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MARINE BOARD OF INVESTIGATION OF SINKING OF THE SS EDMUND FITZGERALD ON LAKE SUPERIOR

10 NOVEMBER 1975

START ROLL 2
GL2-40

Coast Guard Investigation,

EDMUND FITZGERALD Sinking
MARINE BOARD OF INVESTIGATION
OF SINKING OF THE SS EDMUND FITZGERALD
ON LAKE SUPERIOR 10 NOVEMBER 1975

The bulk freighter EDMUND FITZGERALD, owned by the Northwestern Mutual Life Insurance Company of Milwaukee, Wisconsin, and on long-term lease to the Oglebay Norton Company, Cleveland, Ohio, sank on November 10, 1975. She was lost on the east end of Lake Superior off Crisp Point nearly on the International Boundary Line with her entire crew of twenty-nine men and a cargo of taconite ore.

The United States Coast Guard Marine Board of Investigation convened on November 18, 1975. It was held in the auditorium on the 31st floor of the Federal Office Building, 1240 East Ninth Street, Cleveland, Ohio. The Board was composed of Rear Admiral Winfred W. Barrow (Chairman), Captain Adam S. Zabinski (member), Captain James A. Wilson (member), and Commander C. S. Loosmore (recorder). The hearings adjourned on December 13, 1975.

It should be stressed that the purpose of the inquiry was not to fix criminal or civil liabilities. Rather, it was called to determine the cause of the casualty, to the extent possible, to permit the taking of appropriate measures for future promotion of safety of life and property at sea.

The transcript of the investigation and related items were made available to the Center for Archival Collections, Bowling Green State University, for microfilming through the authority and forethought of Captain James A. Wilson, United States Coast Guard. His intent is to insure the availability of the document for future generations of scholars involved in Great Lakes studies.
A. I do. I did.

Q. Not all the crew members are that conscious of the importance.

A. No, that is true.

Q. From your observations on the vessels coming through the Soo and so on and so forth, generally do they have the hatches all dogged?

A. That is pretty hard to answer because you are meeting a ship in the river and you might glance over there, but you really don't pay too much attention to things like that.

I could notice once in a while and you will see a ship with a hatch open and you figure, "Well, they're down there painting or doing some damn thing or doing maintenance work."

Q. But, this would be in the river that you would see this condition.

A. Yes, that's right, because you would hardly notice them on the Lake. You would be too far away.

Q. So would you think that as far as the masters were concerned, the captains, that they would want to secure everything no matter what the weather forecast was? I am talking about November, October, the winter storm season.

A. Well, we always, myself, I always felt that it was better to have it done ahead of time, even if the weather was good, and then you know it was done and you wouldn't have to
get men out in the middle of the night to look them over
again, and a lot of times if we did have bad weather, when we
got to a place like sitting in a river or something, I would
tell the mate, "Go over the hatches again," and they would
go over them.

CAPTAIN WILSON: That's all I have.

REAR ADmirAL BARROW: Captain, I have one
more question I would like to put to you.

EXAMINATION

By Rear Admiral Barrow:

Q Loaded ore boats, in your experience with a quartering
sea, how do they ride?

A Well, it would depend on the cargo. With iron ore, the
Gallagher used to ride fairly good.

Q Given your background with ore boats, and the condition
which you have described for us a little while ago, and you
were, of course, fighting a head sea, a vessel loaded with
ore, a boat coming down in the vicinity of Caribou, do you
think that they would have been laboring under any great
difficulty with that kind of a sea?

A Well, that's hard to answer because I really don't know.
I haven't been on any of those modern ships.

Q I am not asking you with relation to that.
I will ask you with relation to experience, then, given
your experience and the type of boats that you have been on,
coming down from Caribou and Whitefish Bay, with the sea
conditions on the order of which you have described that you
saw at 20 to 25 feet, and with your estimated winds, this
would have placed the sea off of the quarter of the vessel
that you were operating, and with a loaded ore boat, would
this have caused you a problem?
A. On the types of ships that I was on, I would say yes.
Q. Would it have rolled, do you think?
A. Well, I don't know. I think we would have been taking
on an awful lot of seas over and probably doing a lot of
damage.
Q. Across the deck?
A. Across the deck and coming over the aftercabin.

REAR ADMIRAL BARROW: Counselor, do you
have any further questions?
MR. MURPHY: I do have just one.

EXAMINATION

By Mr. Murphy:
Q. Would you identify, please, the logs that were kept
aboard the Benfri?
A. They had a regular ship's log there.
Q. One regular ship's log in the pilothouse?
A. Yes, sir, and they always have a bell book up there.
Q. In the pilothouse?
A. Yes, sir.
Q. Do you know whether there were any logs kept in the engineroom?
A. I couldn't say that.
Q. Was she a direct pilothouse control?
A. No.
Q. I see. Was it a regular Chadburn?
A. Yes, they referred to it as the telegraph on the deep-sea ship.
Q. Right.
A. And some do have the automatic recording devices that would put down the time and the date and time and the hour and the minute and the second and whatever you ordered on the engine.
Q. Did she have a course recorder?
A. Yes, she did.
Q. Was it in operation at the time?
A. I don't know whether it was or not. I didn't pay attention to that.
Q. Did she have a radio-telephone log?
A. No, the radio operator keeps some sort of a log, but out on the bridge we never bothered.
Q. The radio operator is not located on the bridge?
A. That is true.
Q. And where is he located?
A. He had a room after the bridge with the radio equipment.
On this particular ship, it happened to be on the starboard side and his cabin was on the port side, and usually at night there is nobody around in that room there and a lot of times a lot of them do keep that automatic telegraph, or whatever you call it, on for distress calls, I guess.

Q. But, the radio telephone to which you referred, on which you made your calls, that was on the bridge?

A. Yes, sir.

Q. I see. And there was no special log kept for that that you know of.

A. No, sir.

MR. MURPHY: No further questions.

REAR ADMIRAL BARROW: Captain Zabinski?

CAPTAIN ZABINSKI: Yes.

EXAMINATION

By Captain Zabinski:

Q. Captain O'Brien, we have the Fitzgerald fully loaded, an ore ship, and it has 29 people aboard proceeding down in a storm in the storm conditions that you have described, and there were a couple of lifeboats, a couple of inflatable liferafts, many jackets, and we have today not recovered anyone, either any survivors or any victims in lifesaving equipment, or lifejackets or otherwise.

What in your opinion does this indicate?
Why haven't we located any?

A. I suppose they were all trapped. I don't know. I am just guessing.

Q. Do you think if they had time, that they would have gotten into jackets? Would that be the normal procedure?

A. I really don't know.

CAPTAIN ZABINSKI: That's all I have, Admiral.

REAR ADMIRAL BARROW: Captain, we thank you very much for your testimony, recognizing the purposes of the Board, which is to determine the cause of the casualty as clearly as we can.

Is there anything else that you can recollect from your memory of the events that took place that night which might be of assistance in helping us arrive at our purpose?

THE WITNESS: No, there isn't that I know of.

REAR ADMIRAL BARROW: Thank you very much, sir. You are excused.

You are cautioned not to discuss your testimony with anyone other than your counsel before the conclusion of the investigation.

Thankyou, sir.

THE WITNESS: Yes, sir.
(Witness excused.)

REAR ADMIRAL BARROW: Commander Loosmore,

call your next witness.

COMMANDER LOOSMORE: Captain Jacovetti.

would you raise your right hand, sir?

CAPTAIN ALBERT JACOVETTI

was called as a witness and, being first duly sworn, was
examined and testified as follows:

COMMANDER LOOSMORE: Would you sit down, please.

EXAMINATION

By Commander Loosmore:

Q Captain, will you please state your name and address
and occupation?

A Albert Jacovetti, 2602 John Avenue, Superior, Wisconsin.

Q And your occupation, sir?

A Marine pilot.

Q Do you hold a Coast Guard License or document?

A Yes.

Q Will you describe that?

A I have the information right here. The Serial Number
is 399758, File Number 5951, Issue 58, Issued February 10, 1972,
Duluth.

Q Sir, what category of license is that?

A Master's, First Class Pilot.
Q. What route, sir?

A. First Class Pilot from Cape Vincent to Gary to Duluth, Masters to Anticosti Island.

Q. How long have you held this license, sir? How long have you held such a license? How long have you been a Licensed Master and Pilot?

A. 1938, 35 years, I guess.

Q. Have you been piloting for 35 years?

A. No. I have been piloting since 1963, 12 years.

Q. As you know, this Marine Board of Investigation is concerned with the loss of the Fitzgerald on the 10th of November of this year.

Were you piloting a vessel on the 9th or 10th of November of this year?

A. Yes.

Q. What vessel was that, sir?

A. The Liberian vessel Nanfri.

Q. Where did you board that ship?

A. At Detour, Michigan.

Q. Where was it bound?

A. Thunder Bay, Ontario.

Q. When did you board the Nanfri, sir?

A. When?

Q. Yes.

A. If you don't mind me looking up notes?
Q. Please do.

A. I got aboard 10:15 in the morning, on the morning of the 10th of November in Detour, Michigan. That's Eastern Standard Time now.

Q. When did the Nanfri depart?

A. She was underway when I boarded her.

Q. Underway?

A. Yes.

Q. Okay. Could you tell us what time, from either your memory or from your notes, what time you cleared the Soo and what time you entered Whitefish Bay?

A. Yes. I've got a little log here.

We was at the upper piers at the location at 1540, 10th of November.

Q. What time did you enter Whitefish Bay?

A. We was at the Groscap entrance of Whitefish Bay at 1740.

Q. Are all these times Eastern Standard Time?

A. Right.

Q. Would you describe the course of the vessel from then and for the next several hours, please?

A. I steered a direct course from Groscap to Parisienne Island, 325 degrees, and from Parisienne Island to Whitefish Point. Normally the course is 340, but I was steering 330 because of the wind and possible drift and I wound up steering 325 because we were drifting farther to the north.
and I would up four and a half miles off Whitefish Point at
1950.

Q. When you were four and a half miles off of Whitefish
point in 1950, what was the true bearing and what relationship
to the ship -- let me put it this way.

What was the relative bearing of Whitefish Point at
that four and a half miles?

A. Right abeam of the vessel.

Q. What were you steering?

A. I was steering at that time, I would like to say 325.

Q. And your next course?

A. The next course, I tried to steer 300 course for
Passage Island and I steered that for a little while, but
I had to change. We were drifting too fast, too far over
Pancake Shoal.

Q. So what course did you steer?

A. I went back to 290. I had to put her right in the sea
then and head on.

Q. Would you describe the wind and sea conditions at
that point when you were on 290?

A. Yes, the wind was right dead ahead. I figured that at
that time the wind was in excess of 70 knots.

Q. Did you measure that or was that your estimate?

A. In fact, the wind was taking the top of the waves and
blowing them across the water indicating that it had to be a
force of at least that much.

Q. Was the Nanfri equipped with an anemometer?

A. No, sir.

Q. There was no anemometer?

A. No, sir.

Q. What were the seas like at that time?

A. Well, like I previously stated, they were very high and I would call them a little violent.

Q. Could you estimate how high in feet?

A. Well, everybody says 25 feet, but I would say it was around 25 feet and one of the bows of the vessel came down into the sea and then we took on blue water over as she came down into the sea. We did take blue water over the bow.

Q. What direction were the seas coming from?

A. Dead ahead, 290.

Q. Do you recall, as you watched the seas come over the ship and so forth, do you recall how many waves along the length of the ship there were?

A. No, I didn't try to count them.

Q. Can you picture the situation?

A. I won't say very many. No, I wouldn't be able to tell you that.

Q. Try to place yourself there.

A. I would say there was a large gully in between each sea.
Q. Can you describe the ship for us? Can you tell us how big it is?

A. I can give you all the dimensions.

Q. Would you please?

A. Okay. It has 12,287 gross tons, about 13,500 net, and she's 709 feet long, 79 abeam, 49 molded depth, 14,300 horsepower, and her average speed is 16 knots.

Q. Do you know what the draft was at the time that you were in this heavy sea?

A. We were drawing 16 forward and 21 feet aft.

If you are wondering why I have these reports, I keep a record of every ship that I have been on, so I would say I got about 1400 records like this.

CAPTAIN ZABINSKI: Is that a hobby of some kind, Captain?

THE WITNESS: Yes.

By Commander Loosmore:

Q. Captain, you testified that you were in the vicinity of Whitefish Point at 1950 Eastern Standard Time on the 10th. That was Eastern Standard Time, was it not?

A. Yes.

Q. Which is about the time, very near the time that the Fitzgerald was lost.

Did you have any communications with the Fitzgerald at all?

A. No.
Q. Did you hear any communications with the Fitzgerald?

A. No.

Q. Did you have any conversations with anyone which related to the Fitzgerald?

A. Yes.

Q. Would you describe those?

A. I heard the Master of the Anderson repeatedly calling the Fitzgerald and I got ahold of Captain Cooper on the Anderson and I told him that his transmission on 16 was very loud and clear and if the Fitzgerald was in the area, there was no reason why he shouldn't hear him.

Captain Cooper told me then that he had been in contact with the Fitzgerald and the Fitzgerald had taken this damage aboard the vessel and asked him to sort of shadow him and he said that he was within five miles of the Fitzgerald and then all of a sudden he lost radar contact and telephone contact and yet, at the same time, on his radar he could see the three of us that were down below in that area.

So I told him that I would attempt to contact the Fitzgerald also, which I did on Channel 16 of the FM.

Q. With what result?

A. No result. No result. Then, I couldn't see anything on the radar.

Q. What damage did you hear about in this conversation?

You said there was damage to the Fitzgerald. What was
that?

A. Well, the only thing he said was that the sea had knocked his railing down and he lost a couple of vent covers and he was taking a little water and it developed a little list, but he thought that the pumps were handling the situation okay, and I believe this had come from Captain Cooper of the Anderson.

Q. Yes, sir. Do you have any idea what time this conversation took place?

A. Well, yeah, I don't have the exact time, but it was after I rounded Whitefish, so it had to be around 2000 or shortly after that.

Q. What is that that you are referring to, sir?

A. These notes?

Q. Yes, sir.

A. Well, these are little notes that I took as to my position and all the times.

Q. When did you do that?

A. Well, after we found out that the -- or had a good inkling that the Fitzgerald was gone.

Q. While you were on board?

A. No, these are definitely our positions taken from the chart as we rounded Whitefish and was in the area, yes.

Q. Did you do that on board the vessel?

A. Well, the Second Mate was putting these positions on the
chart right along at regular intervals.

Q. I see, and when did you make those notes?
A. After we found out or after we had an inkling that the
Fitzgerald was lost.
Q. Was that while you were on the Nanfri?
A. That is right. Well, from the time that we was abreast
of Whitefish Point at 1950 until 2400, we had made 14 miles
in that time.
Q. How long was that, sir?
A. Four hours and ten minutes. We made 14 miles.
Q. Was Captain Cooper's conversation the first you heard
of the difficulty with the Fitzgerald?
A. That is right.
Q. Did you hear any other conversation about her?

Did you have any other conversation about her?

REAR ADMIRAL BARROW: Commander Loosmore,
I think what we will have to do, perhaps, is have the
Captain indicate those positions on the chart for us
here so that we could have it.

(Recess had.)

REAR ADMIRAL BARROW: Back on the record.
Captain, you have indicated that the time of your
conversation with the Captain on the Anderson was
something like 2000.

THE WITNESS: In that area, yes.
REAR ADMIRAL BARROW: Can you tell me, can you clarify if that is Central Standard Time?


REAR ADMIRAL BARROW: Are you sure of that now? 2000 Eastern Standard Time?

THE WITNESS: We were on Eastern Standard Time.

MR. MURPHY: I am going to state for the record that it is impossible. All the information is that the vessel was down. The last conversation in contact with the Fitzgerald was about 1915 Eastern Standard Time and I am only raising the point at this time so if there is any doubt about it, it could be clarified at this time.

REAR ADMIRAL BARROW: That is his testimony.

CAPTAIN ZABINSKI: That is his testimony.

MR. MURPHY: I understand.

REAR ADMIRAL BARROW: And I have asked him and he has repeated that his testimony was that he was talking with him around 2000.

THE WITNESS: That is a guess. I am not testifying that it was at that time definitely, you know.

REAR ADMIRAL BARROW: I understand.
Now, let's go off the record for a few minutes while we get this position.

REAR ADMIRAL BARROW: Let the record show we reconvened at 12:50 p.m.; parties in interest are the same as before.

Commander Loosmore, would you proceed?

COMMANDER LOOSMORE: Yes, sir.

By Commander Loosmore:

Q. Captain Jacovetti, we were talking about your positions, and during the recess you plotted some positions on a chart.

A. Yes.

COMMANDER LOOSMORE: I would like to have this chart marked as Exhibit 49 for identification, Lake Survey Chart No. 92. It is dated July 5, 1974.

The area displayed shows Whitefish Bay in the southern end, the southeastern end of Lake Superior.

REAR ADMIRAL BARROW: It will be marked so for identification as Exhibit 49.

(Exhibit 49 was marked for identification and made a part of the record.)

Q. Captain Jacovetti, would you show us on this chart the positions which you were just describing a moment ago?

A. Okay. We were abreast --

Q. You will have to speak up so the court reporter can
hear you.

A. We were here about 2000.

Q. Indicating a position marked --

A. Right here (indicating).

Q. With the numerals 20?

A. At 2130 we were up in this area.

Q. Indicating a pencil mark 2130.

A. And 2150 here.

Q. Indicating a line with a dot on it?

A. Yes.

Q. Sir, would you mark that a circle, please?

A. (Witness marking.)

Q. Are there any earlier positions shown on that chart?

A. No.

Q. Earlier than 1950?

A. I have one down here at Parisienne Island abeam at 1825.

Q. Sir, did you make these marks?

A. Yes.

Q. And what do they represent?

A. The position of the ship at those various times.

Q. On what date?

A. November 10, 1975.

Q. And again, what zone time is being used for these positions?

Q. Eastern Standard Time?
A. That's right.
Q. Now, we were discussing a conversation you had with Captain -- with the captain of the Steamer Anderson.
A. I think you said that was the first time you heard that the Fitzgerald was in trouble?
Q. Did you have any other conversations with the Steamer Anderson?
A. I had one afterwards. We talked about my being able to raise the Fitzgerald and, of course, he expressed his concern as to what happened to the vessel also.
At first he thought that the Fitzgerald might have had a blackout where he couldn't see lights or anything.
Then he also lost the radar contact.
Q. Do you recall anything else he said?
A. No.
Q. Or that you said?
A. We more or less introduced ourselves. He wanted to know who I was, and he wanted to know who he was talking to. I asked also who he was.
We didn't know -- you know, we were not acquainted, but about the main thing was that he expressed concern about what happened to the Fitzgerald.
Q. Did you have any other conversations about the
Fitzgerald?

I talked to the William Clay Ford. The fact is the William Clay Ford called me. I don't recall what time it was. They told me that the Coast Guard was trying to get me, and I was unable to get or have any contact with the Coast Guard at that time, but he mentioned -- the skipper of the Ford told the Coast Guard I was in the area and was aware of the situation.

He was sure that I was doing what I could.

Q About what time was that, sir, as best you can recall?

A These conversations happened anywhere between eight and midnight. I guess I didn't keep good track.

Q Did you at any time see the Fitzgerald?

A No.

Q On your radar or visually?

A No.

Q Did you see any other ships?

A Yes. We saw the Anderson.

Q Where was the Anderson?

A The Anderson was up ahead -- I would say -- let's see. I had the Benfri about four miles ahead, and the Anderson passed down ahead of the Benfri and crossed over on the west side of all of us on the way to Whitefish.

Q And about what time was that, sir?

A Maybe that was around nine o'clock, 2100.
Q. Could you indicate on that chart where you were at that
time?
A. I had to be above Whitefish, and he was coming down,
so he told me to steer a course of 141 for a mile and a half
off Whitefish, so we had to be in this area someplace.
Q. Would you draw a circle in a rough area where you were?
A. Right in here.
Q. Would you put a number 12 at that point, please?
A. (Witness marking.)
Q. Now, from No. 12, which is your position during this
corversation, could you indicate where the Anderson was when
this conversation took place?
A. I think he was down -- like I say, the Benfri was about
four miles ahead, and he crossed ahead of him, so he had to be
in this area.
Q. Okay. Will you put a mark where he was?
A. These are guesses.
Q. Yes, sir. I realize that they are rough guesses.
A. Actually, he had to be up in this area here (indicating).
Q. Would you mark that 13, please?
A. (Witness marking.)
Q. Captain, earlier in your testimony you referred to a
phrase, "The three of us." You said, "The three of us were
down below."

What did you mean?
A. Down below?

Q. I may not have the phrase right.

A. There were three ships in the area, the Avorfors, the Benfri and myself.

Q. All right. What do you mean by the area?

A. Well, in that vicinity. I was in the vicinity of Whitefish Point or just above it.

Q. Now, you referred to the Benfri being ahead of you. Where was the Avorfors?

A. He was about six miles ahead of the Benfri.

Q. Were you able to see either one or both on radar?

A. Yes.

Q. Were you able to see the Anderson on radar?

A. Yes. In fact, I saw him visually.

Q. The Anderson?

A. Yes. I could see the lights of the Benfri and the Avorfors, too.

Q. What was the visibility at that time?

A. It was good and clear. I would say it was in excess of 15 miles, because we saw the lights at Crisp Point very good. I could see the lights on the hill in back of Copper Mine Point, the radio towers.

Q. Would you indicate where that is on the chart, please?

A. Okay. The radio towers are about up in this area here (indicating).
Q. Would you put an X there?
A. Here they are right here (indicating).
Q. You are putting an X next to a Marine circle denoted "R Relay Mast 2 vert LTS FR."
   Just so I understand it, you testified you could see Whitefish and the radio towers?
A. At Crisp Point down on the other side.
Q. Crisp Point at approximately what time?
A. Hell, I could see them all the time.
   We had no trouble with the visibility after I rounded Whitefish.
Q. Just so I got the picture again, at this time what was the wind, your guess?
A. 290.
Q. At what velocity?
A. I would say around 70 or in excess of 70.
Q. And what were the seas?
A. 290.
Q. And how high?
A. Well, I'll judge 25 feet.
Q. Did you talk to the Coast Guard at any time?
A. Yes.
Q. You did finally get ahold of the Coast Guard?
A. Well, they called me and asked me to keep a lookout for a 16-foot outboard boat that was reported overdue.
   I told them that I had already rounded Whitefish.
In my travels across Whitefish Bay, I didn't see anything, but I told them there were a number of ships anchored in behind Whitefish; that maybe they could help, and I also told them that if anybody was out there in a 16-foot boat, they would be long gone because of the seas. They agreed.

That's the last time I talked with the Coast Guard.

Q. You said the last time. Had you had previous conversations with the Coast Guard?

A. No, not really, outside of reporting our regular spots along the river.

Q. And when you speak of talking to the Coast Guard, specifically what station was it? Do you know?

A. Soo control on Channel 12.

I didn't hear Soo control calling us when the Ford called me and told me that they were trying to get ahold of me. I didn't hear them.

Q. What channels were you guarding?

A. 16 and working 12 when I had to, also, radio 13 when I talked to the other ships.

Q. Did you have any other radio communications on the bridge of the Nanfri?

A. I talked to the pilot of the Coast Guard plane.

Q. You did talk to the pilot of the Coast Guard plane.

A. Yes. I think it was 7236. I heard him report to him
at the Soo control that he was 14 miles west of Copper Mine Point at the point he had the flare dropoff, and I figured I was 16 miles west of Copper Mine Point. I could see him.

I called him and told him the names of the ships that I imagined he could see from the air.

That would hav been the Nanfri, the Benfri and the Avorfors, and he affirmed the fact that he could see us.

When he dropped the flare, I had five men on the bridge there watching, you know, to see if we could see anything.

That was the last conversation on the air with the Coast Guard or anybody else.

Q  Yes, sir. Did you see the flare?
A  Yes. I saw the plane and saw the flare.
Q  Did you know Captain McSorley?
A  No.

COMMANDER LOOSMORE: Thank you.

REAR ADMIRAL BARROW: Captain Wilson.

EXAMINATION

By Mr. Captain Wilson:

Q  You said that you have been a pilot for 12 years.

Where were you before that, sir?
A  Well, I was at Jones & Laughlin Steel Corporation for 21 years and with Wilson Marine for 10.
Q  You were J&L for 21, and then Wilson for 10 after that?
A  Yes.
Q. When you said you talked to the Anderson and you introduced yourself, who were you talking to on the Anderson?

A. Captain Cooper.

Q. He identified himself as Captain Cooper?

A. Yes.

Q. And at that time you saw the Anderson, you saw the Anderson's lights?

A. Right.

Q. You said that the Benfri was first. She was out ahead of you?

A. The Avorfors was first.

Q. How far was she ahead of it?

A. I imagine about 6 miles ahead of the Benfri, and the Benfri was about 4 ahead of me.

Q. So the Avorfors was about 10 ahead of you?

A. Yes.

Q. You could identify the Anderson at that time? Did you know which ship out there was the Anderson, or were you able to identify it later?

A. Only through conversations with Captain Cooper.

I knew the other two ships were westbound, and he was eastbound.

Q. He was the only eastbound vessel you could see?

A. That's correct.

Q. You said he crossed over ahead of the Nanfri and the
Benfri?

A Yes.

Q Where was that in relationship to the Avorfors?

Was it behind the Avorfors?

A The Avorfors was west of them.

Q He was?

A He would have crossed in between the Avorfors and the Benfri.

Q And he made that cross before or after you had the conversation with him?

A No, it was after.

Q Afterwards?

A Yes.

Q So when you had the conversation, he was above?

A Yes.

Q He was above the three?

A Yes, not too far really, because it didn't take him long to cross the course lines.

Q What was the last Wilson boat you were on?

A Edward S. Kendrick.

Q She had telescoped hatch covers, didn't she?

A Yes.

Q Were you ever on one of the boats with solid hatch covers?

A Yes, I was on the second ship that it was ever installed
on the Great Lakes, the old B. F. Jones in 1937.

Q. What was the practice of that or the other lake vessels you have sailed on as to securing hatch covers?

A. Well, with a loaded ship in the fall of the year, we put everything on there.

You know, we put the so-called clamps on.

Q. You put on all the clamps?

A. Yes, loaded.

Q. And did everyone, the whole crew understand that? I mean, there was no problem with that?

A. No problem, no. I mean, that was the custom or the practice to batten them down when you got her loaded.

I will admit going upbound light we put every other one down.

Q. But in the fall you put them all on?

A. Yes.

Q. How about the rest of the year?

A. The rest of the year, when the weather was real good, it would be every other one.

Q. Even with the weather warnings?

A. Well, with weather warnings, they would batten her down, and put the rest of the clamps down. The crew would get out and put them down.

Q. You never had, while you were upbound, all the radar targets that you eventually picked up as other vessels? You
never picked up anything on radar, any blips that you
ultimately couldn't identify?
A. We kept looking out after I talked with the Anderson just
especially for that purpose, but we had the four targets out
ahead, three targets out ahead.
When the Anderson went on by Whitefish, we just had the
other two, that's all.
Q. How did the Anderson seem to be riding when you saw her?
Were lights fairly steady? Was she rolling?
A. Well, she was moving a little bit, but it was pretty hard
to tell, you know, in the darkness of the night just how she
was doing.
Q. But you didn't see and lose the lights in a rolling or
anything like that?
A. No, not really.
Q. You never saw any debris in the water?
A. No, no flares, no debris at all, nothing.
Q. You never saw any unidentified lights on your horizon or
out there that you were suspicious of?
A. No, sir.
Q. No white lights or anything like that, any glimmer?
A. No.
Q. Did you assist in the search with your vessel?
A. I figured I was pretty near in the area anyhow. I didn't
attempt to turn the vessel, no.
Q. I realize from what you said that apparently you didn't feel there was a need.

Was there any discussion with the Captain of the vessel, or were you asked to assist in the search, to do anything?

A. Only from what the William Clay Ford told me.

He told the Coast Guard we were there and were doing all we could.

Q. Would you have felt any problem in maneuvering the vessel?

A. I wouldn't have turned it.

Q. You wouldn't?

A. No way. In my opinion, you could not turn the vessel.

Q. So even with a salt-water configuration vessel, you would have had --

A. With those high sterns, once you turn the vessel in the wind like that, she would just stop on you and go so far.

You couldn't turn that stern up into the wind nohow, even if you had 20,000 horsepower.

That has been my experience with saltwater ships before.

Q. Do you feel you could have turned a laker?

A. No, sir.

Q. So everyone was pretty well committed to the direction that they were going in?

A. Yes.

Q. If anything happened, could you have launched a boat?

A. I hardly think so.
A. After maybe, yes.
Q. If there was any necessity of it, would you have felt --
A. Have tried?
Q. Yes.
A. I think we would have tried, yes.
Q. For purposes of abandoning your own vessel for
assisting others?
A. Certainly if I was going to abandon my own vessel -- I
think if we had a chance to assist somebody, we would have
tried it.

CAPTAIN WILSON: That's all I have.
REAR ADMIRAL BARROW: Captain Zabinski?

EXAMINATION

By Captain Zabinski:
Q. That would have been very difficult, Captain, to save
anyone other those conditions; is that your testimony?
A. I don't know how you could have maneuvered your vessel
to get anywhere near it, because the minute you stop a light
vessel like that, she would have broken right off.

I don't think you could have even dropped an anchor
there and done any good.
Q. How about besides lowering your boats? Could you have
used any other means of saving people in the water, let's say?
A. No. You could have tried with what Captain O'Brien said,
at least, you could have tried to hang something over there
that they could have grabbed onto.
I can remember a story that happened out on Lake Michigan years ago, and they hung cargo nets over the side so the men could make a leap and grab onto the cargo nets and get aboard.
Q. Do you recall if any people were saved by that net?
A. Yes. I think they saved the whole crew in the course of events.
That's what they done in preparation for the rescue.
They hung lines and cargo nets and what not over the side, and they got close enough to them to get aboard.
Q. How bad a storm was this, Captain?
You have been out there many years now and have been other storms.
A. Well, I would say it was one of the worst, but it was not any worse than some of the others that I have been in.
Q. What was the ship's crew captain and the officers doing during this period of time when you received the call from the Anderson?
A. They had two lookouts up on the bridge, the Captain, the Third Mate, myself and a quartermaster on the bridge.
Q. They were aware of the emergency?
A. They were aware of the emergency, yes.
Q. You did indicate at one time, and you were sort of hesitant, that about three or four targets -- did you ever see four targets up ahead, Captain, when you passed Whitefish Point?
A. No.

Q. Do you ever think that you had, upon recollection, that you may have had the Fitzgerald on the scope at the same time you had the other three targets?

A. No.

Q. I would like to go into -- you heard me talk with Captain O'Brien about shoal water and the effect of shoal water on sea conditions similar to the one that you described.

What is your experience along those lines?

A. You certainly try to avoid the shoal waters.

Any time you have a sea running out there and you are passing over a shoal water, you are going to get a beating.

Like the south seas banks off Caribou Island, you try to avoid those during the time of the sea or storm, because they do react upon a ship, I mean to cause a ship to roll and pitch.

Q. The sea condition is different; is that correct?

A. Yes.

Q. Is it higher? Would you say the sea condition causes it to be higher?

A. It is more turbulent. I would not say it is higher, but it is more turbulent.

Q. How about the ship smelling of shoal and being affected by it?

A. I think if you run across a shoal or run across shoal
water, you would know that right away.

Q. How?

A. Well, the reaction of the ship usually shakes and vibrates more.

Q. Even though they don't touch bottom?

A. Yes. You have a common occurrence on Lake Huron where if you get within ten miles with a light ship and you are going along full speed, you can tell you are coming into that area just by the vibration and shaking of the vessel.

Q. Is this due to the sea action, would you say or --

A. Shallowness of the water.

Q. Would it necessarily have to be rough for you to experience this?

A. No.

Q. You could get the same effect in smooth water?

A. Yes.

Q. Would you say such an effect would be greater in a rough sea, passing over a shoal?

A. Certainly, if the ship is pitching or bobbing, it is going to take you closer to the bottom, and I imagine you would have more reaction.

Q. You have been through the area between Michipicoten and Caribou Island, I guess, during your times on Lake Superior?

A. Yes.

Q. Would you describe that area and the shoals?
A. You have the North Superior shoals out there that you
more or less have to watch, and you have Chummy Banks that
you try to keep clear of.

Q. North Superior shoal is off to the northwest of
Michipicoten; is that correct?

A. Yes.

Q. Captain, I will ask you a question. You heard me ask
Captain O'Brien.

We had a fully loaded ship, 29 people aboard, and we
haven't found a soul.

What in your opinion could have happened, based on
those circumstances?

A. I would hate to answer that question. I just hate to
answer it.

You know, they didn't send out a Mayday or a distress
call or anything, so whatever happened it happened quickly.

CAPTAIN ZABINSKI: That's all I have.

EXAMINATION

By Rear Admiral Barrow:

Q. Captain, I have a couple short questions here.

You indicated, I believe, that you saw all of these
three targets ahead visually?

A. Yes.

Q. Did you have the radar on at the same time?

A. Yes.
Q. Did you pick up any radar targets other than those and land?
A. No, sir.
Q. Not at any time?
A. No.
Q. Did you during that period of time, after it was reported that the Fitzgerald couldn't be raised, did you actually look very closely at your radar?
A. Oh, yes. After I talked to the Anderson, we kept watching the radar constantly to see if we could pick up anything.
Q. Was the radar functioning well?
A. Very good.
Q. How much sea return did you have?
A. Not very much. Actually, the sea return affects the ship when the ship is closer to the land.
The farther you go out, the sea return doesn't, you know, bother you so much.
Q. How far would you say the clutter was on your radar at that time?
A. We had the radar at times between 12 miles and a 24-mile range.
We could pick up Copper Mine Point and all the land on both sides of the Lake.
I had no trouble seeing any of the targets that we did see.
There were no other targets on the scope.

Q. What was the nearest ship target that you had at that time?

A. The Benfri, which was about four miles.

Q. About four miles?

A. Yes.

Q. And she was clear?

A. Yes.

REAR ADMIRAL BARROW: Counselor, do you have any questions?

MR. MURPHY: Yes.

EXAMINATION

By Mr. Murphy:

Q. Captain, would you tell me, please, what logs you did have aboard the Nanfri or that were aboard the Nanfri?

A. They keep a regular log aboard the ship.

Q. A radio telephone log?

A. No. They don't keep a telephone log.

Q. I see. Was she a direct part of house control?

A. No, sir.

Q. So she was a Chadburn also?

A. Yes.

Q. Do you know whether they kept a log in the engineroom also?

A. No, I don't.
Q. You were, I thought, a little hesitant about the 25-foot wave, and I sort of had the impression that you were adopting that because you heard others say that.

Do you have any different opinion than what anybody else stated?

A. To tell you the truth, I was going to say 30-foot waves and not 25, but I thought maybe I was overreaching a little bit.

Q. But your opinion is that it could have been as high as 30 feet? Is that correct?

A. Right.

Q. Now, there are some shoal areas in the vicinity of the Caribou Island that have been mentioned here?

A. Yes.

Q. Are you familiar with those areas?

A. Yes.

Q. Those are some, as indicated on the chart, to be as low as 6 fathoms.

Are you familiar with where those areas might be?

A. Well, not really, or how close, I couldn't pin it down.

Q. With the waves the size that you have described, and with a large vessel such as the Fitzgerald drawing approximately 27 feet, and with the amount of turbulence that you have described, which is created over shoal areas, assuming this vessel was near a 16-foot fathom area, in your opinion, do you think that with the height of these waves and the depth of
valleys in between that it was possible that this vessel under
those conditions could have touched that bottom or touched
that shoal area?

A  I don't think I am going to touch that one. Anything
could happen, so I wouldn't want to express my opinion.

Q  I meant to say 6 fathoms. My partner has advised me
that I said 16. I meant 6.

A  Yes. That's what I thought you meant.

Q  What, in your opinion, if you have an opinion, when you
have a wave of that size, that height, does that naturally
make the depth of the water between the waves shallower than
it would normally be, or does it just raise the depth of the
water above its normal height? Can you answer that question?

Do you see my point there?

A  Not technically I couldn't answer it at all.

I wouldn't say that there wouldn't be a great difference
in the depth of the water in relation to the height of the
wave.

I think the wave is more of a surface action, more than the
lowering of the sea.

Q  You did say, however, I think, if I quoted you correctly,
that when you are in the shoal area, you get a rougher sea,
a greater turbulence, and it will put your ship closer to the
bottom?

Did I understand you correctly on that?
I didn't say closer to the bottom, but it does react on
the ship; that the sea is more turbulent and the ship works
more.

REAR ADMIRAL BARROW: Let's go off the record.

(Discussion off the record.)

Q Captain, when you had this radio telephone conversation
with the Captain of the Anderson, I believe you said that he
reported to you information that the Fitzgerald had lost two
vent covers.

Was that the way the information came to you?

A Yes.

Q And when you had this conversation with the Anderson,
did you have the impression that the Captain was telling you
about something that had occurred just about the time you
were talking with him or that it was something relating to
information that he had obtained sometime prior to that time?

A This was information he got prior to when I talked to him.

Q You don't know how much prior or how long prior.

A No.

Q I see. All right. Did you ever have any conversation
with the Avorfors at all?

A Yes.

Q Would you tell us what that was, please?

A It didn't amount to much.

He had lost his radar and he was depending on
Captain O'Brien to give them positions and he made the
statement that he thought the wind was going about 80 knots
at that particular time.

Q  He being who, sir?
A  Captain Woodard.

Q  Captain Woodard? I see.
A  And he did tell me that the ship had broached and he was
having a little trouble getting the ship back in the sea, but
his phone was not working too good and we were having
difficulty talking, so we didn't attempt to talk very much.

Q  And of course the Avorfors was farther out more in the
Lake than you were.
A  Right.

Q  Or than Captain O'Brien was.
A  Right.

Q  Did you ever hear any conversation with respect to whether
or not the light or the beacon at Whitefish Bay was on or off
or was working?
A  No.

Q  Whitefish Point, I beg your pardon. I keep referring
to the Bay when I mean the Point. I am sorry.

A  Yes.

Q  You didn't hear any radio conversation between any vessel
on that, either the Anderson or any other vessel?
A  No,, sir.
Q. Did you make any observations when you passed Whitefish Point as to whether or not the light was on?
A. It was on.
Q. And the beacon also?
A. I didn't try the beacon. I don't know whether the beacon was on or not. The light was burning.
Q. I see. Do you have any recollection as to when that conversation with the Avorfors took place when you received that information from Captain Woodard?
A. The time?
Q. Yes.
A. In the first place, did you mark it down?
Q. Do you have a recollection? If so, I would like your best recollection, sir.
A. Well, most of all this conversation took place, I would say, from the time I was abreast of Whitefish Point, shortly after, so I was abreast of Whitefish Point at 1950, so it had to be within that hour or so.
Q. And he was approximately how far ahead of you?
A. I would say ten minutes.
Q. I'm sorry. When you say within an hour, what do you mean?
A. Well, anywhere from let's say between eight or nine.
Q. Thank you.
A. We call it 1950 or 2000 or 2100, but that is between eight and nine o'clock.

MR. MURPHY: I have no further questions.

REAR ADMIRAL BARROW: Do you have a question, Captain Zabinski?

CAPTAIN ZABINSKI: Yes, I have one.

EXAMINATION

By Captain Zabinski:

Q. Captain, what, if any storm warnings or weather warnings were posted when you were transiting around Whitefish Point?

A. Well, they had the storms up earlier in the day, you know, and they were talking about -- I have a copy of the storm warnings and we did listen to the weather reports, but they were talking about westerly winds but they didn't have it up to the 70 knots that we got. They were talking about 40 or 45-mile-an-hour westerly winds.

Q. Would that be gale or storm warnings?

A. I would call it a storm.

Q. Storm?

A. Yes. Anything above that, anything above that would be a whole gale.

Q. Anything above that?

A. Yes.

Q. Is that also an indication or does the Weather Bureau use that as an indication?
A. Right.

Q. Which is more severe, the whole gale?

A. The whole gale, yes, sir.

Q. What is below storm, Captain?

A. Gale warnings.

Q. You feel that the wind was considerably higher than the forecast, which you assumed to be 40 to 45 knots?

A. It was higher than that running in the Locks. They were recording the wind at west at 60 knots when we were in the Locks.

Q. Who was recording that?

A. The Locks Master in the tower with the anemometer.

REAR ADMIRAL BARROW: Any other member of the Board?

COMMANDER LOOSMORE: No, sir.

CAPTAIN WILSON: No, sir.

REAR ADMIRAL BARROW: Captain, you know that our purpose here is to determine as closely as possible the course of this tragic accident.

Is there anything you could add to the testimony that you have given us up to this point to assist us in our purpose?

THE WITNESS: No.

REAR ADMIRAL BARROW: Anything that we have not asked you before which you in your own recollection can
THE WITNESS: Well, about the only thing I can tell you that they didn't ask me about was the rate of the drift. Of course, I couldn't tell you, but we were drifting to the northward, and anything that would have happened in that area would cease in that, you know, would drift that way or toward the beach.

REAR ADMIRAL BARROW: Which beach?

THE WITNESS: Well, I would say to Copper Mine Point.

We were, with the amount of speed that we were making you know, we were having quite a time keeping away from the shoal ourselves.

REAR ADMIRAL BARROW: This shoal that you are referring to, which shoal are you referring to?

THE WITNESS: Pancake Shoal, right in this area right here (indicating).

COMMANDER LOOSMORE: The witness is pointing to Pancake Shoal or Outer Pancake Shoal.

REAR ADMIRAL BARROW: Thank you very much for your testimony, Captain.

You are cautioned not to discuss your testimony with anyone other than your counsel before the conclusion of the investigation.

(Witness excused.)
REAR ADMIRAL BARROW: We will recess for now for 45 minutes for lunch.

(Whereupon, at 1:45 p.m., a luncheon recess was had to reconvene at 2:30 p.m.)
AFTERNOON SESSION

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(2:38 p.m.)

REAR ADmirAL BARROW: Everybody be seated, please. Let the record show we reconvened at 1438. Counsel for the party in interest, Oglebay-Morton, present.

Commander Loosmore?

COMMANDER LOOSMORE: Thank you, sir.

The Board calls Mr. William Cleary to the stand.

REAR ADmirAL BARROW: Would you introduce into evidence the exhibit here before we proceed?

COMMANDER LOOSMORE: Yes, sir.

REAR ADmirAL BARROW: We neglected to admit into evidence Exhibit 49 for identification.

Without objection at this time, I would like to admit that.

MR. MURPHY: No objection.

REAR ADmirAL BARROW: The exhibit admitted into evidence is the late survey Chart 92 with the positions as indicated by Mr. Jacovetti.

REAR ADmirAL BARROW: Proceed.

COMMANDER LOOSMORE: The Board calls Mr. William Cleary.
WILLIAM CLEARY

was called as a witness and, being first duly sworn, was
examined and testified as follows:

COMMANDER LOOSMORE: Would you be seated,
please.

EXAMINATION

By Commander Loosmore:

Q  Would you please state your name, address and
occupation?

A  William Cleary, and I live at 13909 Congress Drive,
Rockville, Maryland.

My occupation is Naval Architect in the Merchant Marine
Safety Office in Coast Guard Headquarter, Washington, D. C.

Q  Mr. Cleary, do you hold a Coast Guard License or document?

A  No, I do not.

Correction, about 30 years ago I got a Wiper's Certificate
I think I still have that.

Q  Could you tell me how long you have been employed by the
Coast Guard as a Naval Architect?

A  Since 1961.

Q  What are your present duties?

A  I am Chief of the Ship Characteristics Branch in the
Technical Division of the Office of Merchant Marine Safety.

Q  What do these duties involve?

A  This Branch is one of six Technical Branches in the
Technical Division...

It is concerned primarily with stability, subdivision when it is required, load lines, the strength that goes with load lines, and we get a bunch of small projects which are handed to us from time to time.

Q. As Chief of the Branch, do you supervise the activities that go on there?
A. Yes, I do.

Q. Have you personally or your staff been involved in any way with the Great Lakes load lines?
A. I have personally, not my staff.

Q. Could you summarize briefly that involvement?
A. It began with Mr. Robertson retired in 1967. I started filling in for him in January of 1967 when the Joint Technical Committee for Canada and the United States was formulated.

In picking up that portion of our business, I then became a member of SNAME Panel HS-1-1. That stands for the Society of Naval Architects and Marine Engineers. And also as part of HS-1-2, which is a research program on the Great Lakes ship.

The Joint Technical Committee has been in existence since 1967.

I had a freeboard panel and a strife panel, which existed during its first year and was finished with their work
by September of 1968.

In April of 1969 the then co-chairman appointed a
working group to review the entire set of load line
regulations and to update them.

They had not been thoroughly updated since they were in
inauguration in 1935 or 1936.

I was on that working group. The other people on that
working group, there was a Canadian Government representative,
a man from Lloyds and the American Bureau of Shipping and one
from the Lake Carriers Association and one from the Dominion
Marine Association. That is equivalent of the Lake Carriers
Association in Canada.

We worked on the basic philosophy of the load lines
and eventually came up with a proposal for changing all of
the regulations to a greater or lesser degree as our group
felt warranted.

That work was finished in 1972. It was then reviewed by
the entire Great Lakes Technical Committee in July of 1972 and
approved by them, and it took until about May of 1973 before
the regulations could be put in the proper format and
published. They were published in Canada and the United
States at about the same time in conformity with the agreement
that we have had with Canada since 1938 through 1940, when
there was an exchange of notes between the Secretary of State
and the Minister of Exterior.
Where are these regulations published?
A. In the United States, in the Federal Register.
Q. Are they also in the Code of Federal Regulations?
A. Yes.
Q. Do you know at what cite?
A. In 46 CFR, Part 45.
Q. Would it be fair to describe them as the 1973 Regulations?
A. Yes.
Q. To refer to them that way then, what would you say the most significant changes were in the 1973 Regs as compared with the ones that had existed earlier?
A. Well, there were two main areas. Number one was: What could be done on freeboard? What should be done on freeboard and to what size vessel?
The other area was on the conditions of assignment, which is how tight does a hatch have to be, what do you do with ventilators, air pipes, doors and all of the weather-tight fittings on top of the ship.
Q. Let's deal with those one at at time. You said what you could do with what size vessel.
Did the '73 Regs change things as far as the size of the vessel was concerned?
A. It did. You are talking about freeboard now.
Q. Well, what do you mean by the size first?
A. By size, we are talking about the vessels from its present
maximum laker or the old maximum laker rather than the 730-
2 footer up to 1000 feet, primarily.

Q     Stop right there. Did the '73 Regs make changes for
4 a lake vessel under 730 feet?

A     Yes, they did.

Q     What would those changes have been in general?

A     In freeboard, we found that there was an allowable
8 reason for an allowable reduction in freeboard. It varied
9 according to the length of the vessel.

Q     Well, since this inquiry, this Marine Board is concerned
10 about the loss of the Fitzgerald, which is 700 and a few feet,
11 what kind of a change, if you recall, would have been involved
for that vessel?

A     I believe the total change could have been in the order
14 of two to three feet depending upon the actual dimensions of
16 the vessel, the length of the beam and the other items that
17 are in the formula.

Q     A change of two to three feet in what?

A     In freeboard, a decrease in freeboard.

Q     A decrease in freeboard?

What would that do to the allowable draft?

A     It would increase.

Q     It would increase the allowable draft?

A     Yes.

Q     Okay. All right. You used a phrase, "conditions of
assignment."

Can you describe what you mean by that, please?

A The load line -- maybe we better go into an overall philosophy of load line.

Q Yes, please.

A The load line is not just a mark on a ship that tells how deep you can load.

It is that, but it is also supposed to be an evaluation of the ship in many things, in stability, in watertight integrity of the hull below the weather deck or freeboard, in weathertight integrity of the hull above the deck and strength also.

The conditions of assignment is a general term which covers that area of weathertight integrity above the freeboard deck, which would cover such things as a hatch cover, a door to a superstructure, the strength of the superstructure itself, air pipes, ventilators, scuttles, manholes, and there may be one or two more. It is a large list.

Q Is this list contained in the regulations?

A Yes.

It also covers, the conditions of assignment also cover the protection for the crew so that there is a reasonable degree of protection when they can be working on the decks.

That does not mean that the load-line philosophy says that the crew can be safe on top of a ship in any storm anywhere,
but there is a degree of crew protection afforded by these
regulations in the form of lifeline regulations, to keep a man
from being washed off the side, that sort of thing.

Q. So then just to kind of recap that a little bit, would you
summarize what would be required for a particular vessel which
has been operating prior to 1973 Regulations, in order that it
could then operate at a deeper draft under the 1973 Regulations?
What sort of things would that vessel be required to do?

A. Well, in the old regulations, there is no prohibition
against wooden hatch covers, although they had gone out of
favor.

The new regulations require steel hatch covers.

The old regulations would allow wooden doors, although
they had pretty much gone out of favor. The new regulations
don't allow wooden doors on the superstructure. You have to
have steel doors.

The new regulations copied from the recent Ocean Convention
the deflection limitation on hatch covers. We did attempt to
smooth out some of the items which we did not see the fine
detail and reasoning, which are now in the present Interna-
tional Ocean Convention on load line.

For instance, in there there are a number of different
heights of doorsills, and while we found ours, examining the
basic philosophy of load lines, and while you can make up a
reasonably technical judgment on having a sill for a door in
the first place, you have a great deal of difficulty deciding
that one should be 12 inches and another one should be 15 inch
off of the deck. The art of Naval Architecture is certainly
not that exact, so we standardized that part of it.
Q: Were there any -- if we started with a vessel that existed
prior to the 1973 Regulations, were there any physical changes
in the vessel that would have to be made?
A: It would depend upon a review of the individual vessel.
When we finished with the Regs, and placed them in the
Federal Register, it was then up to our signing authority,
the American Bureau of Shipping in most cases, but there were a
few that are classed by Lloyd's Register of Shipping, and it
was then up to them to go back over each and every ship to
review that vessel's assignment in accordance with the new
regulations and to find out whether it was suitable for the
new regulations.
Q: Were there any changes in operating procedures or any
special instructions which the vessels are required to have?
A: Two. We included the idea of stability check which was
firmed up in the new load -- International Load Line
Convention.
We copied that idea and we also included a loading manual
requirement for the 1973 Regulations.
Q: Had a loading manual been required previously?
A: No, it had not.
Q. Would a loading line manual have been required to get a 1973 load line?

A. Yes, that was the idea.

Q. Could you tell me a little bit about this loading manual? What is the loading manual? What was it supposed to accomplish?

A. The idea behind the loading manual is to give the skipper of the vessel the information that he needs to be certain that his vessel does not leave port in a condition of stress. We call that still water stress. That is really the only part of the entire examination of the strength of the vessel which you can be certain of, and by controlling that part of it, you hopefully make sure that the skipper will not leave port with his vessel stressed too highly.

There are a number of things which go along with that, the limiting stress value for harbor conditions, still water bending moment, and this is set low enough that there is a considerable reserve before you would expect anything that occurs out on the ocean or in a storm on the Great Lakes to cause a ship any harm.

The loading manual then is insurance for the master that he ought to have that reserve, if his ship is fully sound, that he can make it safely through the conditions that he has on his voyage.

It is expected that the calculations will cover all of the normal loading conditions, which the ship will normally
use and that includes valid conditions.

He should have information of the other half of the voyage, round trip.

Q. You started to discuss what the contents of the manual are supposed to be.

Could you be more specific of what the manual is to contain?

A. Well, in cases of present ship, it is an iron ore carrier. It needs to know how to load the full cargo of iron ore.

It needs to have another page that tells you how to load the ballast tanks for the return voyage.

If any special voyages are contemplated or different cargoes are contemplated, they are supposed to be covered by the separate conditions.

Q. How specific should this "How to load" be?

A. It has to be very specific. I know of one case up in Canada where I was told that the vessel had broke in half, because instead of moving -- that was right out of the dock, while they were loading the cargo.

The normal procedure is to load in balance along the length of the vessel, so you don't load the middle over the ends too much at one time.

Then you often shift the vessel slightly to get other hatches in line with the loading chutes, and then you continue
the process trying to keep it as uniform as possible while you are loading.

When we put this regulation into effect, the working group and all of the Joint Technical Committee group were aware that for many years the equivalent of a loading manual has been carried on the Great Lakes on most ships.

This is usually in the first mate's back pocket, a little black book which tells him how he is to load and how he is to ballast the vessel.

During the discussions there were even some people that didn't want us to say "loading manual." They brought this up, and they said, "Well, we already have this in effect," and we agreed with that. But we still said, "Let's make it normal," at least the requirement is in the regulations.

Q. You are talking about moving the ship back and forth at the dock? Would it be fair to characterize that as a sequence of loading?

A. Yes, sir.

Q. Then are you saying that the Regs or that the loading manual must contain -- are you saying that the loading manual must contain loading information on the sequence of sea loading?

A. I am saying that it should. The wording in the regulation I think, is only two sentences. It covers an awful lot of ground by saying that you have to have an adequate loading
manual, but it is then up to the designer, the operator and
the classification society in looking at these to be certain
that all conditions are covered.

CAPTAIN ZABINSKI: I wonder if you could
clear it by referring to the regulations. Give us the
citation on that here, please. This is on that loading
manual reference you just made.

COMMANDER LOOSMORE: Yes, sir.

Q. I think these are the proper ones.
A. This would be under Section 45.105 entitled "Information
Supplied to the Master."

It says, "Unless otherwise authorized by the commandant,
the vessel must have on board in a form approved by the
commandant sufficient information:

"A. To enable the master to load and ballast the vessel
in a manner that avoids unacceptable stresses in the vessel's
structure."

B is on stability.

COMMANDER LOOSMORE: For the record, Mr. Cleary
was quoting from the Code of Federal Regulations revised
as of October 1, 1974, Title 46, Shipping.

By Commander Loosmore:

Q. Does that language imply an approval, or is there an
approval, or is there an approval process of this loading
manual?
A. Yes. The process -- we have five Technical Officers around the country. One of them is located here in Cleveland. Again, once the overall policy was set in the Federal Regulations, the actual approval was a matter that we left to our Technical Field Office and to the Classification Society, which works with us in these matters.

Q. Were there guidelines to the field officers as to what the contents of the loading manual should be?

A. I can remember after the regulations went into effect telephone calls. That's 98 percent of my job anyway.

Somebody wants to know what something means, but I think I might end up bending the truth if I were to say that I remember a certain telephone call. I don't.

I do remember there were telephone calls asking, "Do you think this would fill the bill," or "Would something else be adequate," but in general, we left the details of what a book looked like.

We wanted to be as flexible as possible so that provided the information covered that, any format would be acceptable.

Q. Would you repeat that?

A. The information covered, what was necessary to keep the master -- I forgot the exact words already.

Q. Do you mean the words in the regulation?

A. Yes.

Q. You mentioned still water stress as being only a part
of the stress.

Do you have any information as to what percentage of the total stress the still water stress might be?

A. Yes. The still water stress in general is for both ocean ships and for the Great Lakes vessels, which was held to a minimum, let's say, but it varies a little bit between the ocean and the Great Lakes. It would be, let's say, under 10,000 psi in the steel at the deck or the bottom, when you get finished with the whole calculation.

Now, that is one-third of the weight that is in an engineering laboratory to do anything to that steel permanently to make it yield and buckle or break.

I am making this deliberately unprecise, because there is a variation from the ocean to the Great Lakes.

Roughly, that one-third/two-thirds ratio is the known versus the unknown in a bending moment of evaluation of a ship.

That two-thirds evaluation, there is no way that myself or any other so-called expert can say precisely what the ship is going to experience out on the oceans, so we are continually engaged in arguing with one another about what should be this margin of safety in such calculations.

Q. That isn't quite the question I asked.

Would, under any condition of loading, the still water bending be one-third the total load that the structure sees?
A. I am saying that would be the approximate limit allowable by the standards of strength that have been set by Classification societies mainly and with the approval of the administrations, which is the Coast Guard in this country. That doesn't mean that the ship, every time it leaves port, is loaded to that stress. This is one of the things that has come out of discussion in the Joint Technical Committee in the last five years.

We have realized that the loaded condition of the vessel is not the critical stress for the vessel as far as still water bending moment goes.

So the designers here on the Great Lakes are asking us questions about, "Why do we have to design to this draft limit, which is taken as the load draft when the bending moment shows that it is perhaps a very low figure," only, let's say, three or four-thousand psi instead of the 10,000 that I mentioned previously. Whereas, the ballast condition often gives them difficulty and may be close to the limit.

Now, that, plus this unknown two-thirds of the bending moment evaluation, which is called the wave-bending stress in general terms, you may include springing, which is a particular problem here on the Great Lakes, and in both here and on the ocean, it would have to include any thermal stresses or which the sun can cause, perhaps not here on the Great Lakes, but all of the other unknowns would be covered in
that two-thirds.

Well, the largest part of that is wave bending, excuse me, the largest part of that so-called wave bending is either wave bending or springing here on the Great Lakes, and the literature going back for well into the 1940s has shown us that that part is not dependent upon draft.

The still water bending moment is a function of the draft, but the other part is not.

It does vary, if you make the ship go deeper in the water, but only a little bit.

This is one of the things which when our committee reviewed all this, we said to ourselves, "Well, that is such a large portion of the overall evaluation of the ship that we can consider that if all of the other things can be acceptably answered."

Q. You mentioned springing. What is springing? What do you mean by springing?

A. Springing is a 2 node vibrator response of the hull generated by action in waves. It does not mean maximum waves. It is generated by a combination of the waves and the speed of impact.

Often we get the highest springing stresses at some very low sea state, only three or four or six feet of significant sea height, but the sea height in which the master feels comfortable, so he continues at his maximum speed.
Q. Did you design for springing stresses?

A. We did not before this big research program, but with the new strength standard that the interim strength standard which is now being used, a good portion of that is an evaluation, an engineering judgment evaluation of the springing.

This was put together in 1968 -- excuse me, 1967.

It was proposed by Mr. Sid Matthews of the National Research Council of Canada as in the strength panel, one of the two panels that the Joint Technical Committee first put together.

It is very difficult to follow every bit of his mathematics.

In general terms, he set up a section modulus calculation based on this still water bending moment, which is dependent upon draft and another term, which is the wave bending portion.

The first instrumented vessel was Ryerson back in the '60s, and he attempted to extrapolate that data up to 1000-foot vessels.

The whole object of that exercise was to make an intelligent guess of what the strength of a 100-foot vessel should be.

In doing so, it covered the length from 600 feet up to 1,000 feet.

He did include an engineering guess as what the springing function should be evaluated at. He included a wave portion,
a term in that equation.

The overall result of his calculations for a 1000-foot vessel proved to be rather close to a straight-line extrapolation of the old experienced curve. It is not a curve, it is just F-factor times beam, times the draft, which is not 100-percent theoretically correct or accurate, but it worked for 30-some odd years, and it was a good experienced curve.

Mr. Matthews' new scientific approach to it, when we had questions about the validity of some of his data and how he put the formula together, the overall result of it was that the thousand-footer came very close to a section modulus, which he would have gotten from the arbitrary formula, and it was on that basis that I recommended to my superior that we accept it as an interim guide.

Now, starting, we have had trouble with it. We have learned a lot from the research of the past four or five years on a great many, instead of one vessel. There has been as many as five instrumented. We do not have all the instrumentation data back from those tests yet, but we do intend to go back and review this strength standard to make it better for the designers, better and more scientific as we can possibly make it, but that review will not start until we have gotten all of these instrumentation reports back.

Q. Is this kind of load included in what you characterize as the wave-bending stress?
A. Yes, it certainly is.

As a matter of fact, what we have seen is that the wave, the part of the current standard that is attributed to actual wave bending, a large wave, poised on a single large wave, which almost never happens, has not been realized, but the springing stresses that were put into the interim standard in 1967 have been realized. So that portion of it will probably have to be increased, but the evaluation of the wave standard we are not sure of yet.

Q. But I thought you said earlier that you designed the water-bending stress.

A. His evaluation was made on a combined still water stress, which was, I believe, the largest one that he knew of at the time, which was something -- five tons or around 10,000 psi, plus the largest total weight action-type bending moment that he knew of at that time, which was around 7 tons, which makes the whole thing around 12 tons.

Now, the bending moment used in a loading manual is the bending moment needed for the information of the master. The rest is left up to God.

All he needs in that loading manual is the still water portion of it, so that the cushion of the two-thirds is there when he leaves port, or more.

As I said, in the loaded conditions, it is quite often more than that two-thirds, because the loaded condition is not
the high stressed condition.

Q. You also mentioned a stability assessment as far as load line.

A. What kind of a stability assessment was done on the Great Lake vessel?

A. It depends on -- I know you are talking about one particular type of Great Lakes vessel, but let me say, first off, that stability is one of those areas where the evaluation can vary from one type of ship to another and therefore even today we have no -- while we have a wind heel criteria in the regulations, which is generally used, the commandant's judgment always has to be exercised when there is a particular problem like with green cargo or if there is an ore that might slip, and you would want to evaluate it.

So the commandant always holds back the authority to ask for additional calculations on stability or if he is satisfied that a certain design of a ship is acceptable without a great amount of stability calculations.

Now, one instance on the oceans is that of a large tanker. As long as that is used for carrying petroleum products in bulk and you don't start carrying railroad trains like we did in World War II on top of that tanker, we are quite satisfied that no stability calculations need to be done on such a ship.

If, however, it is, let's say, a bulk carrier or a combination carrier, which might have a lot of free surface on
it, then, we say there must be a stability evaluation included and you also start with an inclining experiment so you have an accurate basis for your stability evaluation.

Getting to this specific ship, this is one of a class of ships which we have felt no need to require a great amount of stability calculations, where we have generally quite a bit of metacentric height, which makes them adequate in all loading conditions. The exception here on the Great Lakes has been for the self-unloader, which has the large boom on top of it.

Now, that is a load of topside weight and we have asked for inclining experiments on most of those.

Q. Had there been any inclining experiments on what I understand are called straight deckers, non-self-unloading vessels?

A. I don't know of any, no.

Q. And they are not required?

A. They are not required.

If they are done, they are done for the information of the owners and the shipyard.

Q. So then, what stability assessment is required in order that the conditions of the load line assignment can be met?

A. These load line regulations cover not only the type of ship that you are concerned with, but they cover any load line vessel from 79 feet on up.

In the case of -- if we were to get back into large
passenger ships on the Great Lakes, we would most certainly
have stability evaluations made on those. The regulations
now cover those more specifically than they did before.

Or, let's say, if a container ship trade developed on the
Great Lakes, something with large windage area, or if you
suddenly get an oil boom up here and you have that type of
draft which always has to be load lined in the Great Lakes,
this covers everything, not just the type of ship that you are
talking about.

Q. Addressing specifically to a nonself-unloader, approxi-
mately 700-foot Great Lakes bulk carrier, is a stability test
required for that?

A. No.

Q. Are there any stability calculations or is there any
other stability assessment which is required for that vessel?

A. No.

Q. Would that hold true without regard to how it was loaded?

A. I would say it would hold true, as long as it stays in
this trade, yes.

Q. What trade?

A. In the iron ore trade.

If you suddenly load it with grain and we find that there
is a large free-surface effect, then, we will come back and
say, "We want a stability test on that vessel."

Q. Then, that is not with regard to how it is loaded.
I was speaking of two different commodities, yes.

Back to the loading manual a minute.

I believe you said, and correct me if this is not what you intended to say, that the loading manual must set out every condition of loading that the vessel is going to be operated in.

That was the intent, yes.

Then, is it fair to say that there is an assessment of stability in the review of the loading manual? Don't let me put words in your mouth.

I would say no. In this particular situation for this type of vessel and this service, it is not a joint loading and stability manual. There are some on the oceans where we join loading information with the stability information and oftentimes it is very considerable stability information, but compared to that this is -- this has to be considered -- no, there is no full-scale stability evaluation at all.

And for their record, what do you mean when you say, "this type of vessel"?

A large Great Lakes iron ore carrying ship or bulk carrier.

In what type of service?

In the iron ore service, iron ore service.

Okay. When you were discussing the 1973 Regulations, you used the phrase, "found that freeboard could be reduced."

Would you describe some of the things which were done
to make that finding?

A. Yes. As one of the two Government Representatives in the working group, it was my job to find out, when you know what the two industry men wanted, which they wanted less freeboard if they could have it, and it fell on myself and the Canadian Government Representative to try to evaluate for ourselves whether we believed that this would be adequate.

Now, when you go back into some of the literature and you first find out that it has been well known for -- well, ever since the first principles of naval architecture from the Society of Naval Architecture was put out in 1939, that the formula which included draft in it was an arbitrary formula and that the wave evaluation which is the larger portion of it is not dependent upon draft for the strength of the evaluation of the ship, then, you say to yourself, "Well, let's look at that. That appears to be something we can set aside for the moment and go on to some of the other things." Well, I took it on myself to do a -- what is called a sea-keeping analysis of a number of vessels, which turned out to be a great deal of work because sea-keeping, even though it's something that naval architects are not totally familiar with, it involves the use of statistics and probability theory. I had two men in my shop do a number of calculations on vessels of higher block coefficient, which means a fat ship of varying lengths from 200 feet all the way up to 1,000 feet.
Utilizing wave data that had been gathered under the SNAME Committee, HS-1-1, in an attempt to find out how high the deck should be off of the surface of the water in a given sea spectrum, the results of that study were compared with indications. I won't say with full-scale reports because in 1966 the science of sea-keeping, as used by the naval architects, was really in its infancy.

At the 1966 Load Line Convention, it was hinted that one could do this sort of thing. We started this evaluation in 1969, using wave data, which the Canadian Hydraulic Laboratory had gathered for two or three years, principally on Lake Erie.

First of all, they found out that the significant height of sea wave has seldom exceeded 20 feet on Lake Superior.

Now, when I say significant height of sea wave, that does not mean that every wave coming at a wave is 20 feet high. This is a statistical averaging by which this is the average of the highest one-third in any given sea state. In that given sea state, there might be some that may be 30 feet high, but it gets up to a point where naturally we are talking about probability and you might say that there might be a couple of hundred waves 21 feet high, but there would only be one 30 foot high, and it would not necessarily be a single wave in which the ship would find itself totally balanced. This is an irregularity that we are talking about, a spectrum in which short waves mix with long waves.
Now, as to the results of that study, we found that just the way the Netherlands had indicated in suggesting this type of study in the international community, we found that the platform height that had existed on the Great Lakes for winter freeboards compared very favorably with an evaluation where one percent of the time that the vessel was in that seaway it would have water on the deck. To us, this meant up to a length of about 500 feet. To us, this meant that the intuitive judgment of the old-time seaman who sat down to decide what the freeboard should be back in 1935 was about one percent of the time they would allow water on the deck.

From 500 feet on up, the 20-foot seaway -- I want to use the words levels out, but that wouldn't mean anything to you because you would have to see a graph, but the necessary height of a deck above water becomes rather standard and even reduces when you get close to 1,000 feet.

In essence, the highest requirement given, the maximum height of seaway known on the Great Lakes, which is considerably less on oceans, was in the neighborhood, a ship around 500 feet was the one that needed the most freeboard, not the most freeboard, but it went up to the 500-foot level and then stayed rather constant at that level.

Now, with that information, with that study, I went back into the working group and it took us six months to do that study because it had to be done mostly by hand, and I said,
"All right, I am satisfied that if we don't do anything with ships less than 500 feet, we might be able to work on several things in the load line above 500 or 550 feet."

The several things that are affected are, first of all, the midship's freeboard itself, and then the shear line, which is supposed to be from that up to a maximum point at the bow, and then in the 1966 Convention there was a requirement for bow height.

It was placed there because the old forecastle requirement which was in the 1930 Convention, had been dropped.

Now, in the 1930 Convention, the forecastle requirement was only on tankers. From my intuition, I wasn't at the 1930 Convention, but my intuition tells me that when they dropped it, they felt naked, so they had to put something back in there so they put bow height back in the Convention on both steamers and tankers.

Q. Is there a bow height requirement for the Great Lakes?
A. We adopted bow height requirement for the Great Lakes as well, but we used this in the 1966 Convention, this new seaweeping, which was just being used by naval architects for the first time.

It was suggested at the last moment. They had no time to go into it, so they set up an increasing bow height and an increasing shear curve. When they finished the study, we felt that it was within our engineering judgment to either hold
constant the bow height and the shear requirements or reduce
them as the length increased.

When we took the study back into the working group and it
was discussed, as I said, it allowed me to say with some
confidence in engineering that, "All right, we can allow some
reduction, but not below 550 feet."

We found out that going back to the strength requirement,
if one reduced on a thousand-footer, if one took this study of
ours and one went right down to the last inch and made the
depth of ship only what the sea-keeping study called for, we
might allow a ship which had a depth ratio of 25 or 30, which
led us to say, "Stop, that's wrong. We don't want the length
on the depth ratio on the Great Lakes ships to expand."

We have it in the area of 18 or 19, that range now.
We don't want it to go much above 20.

So we set the new rules. We made an attempt to set the
new rules without using every last bit of that sea-keeping
study. We set them in between the old rules and what the
sea-keeping study would be for an acceptable platform height.

In addition, we kept another cushion on shear. Instead
of allowing it to drop in accordance with the sea-keeping
study, we held a shear penalty at the 550-foot mark. A
thousand-foot vessel is required to be calculated as fit
with a 500-foot vessel.

Mr. Cleary, it sounds like there was a considerable
amount of analysis that went into these 73 Regs.

Could you estimate how many man-hours were devoted to this.

If you can't, that's fine.

A. It is not my only job, so I can't say I spent midnight
oil for seven years on it.

Q. How long have you been working on it? What percentage of
your time?

A. A better estimate is that once you set yourself a task
such as the sea-keeping study and you have to do it by hand,
I only have five people in my shop. I had to use 40 percent
of my resources for six months just for one evaluation, which
was not the total evaluation of what the load line policy
should be.

Q. In your discussion of the requirements to go to the '73
Regs, I believe you mentioned a change in vents or vent
heights.

Did you say something like that?

A. I said we looked them over. Frankly, at this moment, I
can't recall what we did with them, whether we raised them or
lowered them. I would have to look up the Regs to check
whether we did or didn't.

Q. Okay. Fine.

A. I know that we went over individually, and it took us
over a dozen meetings in that working group from 1969 until
1972, which is a three-year period, I guess.
There were over a dozen meetings, and we tried to evaluate in some manner each and every one of the regulations in the International Convention as opposed to the Great Lakes Rules to find out whether we wanted to use the new ideas from that convention in the Great Lakes Rules or -- many of them are the same anyway.

We had to get into discussions as to why are the Great Lakes different if we are going to use something different.

Q A few moments ago we discussed a change in cargo from ore to grain. I believe you used the word "grain"?

A Yes.

Q If you took one of these, in your opinion, and having studied vessels like the Great Lakes ore carriers, if you took one that had been operating in the ore trade and took on a grain cargo, would it roll more or less with grain than it did with ore, or can you say, limited to the same draft?

A I would have to answer in a general fashion. It would depend very much on the beam of the vessel.

If you are talking about the 75-foot wide one, in general, the iron ore cargo which achieves a full load without filling the entire capacity of the load in volume has a lower cargo center of gravity than the grain would, and usually the grain practically fills up the entire hold volume. The iron ore would tend to make the ship stiffer. Thus, it would roll less.

Q When we were discussing sequence of loading, you described
an occasion that you had heard about where a ship had broken
at the dock.

Again, you described loading it in the middle and so
forth.

Would it be possible under all conditions of loading to
tell if you were loading it properly by observing the draft
marks, or would there be something else that you would have to
follow?

A. Very definitely. It would not be acceptable just to
look at draft marks, unless you had a midship's draft mark.
You need at least three points on any curve to find out if
you have a curve or straight lines.

Many of the Great Lakes ship have a big white board they
hang over the side to help them do just that.

I expect that with the old first mate's book plus that
white board, which they used only in port, that they probably
have a pretty workable system.

Q. Suppose we didn't have that first mate's book. We just
had forward, midship and aft marks.

Are those three proper to tell whether it is loaded in
the proper sequence?

A. Yes, but this has nothing to do with safety.

I don't think the operators themselves would stand for
it, because in order to make sure that the vessel remained
safe, and you don't have that book in your hand where this has
been predetermined for you, you have to proceed very
cautiously.

It would mean instead of loading in a few hours as they
do, they might take two or three days to load the vessel
doing it very carefully.

With that book, he has the information. He knows that he
loads in a certain sequence in only a certain time.

If the vessel needs shipping, he has the confidence to
bring the ship down to its marks in a speedy manner.

Q. What is the difference, as long as you keep the three
points in a straight line?

A. There is no difference. I am not talking safety now.
I am talking what I would judge if I were the first mate, and
if I had no previous information as to where to put cargo and
I pulled up to that dock for the first time and I had those
three points for the first time. It is much like trying to
lift a ship out of drydock. It takes a heck of a long time
to do it, to do something like that.

Q. Do the loading manuals contain instructions on removing
ballast?

A. I am going to have to answer that question from a policy
point of view.

It says to avoid undue stressing of the vessel in here.
Now, it is just as possible that in the loading or unloading
process of either ballast or cargo to do it the long way and
get yourself in trouble.

So I would expect that any reasonable loading manual
would have instructions as to how to do that.

Q. Do your notes as Chief of the Ship's Characteristic
Branch include any casualty analysis?

A. When it is necessary, yes.

We don't have the manpower or the time to do this on a
routine basis. That's why the Coast Guard, the Office of
Merchant Marine Safety has set up a casualty branch.

They deal mostly with numbers. However, when there is
something technical, either in my section's area or in fire
protection or one or the other safety areas, sometimes the
case is sent over for special review.

Q. Do you regularly get casualty reports?

A. My branch has -- it was the nucleus back when Merchant
Marine safety was first invented under the Department of
Commerce, it did start with structural evaluations, and we do
collect the forms from the structural casualties that are
sent in.

Now, in the near future as soon as this big computer we
are supposed to have --

Q. But at the present time you still handle it that way?

A. We still do it.

Q. To your knowledge do you have any casualty reports on the
Fitzgerald?
1. We looked that up. We found one.

2. Were you able to bring a copy of that report with you, or could you furnish that copy?

3. I could get a copy, yes.

4. Do you recall what the subject of that was?

5. Yes. I read it pretty thoroughly. It was a fracture that was noted in the gunnel bar, I believe, on the port side of the vessel adjacent to Hatch No. 14 of 21, which would be roughly two-thirds back along the cargo length.

6. That gunnel bar is the attachment -- it joins the outboard piece of the deck plating to the topmost piece of side plating, which is called a shear straight.

7. When did that casualty occur?

8. I don't know. It was about ten years ago, so '63 or '64. I am not exactly sure.

9. Would you furnish a copy of that?

10. Yes, I will. It was a crack -- there are two rows of rivets, and they alternate in spacing, and it was a crack that they noticed from one of the low rivet holes that went up between the upper rivet holes on the vertical bar to the angle which is attached to the shear straight plate.

   COMANDER LOCSMORE: Thank you.

   REAR ADMIRAL BARROW: Captain Wilson?
EXAMINATION

By Captain Wilson:

Q. Mr. Cleary, you mentioned that under the conditions of assignment that the new regulations address themselves to such things as hatch covers, securing devices, topside openings --

A. Yes.

Q. Were they specific in the addressing? I know you said you had to go to single piece steel, but does it address itself to spacing of hatch clamps or anything of that nature, or is it just in general?

A. It addresses itself to -- I am pretty sure it addresses itself to gasketing. I am sure virtually that it doesn't say how the hatch cover should be held down on the hatch combing.

Q. But it does address itself to the seal?

A. Yes.

Q. And how would you know, once these things -- once these vessels were examined under the new regulations, what is the requirement for maintaining them to that level?

A. That comes under the heading of "Survey Work." The level of tightness that is expected to begin with and to be maintained is not watertight. It is weathertight, and whenever these two words are mentioned in the international circles, the naval architects go off for three days' discussion.

But it is fair to say that watertight can be considered to have a certain head of water on top of the thing or against it,
whereas watertight might be calculated that way, but it is actually considered to be a momentary thing.

Addressing the loading manual, you mentioned that in general terms it should apply to sequence of loading the vessel and sequence of deballasting in unusual loading conditions, if I recall the words correctly, varying cargoes if they have more than one cargo that they carry?

A. Yes.

Q. Would it also address itself or should it to evolutions not directly involved with the movement of the vessel such as putting the vessel on an unusual angle for doing repair work or examining the propeller, things of that nature? Was that within the intention of the loading manual?

A. That is often provided, but I cannot say that that was required by the intent of the load line regulations.

However, it is known that that's a condition where you are deliberately placing the ship in high stress.

You are doing it under controlled conditions in a harbor. Therefore, you can use some of that cushion which I spoke about, which is more or less allowed in the overall strength evaluation of the vessel for out at sea.

Sometimes you get into legal discussions about whether the load line is, in effect, inside a harbor.

So we simply avoid that question. We do not require -- although I know it is often provided, because if the owner is
going to have his naval architect do the rest of these
calculations, it is just a matter of common sense. He knows --
if he is going to do such an evolution at some time, he knows
that he will be stressing the vessel in still water higher than
normal.

So he would want information as to how to do it without
hurting his vessel.

Q. If a vessel were overstressed but not to the point of
shearing or fracture, would there be any evidence to the
naked eye? What if someone did not follow the loading manual
and overstressed in a localized area on the vessel?

Would there be some indication to the operator, to the
master, mate, surveyor, inspector?

A. In order to answer that correctly, I think we should say
-- when you say "overstressed," we are talking about the still
water stress.

Using that up, you are simply moving into that cushioned
area, which is two-thirds of the overall evaluation before
anything starts to break or give.

It may not show itself in any way.

Q. Then this would still be within the ductile range of the
steel?

A. Yes.

Q. You mentioned that you did a casualty analysis periodically.
I am assuming from the background that that has to do with
vessels that have failed by fractures and so on?
A. Yes.
Q. Were these in the past history on the Great Lakes with these vessels loaded or in ballast, the history that we have had, say on the --
A. Former casualties?
Q. Former casualties.
A. The last two casualties of a vessel of this type and size were the Bradley and the Morrell, both of which were in ballast when they had their casualty.
I did not do -- I didn't do studies on either one of those.
I didn't come to work for the Coast Guard before the Bradley went down, and in the Morrell situation, that was handled by other people.
Q. You mentioned, although you said it was not applicable to the Great Lakes, but you mentioned the effect of heating or the sun?
A. Yes.
Q. Is that heating effect a temperature differential, or what effect would the sun have? Could you do the same thing the other way? Could extreme cold or varying temperatures cause a problem?
A. Yes. The evaluation of sun temperatures, I suppose, is not germane to your interest here, but it is a possibility of becoming a large factor on oceangoing ships which run in
the tropics and are present on one side of the ship to the sun all day long.

The opposite, the cold can have an effect. As I understand it, the Morrell casualty was supposed to have been due to the temperature effect on the pre-1943 steel.

However, on this vessel, she was built with a new steel, so that doesn't leave us anywhere on that one.

Q. You also mentioned the rationale behind the lack of a need for a stability test on a Great Lakes type of vessel because of the large metacentric height.

Does this indicate that there is not much of a rolling problem with these vessels in a seaway?

A. I am going to say --

Q. Relatively speaking?

A. Thank you very much. I am going to say yes, and it indicates there is not much of a rolling problem.

I have ridden two of the instrumented ships, and from that experience, in talking to the men on board, I have a strong impression that they do everything they can to stay out of a rolling situation.

Now, my impression is that that's because they are not really fearful for the safety of the vessel, but when they do get in a rolling situation with or in their vessel particularly, it should tend to respond very quickly to any beam seaway, and it would be most uncomfortable.
Q. From your knowledge, is there any comparison that you could make? We have two vessels that are very similar that were out in the seaway at this time, almost in the same areas undergoing the same sea conditions.

Did you ever make any comparison between the freeboards of the Arthur Anderson and the Edmund Fitzgerald?

A. Yes. I looked up the two since they were mentioned as being close together.

The Anderson, I don't know that she was at her winter marks, but she was allowed to have less freeboard than the Fitzgerald.

Q. So the Anderson, if both vessels were at their winter marks, then the Anderson would have less freeboard than the Fitzgerald?

A. Yes.

REAR ADMIRAL BARROW: I would like to let this inquiry rest for a few minutes. We'll take a five-minute recess.

(Recess had.)

REAR ADMIRAL BARROW: May we be seated, please.

Let the record show that we reconvened at 1623; counsel for parties in interest as we started this morning.
EXAMINATION

By Rear Admiral Barrow:

Q. Mr. Cleary, I'd like to ask several other questions, and I recognize when you ask an expert for a quick answer that it is awfully difficult to do. But I would like to talk for a few minutes about some of the work that has been done on the Lakes and what it has resulted in.

You talked about several committees that have existed on the Lakes which were devoted to freeboard and the load lines and strength.

Where are the scantling requirements in the Great Lakes contained?

A. The scantling requirements, per se, are in the rules of the Classification Society.

I think I should expand my answer to talk about longitudinal strength as well.

When you say "scantling," this to many of us means: How big should a stiffener and the bulkhead be?"

The Coast Guard has always relied on the Classification Society for that review with only an occasional review by the Coast Guard Engineers.

For longitudinal strength, that is covered in a general -- as a sort of policy statement in Federal Regulations, but the formula itself is a matter for use by the Classification Society. So when we did all of this work we in essence
adopted the interim strength standard for the larger vessels.

There never has been a change in the strength standard
on the vessel being talked about here. The only strength
standard that we have worked on in the last ten years is this
interim strength standard for the thousand-footers and the 850-
footers, and the reason for that was all parties concerned
knew that this was making a ship 50 percent longer than we had
any experience with. That is why both the committee and the
government and the Coast Guard stepped into those negotiations
and more or less decided what the standard should be.

This comes under the heading of the commandant's review
of assigning authority action when we think it's necessary.

Q Have the strength standards for these particular vessels,
the ore carriers on the Lakes, been modified within recent
years?

A Only for the very large vessels.

Q For the very large ones?

A Yes, sir.

Q You talked a few minutes ago about the instrumentation
on Lake vessels.

Are there some now that are presently instrumented?

A Yes, sir.

At the present time I believe there is -- there are only
two instrumented but there have been as many as five.

The two I think instrumented are the Galloway and the
William Clay Ford, which is a shorter vessel and that was 
instrumented only a couple of weeks ago at the instigation 
of the -- well, it was initially suggested by the gentleman 
from ADS who was involved with us in the working group who 
suggested it for two reasons:

First, the obvious thing, that you would like to have 
an instrumented vessel at the other end of this Lake that we 
were concerned with was slightly shorter because we had, our 
objective in instrumenting the thousand-footer was to find out 
if Mr. Matthews' theories were correct or not correct.

The second theory or objective I am sure was Mr. Matthews 
strength formula which when extrapolated backwards would appear 
to be a reduction in strength for the vessel.

No such reduction has ever been authorized and when it 
was suggested, I immediately said -- it was in several 
different committees that this was talked about -- the Coast 
Guard's position would have to be "We don't stand in the way 
of somebody instrumenting a ship. Certainly we are interested 
in all the information we can get. However, before any actual 
reduction in section modulus would be allowed, we would want 
to review such instrumentation very thoroughly."

What size are the ships, these two that are instrumented 
at present?

A. The Ford is a little over 600 feet if I remember correctly, 
and the Galloway I believe is at 700, in the 700-foot range.
Q. Were either of these vessels in Lake Superior on the 10th to your knowledge?
A. Well, I have been told that the Ford was anchored in Whitefish Bay and made a partial or made some kind of search that evening.
Q. But not actually in the storm on Lake Superior?
A. I don't know the details of it, Admiral.
Q. You have also, have you not, wave tests done on the Lakes over the last, perhaps seven or eight years?
A. Yes, sir.
Q. What have you learned about waves on Lake Superior?
A. The only wave information that we have on Lake Superior goes back to the test done by the Hydraulic Laboratory of the Canadian National Research Council done in 1966 and 1967. These are summarized in a book which was published at the Society of Naval Architects, its Technical Bulletin 2-17, if I remember correctly.

In it the author recounted several years' experiments with wave buoys at four different locations on Lake Superior. One was at Eagle Harbor in the middle of Lake Superior, another was on the Canadian side, on the north side, and another was down near Whitefish Point, but I think they call it Grand Marais, I think it's on the U. S. side, and I believe he had one at the western end of Lake Superior.

His overall results of that were used in a sea-keeping
study I think I mentioned earlier.

In order to do that sea-keeping study we picked out two of the several spectra he offered. He did not develop spectra for every single day for every single buoy. He had a good range. We picked up the significant height of a five-foot and about a 12-foot and a 14- or 15-foot and the highest he had for us to work with at that time was an 18.3-foot spectra, and that is again a significant height. You can see waves higher in the spectrum and he showed evidence but not energy diagrams of significant height going up to approximately 20 to 22 feet on Lake Superior.

Q. How about the distances between waves? Is this part of the study? Was that available?

A. It is the most important part of the study, Admiral, and unfortunately the scientific community has not yet solved the problem.

The way it is approximated in this work, is to build an energy diagram, utilizing all of the -- let me start all over again.

The wave buoy measures vertical acceleration and de-acceleration and by that, marks the top and bottom of its movement. It measures time, and by a complicated electronic process and integration, one decides that there are a lot of different frequencies in the seaway that you are measuring.

That gets analyzed by a computer in order to determine that
there is, let's say, a 600-foot wave present in that spectrum. That does not mean that it is a static concept of a 600-foot wave with very nice waves, 600 feet apart with nothing in between.

The way a spectrum is presented, there could be frequencies or wave lengths anywhere from 30 feet up to a maximum that has been recorded on the Lakes, which is somewhere over 600 feet, though there is some disagreement as to how much over 600 feet.

Q. You talked a little bit about the phenomena of springing. Can you tell me if that is worse in the ballast condition than it is in a loaded condition on an ore carrier?

A. Yes, sir, very definitely.

Q. It is in the ballast condition?

A. Yes, sir. That has been consistent right from the Ryerson tests, right on through all of the instrumented vessels that I have seen the results on so far.

At first I didn't put much credence in that when I was only looking at the Ryerson test, but the evidence now is very strongly in favor of the ballasted condition being the one that is most highly stressed, especially in the springing.

Q. Would this in your judgment be a strong -- one of the strong aspects or strong parts in perhaps exceeding the stress on ships in ballast, allowable stress?

A. Fortunately so far we have not exceeded the sum of the
allowance for both weight and springing that was put into the
formula. We still have a good bit to go before we read
something like that.

Q. That is on the measurement system?

A. Yes, sir, but the amount that was put in with
Mr. Matthews' initial engineering judgment, we have exceeded,
and that is why when we start to make this interim
a complete standard, we probably will revise that section
of it.

Q. In the measurements that you have taken up to date,
what order of pound per square inch have you actually gone to
on the ships?

A. The latest reading that I have seen was a leeter that
was sent to our Office of Research and Development, just
about three or four weeks ago, in which a single instance
was reported of going over 30,000 pounds per square inch,
peak to trough.

Now, one has to immediately say that that is not the
figure that the steel is looking at because steel starts to
give at that psi. When we say peak to trough, we are
talking about from tension to compression, so you divide it
in half, so you are talking about 15 or 16-thousand pounds
per square inch in either the deck or the bottom, plus
whatever static or still water bending moment was in the
ship when it left the harbor, so that would mean in actual
stress that would be around, let's say, 18 or 19-thousand psi in the deck or in the bottom, which so far is no worse than the allowable stress limits of the old T-2 tankers in World War II.

REAR ADMIRAL BARROW: Captain Zabinski?

EXAMINATION

By Captain Zabinski:

Q Mr. Cleary, you mentioned about the working committee which indicated two members of industry, one from America, the United States Government, and one from the Canadian Government, and then you mentioned the full committee.

Just briefly, what is the composition of the full committee?

A The full committee, Captain, was made up of between 20 and 25 people. I want to say it was evenly taken from Canada and the United States, but I think there were one or two more Canadians than U. S. citizens on it, but an effort was made deliberately to cover governments, that is, the Coast Guard, the Classification Society that works on our side of the Lake, American Bureau of Shipping, the principal design agents on the Great Lakes, the principal shipbuilders on the Great Lakes, as well as some of the shipbuilder-owner representatives, and that was mirrored on the other side, on the Canadian side.

Q Just briefly, the load line, the Great Lakes Load Line
Convention that we are talking about, is an agreement, a

treaty between the United States and Canada, is that correct?

A. It is not quite that high a level, Captain. It is
based on an exchange of notes which took place in 19 -- from
1938 through about 1940, four or five letters that were
sent back and forth between the Secretary of State and the
Minister of the Exterior.

Q. But, we have the Internal Load Line Convention, which
both the United States and Canada are signatories to, is
that correct?

A. Yes, sir.

Q. Why do we need a special load line for the Great Lakes,
if we have an International Load Line Convention, which we
are both signatory to?

A. The immediate answer to that is that the International
convention stops at the entrance to the St. Lawrence River.
You could also say that since these are private lakes,
owned jointly by the two countries, it is in our own best
interest to have our own agreement, and you could go further
into the technical part of it and say that since the
operations and the weather are somewhat different than from
ocean situations, there is reason to go into our own agreement.

Q. It is a mutually advantageous thing to have a separate
agreement?

A. Yes, sir.
Q. Would you say, as just a general rule, that the Great Lakes load line is more lenient than is the international rule, or could you categorize it for us, comparable vessels, size vessels, comparable freeboard?

A. No, sir. I would not say that the Great Lakes is more lenient.

The tabular freeboard is rather close to the international tabular freeboard. That is before all of the corrections are made for the lower lengths of vessels up to about -- well, about 500 feet or so, 550 feet.

After that, there is a difference, which was based on the studies and based on the limitations of weather.

For instance, for the North Atlantic sea spectrum, 20 feet would not be significant. It would be more like 40 feet and the oceangoing vessels, therefore, have to be built to withstand the ocean conditions.

Q. That would be a higher freeboard assignment, would that be correct?

A. No, sir. There is not that much difference.

Now, there might be a foot or so difference depending upon difference in beam or graphs or geometrics of particular vessels, but if you pick two vessels of the same length for instance --

Q. If there is not much difference, then why the need for the two Conventions, or why should there be any separate
Great Lakes rules at all?

A. Well, for one thing, the difference between a seaway height of 30 or 40 or more feet on the oceans versus a 20-foot on the Great Lakes allows an engineering appraisal of the strength of the vessel, which saves a great deal of weight in the vessel.

Q. So because of the significant weight-height criteria that can be used, the structure of the vessel can be different than an oceangoing vessel, is that correct?

A. That is correct, sir, because if you go back into history, this goes all the way back into the 1800s. It has been looked upon as a unique situation on the Great Lakes ever since.

Q. In other words, although, if I understand you correctly, although the freeboard assignment may not be different, the strength of the vessel could be significantly different, the longitudinal strength of the vessel could be different?

A. Yes, sir, the accepted section modulus of a Great Lakes vessel is in the neighborhood of one-half of an ocean vessel. The freeboard of an oceangoing vessel might look a great deal different because -- especially for dry cargo vessels, and some of them are sheltered deck vessels, which means they have a 100-percent superstructure on top of their freeboard deck. Of course, that is not used on the Great Lakes.

Q. Mr. Cleary, one thing I would like for you to check for me
and put into the record, and you are probably the one who

can help us the most on it, is that I have a plan, the
capacity plan of a vessel dated September 9, 1958, and I
would like for you to look at this, and if you can --

COMMANDER LOOSMORE: This is Exhibit 6-B.

By Captain Sabinski:

Q. Assuming that the load line is as depicted on this load
line plan, which we have not had the time to check, but would
you read into the record what the freeboard assignment for
that vessel was in September of 1958?

A. Yes, sir. The plan says, "To the summer load line the
freeboard is 12 feet six and three-quarters inches."

Q. And the load line issued on the 1st of April of 1974,
which would have been after the '73 modification, would you
read into the record, please, what the summer assignment would
have been then?

A. The summer assignment here is 11 feet 2 inches.

Q. Now, that shows a difference of one foot four and three-
quarter inches?

A. Yes, sir.

Q. Would that mean that the vessel in 1973 was permitted
under these new rules an increase of decrease of freeboard of
one foot four and three-quarters inches?

A. Yes.

Q. Looking at this plan at maximum draft, how much cargo
1. per inch can this vessel carry, per inch of draft?
2. A. Well, the tons per inch emersion at the summer load line
3. reads just above 113 long tons.
4. Q. Per inch?
5. A. Yes, per inch.
6. Q. So that would mean for each inch additional freeboard,
7. which was permitted or its additional inch of draft, which
8. was permitted, the tonnage, that much tonnage, additional
9. tonnage could be carried in a vessel in 1973 or towed in
10. comparison to 1958; is that correct?
11. A. That's correct.
12. Q. I believe the question was asked if you knew of any
13. modifications which were necessary when the new load line
14. assignment was issued.
15. I show you Exhibit 3-N and ask you to examine it a
16. minute and see if you can shed any light on modifications
17. which may have been required?

MR. MURPHY: While the witness is studying this
document, may we show for the record that the questions
which were asked previously by Captain Zabinski clearly
were limited to summer load line requirements and that
on the evidence in this case, as testified previously,
that this vessel was not on her summer load line at the
time of her casualty? Is that clearly understood? Is
there any question of that?
CAPTAIN ZABINSKI: Right. I think a draft is a different approach altogether.

I was confining my questions strictly to summer load line.

MR. MURPHY: I understand that, and there would be corresponding variations for the winter load lines.

CAPTAIN ZABINSKI: I assume so, counsel.

MR. MURPHY: I just didn't want the record to have the wrong impression that that applied to conditions existing at the time of this casualty.

REAR ADMIRAL BARROW: Yes, sir.

By Captain Zabinski:

Q Can you shed any modifications on what may have been required?

A What I see here, Captain, is a report by the American Bureau of Shipping Surveyor in order to seek -- if the vessel was in compliance for the conditions of the '73 revised regulations and he says, "Was found to comply with the following requirements as noted in Cleveland letters." I presume he means the main office of the American Bureau of Shipping for Cleveland and the Great Lakes, and he has ten items, actually nine items, plus the final item about the marks.
Q. Were there any modifications in those items? Are there any modifications to vents or anything that you can see?

A. Yes, sir. The vents particularly are in Item 4. It says, "The combings of four 8-inch diameter tunnel vents located on the spar deck were raised to a height of 30 inches."

Q. Number 4?

A. Item Number 4.

Q. But how many does it say?

A. Four of these tunnel vents.

Q. Thank you. Mr. Cleary, just one point that I wanted to get. You talked about the still water stress being equal to one-third of the sum total amount and the additional two-thirds were sort of a safety factor, a guard factor, if you will, is the way you referred to it.

Adding these two together, we get a total. Is this the total amount, or is this an amount of foot pounds or foot tons, whatever it is, which would be required to permanently distort the hull girder?

A. Yes, sir.

Q. In other words, if we reached that figure, we, in fact, have some way of distorting it or reaching the hull girder?

A. Yes, sir. That's under the assumption, which is often made, that the whole girder is a homogeneous beam.

Now, there is one other factor in there, and that is if already any details in the structure which are weak or there
are holes or cracks that are there, these become stress 
raisers, which means they multiply that stress that is put 
into the hull by some unknown amount.

Q. Even though you have not reached this full two-thirds 
figure, is that what you are indicating?

A. These would be some percentage -- any stress raiser will 
be some percentage higher than the engineering calculation 
as used on the ship any time the ship is stressed.

Q. On the Great Lakes, are the stresses to be anticipated 
in a vessel underway based on the highest wave height? What 
is the criterion in that regard?

A. That point, Captain, causes the engineer to go into a 
long dissertation.

Thirty years ago when we knew -- we knew absolutely 
nothing about the seaway. It was the practice to balance 
a ship design on an arbitrary wave, which was the length of 
the vessel and one-twentieth of that height and length and 
calculate the strength of the vessel that way.

In the past 15 years, going back to the middle of 1950, 
that would be 20 years, efforts have been made to read the 
seaway and to make adjustments based on the fact that a vessel 
is seldom, if ever, balanced that precariously on just two 
points or on a single point.

That's when we get into the discussion of an irregular 
sea, which is usually what you see from a ship.
There are long waves and short waves present together at the same time. So this evaluation, while they knew this was the seaway acted, it was not possible to define this in any way mathematically until the new sea-keeping theories started to come out by the scientists in the late 1950s and early '60s, and we are still learning how to use this new tool.

Q. Was that based on wave studies at that time when there were newer considerations in the '50s? Was that based on wave studies?

A. Yes, sir. I believe those wave studies -- we are not talking about ship-wave interaction studies. We are just talking about ship studies during the studies in World War II.

Q. And it is at that time that they found that the waves were irregular, and for that reason, that criteria should be used. Is that a fair statement?

A. No, sir. I would turn your sentence around, if I may. We always knew they were irregular. We just didn't know how to calculate them. We had to wait until the electronics people showed us this new mathematical concept. Some naval engineering people learned how to use it, and we are still learning.

Q. I would like to touch on loading procedures that came up before the Board.
Apparently, on the Lakes, a ship comes into a loading
dock and comes with some ballast in it from the inbound voyage.

At the same time they are loading, they are discharging
ballast at a certain sequence.

Would such an item, or should such an item in your
opinion be included in the loading diagram?

A. In my opinion the instructions should be included somewhere
in the loading manual, but it is not necessary to make another
bending moment calculation for the pumps that are discharging
ballast water or you are adding iron ore.

As long as that has been taken into consideration by the
naval architect doing the calculation and if he notes to that
effect in the beginning of the instruction manual that you do
it at a certain rate and use pumps 1, 2, 3 and 4 at a certain
time, that should cover it.

Q. In certain tank sequence?
A. Yes, sir.

Q. We covered the point, I believe, about when you were
unloading and taking on ballast at the same time. Should there
be a loading or discharging procedure to prevent or to avoid
overstressing the vessel?
A. I'm sorry. The way I understand that question --

Q. We require loading procedures while you are loading?
A. Yes, sir.

Q. And we just touched on ballasting, which seems to be the
common practice of deballasting while you are loading.

Now, to the discharging port, the testimony before this
Board is that they discharge cargo and load ballast at the
same time.

I am asking: Would it not be good operating procedure
in your opinion to have an unloading procedure so that the
vessel is not overstressed?

A. Yes, sir. There should be an unloading procedure for the
cargo.

If the instruction of ballast in a haphazard manner
would create an embarrassing situation for the ship, then
certainly the naval architect ought to offer that information
for the ship master.

I would like to ask you: We have made reference to the
mate's loading diagram, which he has in his hip pocket.

Unfortunately, in this case, we are not able to produce
either the loading diagram, the loading book that the mate
had used. It has been difficult for the Board up to this
point to find out how much was loaded aboard the Fitzgerald.

We know the total amount. We know the draft. With that
information, I would like to ask you if any thoughts of the
committee or otherwise have been given to requiring records
to be kept so that the loading, the exact loading distribu-
tion aboard a vessel can be reconstructed?

A. We did not feel that it would be necessary to require
records from every voyage.

Now, the way that discussion went was that these vessels are in such a unique trade that they do the same thing over again 50 times a year, with very slight variations; that as long as the information for proper loading is available, that it would not be necessary for them to have them submit a slip that they had done it according to page 4 or whatever each time they did it.

That's a Great Lakes unique situation.

If I were making judgment on an ocean vessel which has flexibility to go anywhere and load anything, I would turn myself around 100 percent, but on a Great Lakes vessel this trade is so unique that we felt that it was acceptable if the information was there for the loadings that they would use, and it was so repetitive that it was not of much use to require a note to be made of it in the home office each time.

Q. Well, I appreciate that the loadings are repetitive in that they are loading ore or taconite in this trade.

However, from the information that comes before the Board, it is possible for the loadings and hatches to be different on each voyage.

If they can be different by any significant amount, there is a possibility that it could call or place the vessel in a stress condition.
The thing that I want to ask you is: Shouldn't there have been some way for this Board, in view of this casualty, to be able to reconstruct the exact distribution and location of this particular cargo?

A. Shouldn't there be some record kept someplace?

A. Well, with hindsight, Captain, I can agree with you.

It would have been very nice, for instance, with respect to the loading diagram -- I have not seen it, but if it shows four alternative ways of loading the same amount of cargo, it might have been advantageous to have that information.

Even a message back to the home office that we had done it in accordance with page 3, the page 2 report would have been useful.

The situation was, I will have to say, not discussed to that depth while we were reviewing the overall policy to put in the load line regulations.

Q. You felt that the loadings would be very close to the same each time it was done?

A. Yes, sir.

Q. Has any check or has any study been indicated to see how much variation there might be between two typical loadings to see what the spread or percentage of spread or distribution of cargo might be?

A. I have not initiated any action like that.

Q. Any suggestion of any study?
A. I don't know. I would have presumed myself that that
is covered by this joint review by our own technical office
here in Cleveland and the assigning authority when they go
over the load line manual.

Q. The mate's loading book evidently and the testimony we
have before the Board is that the mate looks at the forward
draft and the after draft and the midship draft.

If they are on a mean or the midship draft is at a mean
of the forward and the aft draft, he assumes the vessel is not
in a stressed condition.

I want to ask you this hypothetical question: Is it
possible for me to take a vessel and have a forward draft,
a mean draft and midship draft identical and yet have a
distribution of cargo which would stress or overstress the
vessel? Is such a condition possible?

A. That's a hard question for me to answer, Captain.

It would have to be analyzed individually, and you
would have to deliberately try to fill up as much as possible
at the quarter points and leaving the buoyancy -- you would
have to have the midship point empty so that instead of
achieving a single curve for the hold girder, you achieve two
curves with the center coming back to the surface.

Q. Could it be possible under that condition to have an
overstressed condition?

A. I frankly don't know, Captain.
It would certainly be an unusual stress condition, but whether it would actually reach a point of danger, I have no idea.

I would like to touch on stability for a moment. There has been quite a bit of discussion in your testimony about stability.

I would like to ask you if the same -- we have a vessel that is stable in an intact condition.

We take a hypothetical situation where the vessel suffers some damage to the deck vents.

It begins to take on water, a certain volume of water.

We don't know how much, but it is through the vents.

In other words, we have some flooding condition.

Is it possible, or does the vessel lose stability when she is in a damaged condition?

A. Yes, Captain, it does.

Now, whether it loses enough to be dangerous to the vessel from a stability standpoint -- it depends upon what compartments have been flooded and to what extent.

Now, the normal way that stability is affected by loose water inside is that it creates what is called a free surface, and it makes -- if there is enough of it, it makes the ship unmanageable in a stability sense, just like what happens to your wife when she takes the little gadget out of the ice-cube tray and tries to carry the water across the
kitchen. It doesn't work.

If you put the squares back into the tray, it works.

If these vents were leading into the main cargo hold, that compartment is wide enough that there would be a significant reduction in stability.

However, my personal opinion is that if you have that type of flooding, we would have that type of flooding, we would have a strength casualty before we would have a stability casualty, or maybe they both would occur at the same time.

However, the added weight of the water, if it filled up the void space in the hold, might be serious enough to cause considerable structural damage to the ship.

Q. So the taking on of water could create a stress problem within the vessel?
A. Yes, sir. I think so.

Q. That would be true taking on water in any cargo hold if a hatch carried away?
A. Yes.

Q. You indicated that one of the considerations for the Great Lakes load line was a stability consideration.

When you are talking about stability consideration, you are talking now about impact rather than a damage stability calculation; is that correct?
A. Yes, sir. There are no subdivision standards on the
Great Lakes.

Q. Why not, Mr. Cleary?

A. That's a pet peeve of mine, Captain.

It was a pet peeve of Professor Sadler's of the University of Michigan back in 1920.

I think it is achievable, and I think it is common sense that there should be subdivision on Great Lakes vessels, but it has been resisted every time it has been suggested.

My understanding of the resistance is that when you are putting watertight bulkheads in the middle of the ship, you restrict the loading and unloading abilities of that ship.

I am personally satisfied that that sort of problem is surmountable. When you had the design of the thousand-foot vessel, there were, as a specialty of installation, there were gates put down in that tunnel that runs the full length of the ship.

If these are handled properly, that is, one does not close the gate while the belt is running -- they were an extremely intricate design -- there is no question about it, but I think it is possible to limit flooding to the extent that one could save a vessel for several hours if not enough to get into a good situation, calm water, or into a protected anchorage.

Q. Even with the introduction of additional flooding water, as we mentioned before?
Q. The Master reported he had a list. If a master of a
ship, a vessel of this size, reports that he has a list,
what conditions could cause a list in your estimation?
A. Well, excuse me. Two would come to mind immediately.
The one that is more likely to happen, I think, would be a
leak into a ballast tank. That is a matter of record among
Great Lake vessels. I am sure it was a matter of record, not
in the Morrell casualty, not in the Morrell, but in its sister
ship, which was running the same course just along with it.
They got halfway across Lake Huron and found that they had
taken water.

If this occurred in their case, I believe it occurred in
the hold, and it didn't have a list. This was in the Townsend,
but if this occurred in a ballast tank on one side and not in
the other side, that would very quickly cause a list on the
vessel.

Q. And the amount of list would depend on the amount of
water?
A. Yes, sir.
Q. All right.
A. The other is a possibility of a shift of cargo, but
if this happened in this case, it would be the first time I
had ever heard of such an action.

Q. Do you know what the cargo was aboard the Fitzgerald?
A. It was the iron ore pellets, I believe, wasn't it?
Q. Taconite?
A. Yes, sir.

Q. Do you have any idea of the stability characteristics about taconite as far as angle of repose?
A. Only from my own balance estimate when I rode the two vessels. It appeared to me to have an angle of repose of perhaps 20 degrees or so.

I could be five, maybe 10 degrees off, but that was a very dusty situation, looking down through the hold.

Q. Is that quite a stable commodity? Is it in the seaway?
A. Yes, sir, I believe so. One of the things that keeps it stable is that the top of that cargo is only halfway up to the hold. Therefore, the acceleration force on the loose surface is minimal. If you had to load that up high, there might be some shifting.

Q. Do you know if any damage stability assessment has ever been made on the Fitzgerald, would one have been required?
A. No, sir, one would not have been required. There are no subdivision regulations on any cargo vessel for the United States or in the world, for that matter, by an administration.

In the United States, in order to qualify for things that Marad does, for such ships they do go through a single compartment evaluation, but there is no requirement for subdivision on any general cargo ship.

On tankers, there is a requirement which is mainly based
on pollution standards on the oceans at the present time.

Q. Did the committee that you are on take into account the
average age of the Great Lakes oil bulk carriers?
A. No, sir, and the reason for that is that when we wrote
those regulations and passed information to the two classi-
fication societies, we passed them with the understanding that
an older vessel would not qualify unless he had the one-piece
hatch covers and all of the other items that would bring him
up to the standard of 1973 Regulations.

Of course, this required -- there were people who
desired the load line but didn't want to make a loading manual
and that took a little bit of talking about, but people
eventually did these things.

Q. Did the kind of steel used in steel construction bear
upon the studies?
A. That came in two parts, Captain.

Again, the evaluation was either to be on the post-
1948 vessels, or the classification societies were to make
very certain that their section modulus was adequate for new
loading manuals. The two things go together. If it is
adequate for that loading manual, that would help to prove
its case.

Q. Would water temperatures on the Great Lakes in cold
weather be a factor in this study?
A. They are a factor in the evaluation of the stress limits
on the steel in ships built before 1948, which was supposed
to be taken into account.
Q. By the classification societies?
A. Yes, sir.
Q. All right.
CAPTAIN ZAWINSKI: That's all I have,
Admiral.
REAR ADAMIRAL BARROW: Counselor?
MR. MURPHY: Thank you, Admiral.

EXAMINATION

By Mr. Murphy:

Q. Mr. Cleary, my name is Thomas Murphy and I am
representing Oglebay-Norton Company.

Do the regulations specifically concern themselves with
stress conditions of the ship during a loading operation?
A. Only in the general sense that the loading manual has to
be reviewed.
Q. There is no requirement?
A. There is no formula in the regulations.
Q. You were asked a number of questions with respect to your
studies with respect to waves, and particularly with respect
to the height and the measurement of the height.

If you are taking a body of water which has a certain
depth, when it is practically still water, and built up, let's
say, a 20-foot wave in that body of water, does the studies
indicate as to any extent when the wave itself increases
to a wave of between -- to what extent the trough goes below
the still water level of the body of water?
Do you understand what I mean?
A. I believe you are talking about what we would call a
shoaling phenomena, which could exist going over a shallow
place or it could also exist in approaching a shoreline.
There are many hydrodynamic studies on what happens to a wave
on those conditions.
I am not a hydrodynamicist, but in general terms, there
is a steepening of the wave, as to how much, it would be
very difficult to say without knowing the exact conditions
and I don't think that I could tell you exactly how much.
Q. I understand.
From the fact, though, of starting at the mean line, like
on a graph, where you have so much water and that water is
piled up ten feet above the mean line at its peak, is it also
going to then drop that same distance below the mean line in
its trough?
A. Generally speaking, yes, yes, sir.

COMMANDER LOOSEMORE: I thought I understood
the witness to say that he was not a wave specialist.

MR. MURPHY: He was telling me he was
not an expert in the shoaling aspect and I was asking him
about the wave, and I think your answer was -- what was
your answer, sir? Generally you would expect that to happen, is that correct?

THE WITNESS: I would say yes.

MR. MURPHY: Thank you.

I think, Commander, there has been an awful lot of questions asked here to find out if witnesses throughout this hearing know or do not know.

I have no further questions, Mr. Chairman.

REAR ADMIRAL BARROW: Anything from the Board?

MR. WILSON: Yes, sir. I just have a couple of questions that I came up with.

EXAMINATION

By Captain Wilson:

Q. I am somewhat puzzled and I don’t completely understand the stability aspect.

As I understand what you said, the lack of required stability data to be furnished is because of the high metacentric height that the ore carriers generally have when carrying cargo.

A. Yes, sir.

Q. And that metacenter is reduced when it is in a ballast or in a ballast condition.

It is less metacentred, but still adequate, or what is the effect on the metacentric height?

A. The normal effect of a laker of this design would be
very minimal because the naval architects, in designing the
distant, keeps the ballast tanks split and over to the side.

So you could put a lot of water in a side tank without
having a great degree of free surface.

Q. Well, then, is there in turn any bad effect from doing
this if you make up for the free surface problem and have the
off-centered tanks? Is there any problem associated with this?

A. There should not be any.

If water either gets to or is loaded into a main hold,
which is greater than, let's say, 50 percent of the beam of
the vessel, that would create a very bad intact stability
situation.

Q. But, the off-centered weight is not a problem, otherwise
if the ballast tanks were then damaged -- would that be much
of a problem if you, for instance, filled a ballast tank when
the ballast was in a lowered condition due to damage?

A. Would the free surface be a problem? Is that your
question?

Q. No, what I am asking, what I am looking for is a trade-off
between the free surface and the off-center weight.

The off-center weight was not considered such a problem?

A. Well, I would consider the free surface, as I said, in
the ballast tanks not to be a problem, not a stability
problem, but the water itself might become a structural
problem, if it puts the ship in a listed condition.
Q. I am wondering if we also have some large open spaces -- as you indicated, there was no requirement for structural integrity, and we have deeper ships, larger ships all over, does it become a structural problem with high waves, say, either from icing on the vessel in cold weather operation or from, say, for any reason that you filled a tunnel with water?

A. Would the water in the spar deck tunnel become a structural problem?

Q. Yes.

A. Well, it has its freedom in running the entire cargo length of the vessel, and that becomes an exercise in mathematics and guesswork, but if the vessel were to be in, let's say, a sagged condition and the tunnel was filled halfway with water, I hesitate to say how many tons of water that would be, every -- what is it, every 35, 36 cubic feet of them would be one ton. If that ran down the center of the ship while it was in the sagged condition, it would also be a steady listing problem and also it might become a structural problem. But if you only had two or three inches of water in the tunnel, or six inches, it would be no problem.

But it's a matter of degree. Once you get to several or many tons of water in that spar deck tunnel, you would have to calculate this, but it might become a problem.

Q. Then without the submission of stability calculations and
without an incline test but with the other range of plans
and information that would be submitted for the construction
of a vessel, could this be done -- do these calculations?
A    I think they could.
The structural considerations can be done simply with a
weight curve of the vessel. It is a more detailed
calculation than in the intact stability calculations.
I don't even understand why you are comparing the two.
Yes, it could be done separately.
Q    If need be; I don't know that it ever will be.
A    Yes.

CAPTAIN WILSON: That's all I have.
REAR ADMIRAL BARROW: Commander Loosmore?
COMMANDER LOOSMORE: Yes, sir. I have one
other thing.

EXAMINATION
By Commander Loosmore:
Q    Mr. Cleary, we discussed a casualty report. I have here
a Xerox copy of the Form Coast Guard CG 2752 dated 15 March
1970.
A    I'd like you to examine it.

This looks like the one that I had seen in headquarters
files. I think it is the same one.

COMMANDER LOOSMORE: Sir, I'd like to request
this be marked Exhibit No. 50 for identification.
REAR ADMIRAL BARROW: Do you have the form?

COMMANDER LOOSMORE: CG 2752, which is entitled "Report of Structural Failure, Collision Damage or Fire Damage to Inspected Vessel." It's dated 15 March 1970, for the Edmund Fitzgerald.

REAR ADMIRAL BARROW: Make it 50 for identification.

COMMANDER LOOSMORE: There are three sheets, a Xerox copy of the front of the form, a Xerox copy entitled "Enclosure to CG 2752 for SS Edmund Fitzgerald," which is apparently four photographs, and a Xerox copy entitled "Enclosure to CG 2752," dated -- and this is no date -- for "for SS Edmund Fitzgerald."


Exhibits 50-A, 50-B and 50-C were marked for identification and made a part of the record.)

MR. MURPHY: Thank you.

By Commander Loosmore:

Q. Mr. Cleary, did you say that this was a copy of the one you had seen?

A. Yes.

Q. To clear up a point of confusion, possible confusion in
our discussion of that earlier, I believe I called the report
a casualty report, and I think you let me call it that.

Is that in fact a casualty report, or is that something
more specialized?

A This is more specialized.

The title of this one "Report of Structural Failure,
Collision damage or Fire Damage," is unique.

There is an ordinary casualty report which concerns loss
of life or casualty in a more general nature.

This is supposed to be specific information which has
to do with the structure of the vessel, either from fire
damage or collision or the structure itself.

Q All right. Then for purposes of clarification of the
record, did you see this report and/or casualty report, or
just this report?

A No, this report looks exactly like the one I saw at
headquarters and one I was referred to. It has some good
photographs. These photographs on a Xerox copy are no good.

Q And again, just for completeness purposes, I recall you
tested there was only one, is that correct?

A That's correct.

Q All right, sir.

One other small "nit."

You were discussing the still water bending and I
believe you testified that while the still water bending
stress, I believe you used the words "an overall stress,"
that if there were details which were weak, you could have
some higher stress. Is that in essence what you testified?
A. I testified something very similar to that, yes.
In order to clear up a point, I would in my own
approach to design, I would not be concerned with that stress
concentration factor so much on the still water bending, which,
as I said, is one-third; I would be concerned with that stress
concentration factor on the overall.
Q. What is the stress concentration factor?
A. The definition of a stress concentration factor, I am
not sure if this is the official one, but it would be any
discontinuity in the structure which multiplies at a stress
that happens to exist from the overall bending at that point
in the ship's girder.
This could happen at a hatch cover, for instance, or if
the deck plates are not in alignment or if there is a rivet
hole which has been reamed out and the site of it destroyed
to some extent, and the crack was initiated there. That is
a stress concentration point.
The actual multiplier is something which is very, is
almost impossible to state unless you can narrow it down to
the specific details of the joint in question, take that
into our laboratory and test it.
Q. Is it possible to estimate what order of multiplier you
are talking about? Is it on the order of one or ten or a
hundred?

A. Well, you are usually — one, of course, is a smooth
joint where there is no multiplication factor but if you have
a stress concentration factor of 2, well, that is a very large
jump. That would take a stress of 15,000 in that particular
member of the ship and run it up to yield stress.

Q. What type of stress-concentration factor would you
encounter at a typical hatch corner? Would you expect --
excuse me -- take a typical hatch corner.

A. I really -- I'd -- I would say it would not be more
than -- I really am not very deep in that particular subject
so I'd like to pass on that.

Q. Fair enough.

COMMANDER LOOMIS: That's all I have.

REAR ADMIRAL BARNES: I think to clarify the
record that counsel for the operator had raised the
point on the change between the freeboard assignment
between summer and winter earlier in the conversation,
and I think perhaps what we should do, in order to
clarify that, is to give those also for winter marks.

So for the record now we might do that.

MR. MURPHY: I'd like to raise the
question even as to the pertinency as to the prior
questions. That is why I didn't pursue it with respect
to the winter months.

I don't think it has any pertinency to this
information, but I certainly think this would.

EXAMINATION

By Captain Zabinski:

Q. Mr. Cleary, you indicated before in reference to
Exhibit 6-B, this is the plan in September, 1958, that the
freeboard assignment in 1958 was 12 feet six and three-
quarters inches, is that correct?

A. Yes, sir.

Q. What was the freeboard assignment in 1958 for the
winter marks which counsel has brought to, called to our
attention?

A. This would be an addition to the 12-foot six and three-
quarters of another two feet two and one-half inches according
to this exhibit.

COMMANDER LOOSMORE: Referring to Exhibit 6-B.

MR. MURPHY: What was the last figure?

CAPTAIN ZABINSKI: Two feet two and a half
inches additional.

MR. MURPHY: Thank you.

By Captain Zabinski:

Q. If we take the sum of the freeboard and add to it the
winter penalty, two feet two and a half inches, this would
give us the winter freeboard required in 1958, which was
14 feet eight and a quarter inches, is that correct?
A. Yes, sir, that's correct.
Q. And the ton-per-inch emission at, let us take the winter marks, TPI --
A. Per-inch emission would be just under 112 long tons per inch for the winter marks.
Q. And referring to Exhibit 17-B, which is the current load line certificate issued on the 1st of July, 1974, what is the winter load line as indicated on this document?
A. The winter freeboard is noted here as 11 feet 6 inches.
Q. And what is the sum of freeboard on that?
A. Eleven feet two, a difference of four inches.
Q. Do I understand your testimony to be, then, that the increase in freeboard or the decrease in freeboard allowed under the current load line certificate is only four inches?
A. That's correct, Captain.
Q. Whereas in 1958 the difference between summer and winter penalty was freeboard assignment of two feet two and a half inches?
A. That's correct.
Q. Do you know why there would be such a difference?
A. Yes, sir. That's one of the actions -- the Joint Technical Committee was to review the winter seasonal freeboard and it was decided to make it no worse than the Ocean penalty, and that was the reason for making such a small
penalty.

Now, I have reviewed that -- I may have introduced another factor here, but I reviewed the load line assignment on this vessel before I came out here, and of the total calculation that vessel did not get the entire amount which it could have gotten from the geometric calculation because of a four-inch penalty for scantling which means that, why, in the overall detail of design and review of the vessel something would not permit going to the full draft, so there was a four-inch scantling penalty in there.

Q. But if we take the difference, which is two feet two and a half inches, multiply that by 112 tons for each inch the vessel now is permitted to carry, it is something in the order of about 3,000 more tons of cargo in the winter season than it was back in 1958, is that right?

A. That's correct, sir.

Q. On the same exhibit -- would you show this to Mr. Cleary -- we have some calculations that have inadvertently found themselves into this exhibit, and I just ask you to review and see if you recognize what they might be and help the Board.

COMMANDER LOOSMORE: The witness is being shown Exhibit 17-E and 17-D.

A. This is a little difficult to read, Captain, but I think I can identify it as the 1972 Regulations calculation
for freeboard.

By Captain Zabinski:

Q. Who would make these calculations?
A. They are done by the assigning authorities, the American Bureau of Shipping.

Q. We haven't been able to have anyone who could identify them for us.

Thank you very much.

The structural failure report, do we get this whether there is a serious structural failure or any structural failure, or just what are the ground rules for the filing?

Who would file that report?

A. May I start with the last part of it?

It's naturally filed only after something is discovered, it's normally discovered by either the crew or a Coast Guard Inspector, or it may sometimes be discovered by an American Bureau of Shipping Surveyor on his annual load line survey which would indicate this and essentially the local Coast Guard officer would then come and make the report.

The report is always printed right at the top "From Officer in Charge, Marine Inspection," and then a blank, the gentleman puts in his location -- in this case, Toledo, Ohio.

As to when they are to be submitted, there are
instructions at the top of the sheet.

Q. Can you read those for us?

A. "Number 1. Officer in Charge Marine Inspection shall submit this report directly to the commandant with a copy to the appropriate district commander whenever an inspected vessel of over 500 gross tons suffers a Class 1 or Class 2 structural failure, is held in collision with another vessel or object, or is damaged as a result of fire or explosion."

And it refers to a different form to be used for reporting equipment failures.

Q. What is a Class 1 or Class 2 failure?

A. A Class 1 failure would be an outright failure of the main parts of the ship girder.

A Class 2 failure would be a failure of a piece of the ship which might lead to a Class 1 failure if it were not corrected.

Q. Was this a Class 1 or Class 2 report?

A. I would -- it says right on here a Class 2. That is what I would have called it.

Q. I realize many people in the audience may not have the benefit of seeing this exhibit.

What generally is the nature of the report? What member does it concern?

A. It's not very long. May I read it, please?

"Description of failure or damage: This fracture was
discovered and reported by ship's personnel during winter layup, 1969, and was first examined by this office on February 17, 1970. The date of occurrence is unknown.

"The fracture occurred in the vertical house of the gunnel bounding angle on the port side adjacent to Hatch 14 of 21 hatches.

"It is considered to have begun at the top center of a lower rivet hole and promulgated vertically upward to the upper edge of the angle.

"The construction consists of two rows of rivets staggered which allowed the crack to pass between two rivets in the upper row.

"Photograph 3 of Enclosure 1 shows void areas in the upper part of the rivet hole which are considered to have been caused by insufficient weld in building up a misaligned rivet hole during original construction."

Then he has a note that the arrow should be pointing in the opposite direction.

That is all, Captain.

Q So it had to do with a fracture found in a gunnel bar which is reported for what reason?

A Well, the gunnel bar ties together the deck and the side of the ship in this case.

Q Why does headquarters have to have these reports? Why couldn't it be taken care of on the spot without a report?
A: It is taken care of on the spot as far as fixing it, Captain, but the objective of these reports is to develop a history if something like this can be developed, either on a class of ship or on a single ship as the case may be, simply to provide the commandant with information that he may need in his judgment.

Q: To see if this type of fracture or condition occurs on other vessels, is that the idea?

A: Yes, if it occurs on other vessels of the same class, yes, and it were discovered in time, action would be taken through ECMIs to inspect.

Sometimes it is not a part of Merchant Marine Safety, this is in the inspection shop, but they would notify the officer in charge, Merchant Marine, to go look in certain places with this sort of information.

REAR ADMIRAL BARROW: Counsel?

MR. MURPHY: No questions.

REAR ADMIRAL BARROW: Do you have anything further?

(No response.)

REAR ADMIRAL BARROW: Off the record.

(Discussion off the record.)

REAR ADMIRAL BARROW: No further questions by the Board.

Thank you very much, Mr. Cleary, for your
attendance.

Is there anything else with regard to the testimony on the particular class of vessel that you might furnish for the Board which you have not expressed before which might be of use to us?

THE WITNESS: I don't know of anything, Admiral.

CAPTAIN ZABINSKI: I do have one more question. I'm sorry.

By Captain Zabinski:

Q Mr. Cleary, we have here a fully-loaded ship going along in a very bad storm, reported waves 20 feet on up to 25-27 feet, winds blowing 50 to 70 knots is what witnesses testified to;

We have 29 people aboard. The vessel has apparently been lost.

The major concern is the fact that we found the lifeboats damaged but, nevertheless, we found the lifeboats, liferafts, many liferafts, liferings, but we have not recovered any survivors or any victims as a result of this casualty.

Given those facts, could you give us any idea or opinion as to what might have gone wrong?

A Captain, the information that I have had coming here today, it consists mostly of what I either heard on the radio or read in the newspaper, and I had heard that there was
a list on the vessel in one newspaper; that the hatch cover might have come loose, or a vent might have come loose, and I believe all three of those were reported in newspapers, anyway, whether these are true or not is yet to be seen.

Taking those three instances, if a hatch cover did come loose in a storm like that, the entire cargo hold would fill with water after a matter of time.

MR. MURPHY: I am going to object to that part of this answer because there has been no evidence in this hearing or anywhere else to any question of a hatch cover coming loose. The entire evidence has been a list, two vents, and loss of part of a fence rail.

I would ask that part of the answer be stricken because there is no evidence, and to my knowledge not even any hearsay to that effect.

CAPTAIN ZABINSKI: I think the witness has qualified where he received this information from, or impression from. I think it's pertinent.

REAR ADMIRAL BARROW: I think what we are doing here, what I think we should be asking is what we have been asking most all of the other witnesses, that is, a hypothetical situation as compared to a specific.

MR. MURPHY: Based on the hypothetical question, Mr. Chairman, that was propounded by the
questioner, there is no indication of any evidence, either before this hearing or anywhere else, that there has ever been any loss or reported loss of a hatch cover. There was one news broadcast where the girl who was making the broadcast misinterpreted the report of the loss of the two vents to a loss of a hatch cover, but that is the only place to my knowledge that has been heard, and this hypothetical question that was placed by Captain Zabinski does not include that assumption. For that reason, I object to any such opinion going into this record on that basis.

CAPTAIN ZABINSKI: I pose the question.

REAR ADMIRAL BARROW: I think just for the record that the customary question we have been asking the witnesses has been generally that the vessel has gone down, it's gone down without recovery of inflatables, without recovery of people, but with lifejackets, but with lifeboats, liferafts, but no people, no bodies, and I think at this point we have asked generally in the experience of the people who is testifying what went wrong, and I think -- can we state it in that terms?

CAPTAIN ZABINSKI: That is fine.

REAR ADMIRAL BARROW: Is that satisfactory?

MR. MURPHY: That's satisfactory with me as long as it's not one of the assumptions that the
witness is making from the question that the questioner was putting.

REAR ADMIRAL BARROW: Go ahead, Mr. Cleary.

THE WITNESS: Yes, sir.

From the way you have restated it, Admiral, I think the first assumption that must be made is that the tragedy occurred very suddenly.

As to what the tragedy was, I can think of two possibilities: One is a capsizing, and the other is a breaking in half which would destroy all power on the vessel and probably sink in a matter of seconds and people would not have the opportunity to get out.

I consider the possibility of capsizing to be much less of a possibility than the possibility of a structural failure.

From what I have heard of the sea state and the actions of the other vessels in that storm, I find it hard to believe that a structural -- that some single wave that came along, that the stress to the hold girder was to the extent it failed unless there was some weak spot which was undetected by either the ship's crew or the inspectors from either the Bureau or ourselves.

Beyond that, I think it's getting into real guesswork.
By Captain Zabinski:

Q. What about the degrees of water you indicated previously?

A. In the ballast tank?

While that would cause a list, it would not cause structural problems which may lead to structural failure.

REAR ADMIRAL BARROW: Anything further?

MR. MURPHY: Yes.

EXAMINATION

By Mr. Murphy:

Q. Mr. Cleary, there also has been some indication in the testimony here and at least a suggestion that this vessel passed very close to some shoal areas, one as shallow as 6 fathoms, which then also raises the possibility of a grounding.

Would you not have to then include that possibility, with that information, in your opinion as to one of the potential causes as long as it's based solely on speculation?

A. Yes, sir, I would have to include that as a possibility.

MR. MURPHY: Thank you. No further questions.

REAR ADMIRAL BARROW: Mr. Cleary, that does raise another point I think we have discussed with other witnesses, and that would be the impact on the hull structure of a vessel such as the Fitzgerald passing within very close proximity to the bottom.
would you talk about that for a few minutes?

THE WITNESS: Yes, sir.

The point that comes immediately to mind is the scope of -- is the wide scope of possible damage and the reaction in the ship's girder.

If it were just a glancing blow, it might turn out to be something that might not cause any problem for a while.

This could be -- well, let's say that the ship passed the edge of a reef and some part of the bilge were exposed instantaneously or hit, whether it was grounding, and that would open up a ballast tank and cause the list, and it might take several minutes or perhaps a little longer, depending on degree of the hit, to fill that ballast tank.

If the ship grounded even instantaneously along the keel either at the bow or the stern, with all of the dynamic heaving up and in and out and up and down of the seaway, having its own speed involved, I would consider it would fracture right then and there and leave it on or next to that reef.

I don't know where to go from there, Admiral.

REAR ADMIRAL BARROW: With a situation where the vessel did not actually strike but come very close to the bottom, six inches or so, would this create a
stress problem for the hull structure?

THE WITNESS: In two or three minutes' thinking, one thinks of all sorts of things.

I think what that would -- let's say it came over a sand bar instead of a reef and came close to the bottom.

If there was an instantaneously hydrodynamic pressure right directly underneath the ship while it was in, let's say, a sagged condition, there is a possibility of either opening up a seam or some local damage somewhere which would fill at a rather slow rate.

If that -- you have to make one assumption right on top of another -- this occurred only one area and then this filled a ballast tank which caused list, which caused problems, whatever time it was --

REAR ADMIRAL BARROW: I guess the next question would be whether or not you would consider this to be a good possibility of a sudden increase in hydrodynamic pressure in a situation such as that.

THE WITNESS: Along with that, would it be enough to break open a seam?

I really -- I just don't know, Admiral.

CAPTAIN ZABINSKI: How about would there be any additional vibration experienced by a vessel passing over shoal water, hull vibrational forces?
THE WITNESS: This is known to occur, Captain. It's one of the sources of springing, although not a significant source of high springing, but we have had masters tell us their ships spring in the Saint Marais River when they get in very shallow waters.

We can probably say it's not waves but pressure differential underneath the ship.

CAPTAIN ZABINSKI: Would this be a continuous vibration or just a one-shot deal in your estimation?

THE WITNESS: If it were going on the shoal area, being carried over a wave or two or three series of waves, I would expect it to be more in the nature of a one-shot, although it takes vessels two or three waves to get over the shoal, it might be two or three single shots which would cause an introduction of vibratory stress into the ship's girders, and this might be a shocking or slamming stress, although it's not exactly the same thing, that type of stress although it's not exactly the same thing, that type of stress decays, the shock stress which decays very quickly.

REAR ADMIRAL BARROW: For the record, without objection, I'd like to introduce Exhibits 50-A, B and C for identification, which we will remove the "for
identification."

MR. MURPHY: No objection, sir.

REAR ADMIRAL BARROW: Thank you very much, Mr. Cleary.

We appreciate your testimony.

You are cautioned not to discuss your testimony with anyone other than counsel before the conclusion of this investigation.

Thank you.

(Witness excused.)

REAR ADMIRAL BARROW: Recess for five minutes.
(Recess had.)

REAR ADMIRAL BARROW: Please be seated.

Let the record show that we reconvened at 1023.

Counsel for the operator is present as before.

Commander Loosmore, call your next witness.

COMMANDER LOOSMORE: Yes, sir, the Board calls Mr. R. A. Stearn.

Would you stand, Mr. Stearn?

RICHARD A. STEARN

was called as a witness and, being first duly sworn, was examined and testified as follows:

COMMANDER LOOSMORE: Please be seated, please.

EXAMINATION

By Commander Loosmore:

Q. Mr. Stearn, would you please state your name and address and occupation?

A. Richard A. Stearn, and my home address is 1106 Pennsylvania Street, Sturgeon Bay, Wisconsin. I am a naval Architect.

I have a firm of engineers under the name of R. A. Stearn, Incorporated and we practice in Sturgeon Bay.

Q. Mr. Stearn, do you hold a Coast Guard License or document?

A. No, I do not.

Q. How long have you been a naval architect?

A. I graduated in 1939. I have been practicing naval
Q. How long have you been in this business of R. A. Stearn Incorporated?
A. I started the firm in 1946.

Q. Mr. Stearn, I have here Exhibit 10 in evidence, and I would ask you, do you recognize that?
A. Yes, I do.

Q. I believe it says on the bottom that it was prepared by R. A. Stearn Incorporated. Is that yours?
A. That is correct.

Q. Have you done other work for Oglebay-Norton Company with reference to the Edmund Fitzgerald?
A. Yes.

Q. Over what period of time, sir?
A. I don't recall the exact dates, but we did an investigation for them in 1968 or '69, I believe.

We also did some work for them on the Fitzgerald for the boiler automation and conversion from coal to fuel oil, I believe, in 1970 or '71.

Q. 1968 or thereabouts, was that the first work that you had done on the Fitzgerald that you can recall?
A. We may have done work earlier than that, but I don't recall it.

Q. You testified that your organization prepared the
Guidance Manual for Loading, which you have in your hand, Exhibit 10, at whose request did you prepare that?

A. It was prepared at Oglebay-Norton's request.

Q. And for what purpose were you requested to do that?

A. This particular manual was prepared because of the change in load lines.

Q. What change in load lines?

A. The change in load lines of 1973. Actually we had prepared a manual prior to that time.

Q. For the Fitzgerald?

A. No, this is not -- excuse me. I see the date here is February 28, 1972, and this is not the current loading manual.

Q. It is not the current loading manual?

A. Let me see.

Yes, it is. Here is a revision date, "October 5th."

We prepared the original manual in 1972. This was prior to any requirements because Columbia, Columbia's policy had been to prepare loading manuals for all of their ships, even though it was not required. The revision here was prepared in 1973 because of the change in load line.

The reason I was confused here was that this does not have the approvals marked on the copy, although on the cover I know the latest ones have.

Q. Well, is that the latest manual that you are aware of?

A. This is.
Q. Take a moment and look through and make sure.
A. This is the one that was approved by the Coast Guard and I believe any changes since that time are merely the marking of the approval dates on here by ABS and the Coast Guard and there were a few typographical errors that were corrected. They were insignificant errors.

This is substantially the latest manual.

Q. Is that exactly the latest manual that was in force at the time the Fitzgerald was lost?
A. This is the one that was in force, yes.

Q. Is that precisely a copy of the document that was on board the Fitzgerald or supposed to have been on board?
A. I cannot say. I presume it is because it is the one that has the American Bureau of Shipping and Coast Guard stamp and those were the copies that were issued to the ship.

Q. Have there been any modifications to that particular document since it was issued?
A. The only modifications were the addition of the dates of the Coast and Guard and ABS approval and the corrections of two or three typographical errors.

There were no changes to the contents that were in any way substantive.

Q. Do you recall what your instructions were on the contract to prepare that loading manual, what the purpose was?
A. To prepare a loading manual for the Edmund Fitzgerald for
the loading of iron ore.

Q. I would like to talk about that loading manual in some
detail, if we might.

I noticed that in the beginning of that loading manual
there is a discussion about the stability. In fact, I believe
you will find a note on Sheet 9 that says, "Stability has not
been considered."

Is that substantially correct?

A. That is what the manual states. It says, "Stability is
not considered or included in this manual."

Q. To your knowledge, has there been a stability assessment
of any form of the Fitzgerald?

A. I have no knowledge of a stability assessment.

I will qualify that. It is our practice in preparing
these manuals, of course, to submit them to the American
Bureau of Shipping and to the Coast Guard. The American
Bureau of Shipping will not approve the manual until the
Coast Guard has approved the stability aspects of the vessel.

Since in bulk carriers of this type, not being a self-
unloader, there has in our experience never been a question of
stability.

We always ask for a waiver of any stability calculations
and/or an inclining experiment and left it up to the Coast
Guard to say whether this is satisfactory.

Q. Did you ask for a waiver in the case of the Fitzgerald?
A. I do not know whether our letter of submittal requested a waiver or not.

Q. We probably requested an approval of the manual and the Coast Guard in reviewing it, then, will take the stability into consideration.

Q. To your knowledge, was such a waiver granted?

A. Yes, it was granted because they approved the manual.

A. Mr. Stearn, I will hand you a Xerox copy of a letter on R. A. Stearn Incorporated letterhead, addressed to Commander (m.i.t.) 9th Coast Guard District, Cleveland, Ohio.

   Do you recognize that letter?

A. Yes, I do.

Q. What is that letter?

A. It is a letter requesting approval of the loading manual for the Edmund Fitzgerald and addressed to the Coast Guard.

Q. Who signed that letter, please?

A. Ronald F. MacLean.

Q. Who is Mr. MacLean?

A. He is an employee of R. A. Stearn, Incorporated.

Q. Okay. May I have that back, please?

(Handing.)

COMMANDER LOOSHORE: I would request that this letter be marked Exhibit 51 for identification.

REAR ADMIRAL BARRON: Mark it 51 for identification.
COMMANDER LOOSHORE: I have a series of letters relating to the approval of this manual and I would like to mark them 51-A and -B and -C as we proceed.

REAR ADMIRAL BARKER: Identify each one as you go along, please. This one is 51-A.

(Exhibit No. 51-A was marked for identification and made a part of the record.)

COMMANDER LOOSHORE: Exhibit 51-A is a letter for identification from R. A. Stearn Incorporated to Commander (m.m.t.) 9th Coast Guard District, dated October 5th, 1973.

Q Mr. Stearn, I hand you another copy of a letter from R. A. Stearn, excuse me, on R. A. Stearn, Incorporated letterhead to the American Bureau of Shipping dated October 5th, 1973.

Do you recognize that?

A Yes, I do.

Q And what is that letter?

A It's a letter to the American Bureau of Shipping signed by Ronald F. MacLean, requesting approval of the loading manual for the Edmund Fitzgerald and requesting they send three copies with the approval to the Coast Guard, 9th District.

Q Is that a routine sort of thing?

A That's correct.
COMMANDER LOOSMORE: Sir, I'd like to ask that that R. A. Stearn letter to the American Bureau of Shipping be marked Exhibit 51-B for identification

REAR ADMIRAL BARROW: Mark it 51-B for identification.

(Exhibit No. 51B was marked for identification and made a part of the record.)

(Brief pause.)

By Commander Loosmore:

Q Mr. Stearn, I have here a letter, copy of a file copy of a letter, without letterhead, addressed to R. A. Stearn, Incorporated, Sturgeon Bay, Wisconsin, dated 23 October 1973 and signed by John Deck III, Commander, U. S. Coast Guard, Chief, Merchant Marine Technical Branch, by direction of Commander 9th Coast Guard District.

Do you recognize that?

A Yes, I do.

Q Have you ever seen that letter before?

A Yes, sir.

Q Could you tell me what that is?

A It is a letter from the Coast Guard approving the loading manual for the Edmund Fitzgerald and states that the stamped copy of the manual has been provided to Columbia Transportation for placement on board the vessel.
It states that the vessel may be loaded only to those conditions contained in the manual, that is, a full load of iron ore and/or pellets or ballast. When further conditions of loading are developed, they should be submitted for approval and inclusion in the manual.

And it states that the stability review of the vessel has been completed, the results of this review indicate that the requirement for stability test of the subject vessel may be dispensed with under the provision of 46 CFR 45.105.

Q. Thank you, Mr. Stearn.

COMMANDER LOOSMORE: Off the record.

(Discussion off the record.)

COMMANDER LOOSMORE: Sir, I'd like to request the letter of 23 October 1973 from Commander Deck be marked Exhibit 51-C for identification.

REAR ADMIRAL BARROW: Mark it so.

(Exhibit No.51C was marked for identification and made a part of the record.)

By Commander Loosmore:

Q. Mr. Stearn, I have another copy of a letter apparently from the same Commander Deck addressed to the Columbia Transportation Division.

Have you ever seen that before?

A. Yes, I have. A copy was addressed to us.
Q. Yes, sir.
   Just briefly could you summarize what that is?
A. It's a letter to Columbia Transportation stating that
   the stability review of the vessel indicates that the vessel
   indicates that the vessel proportions and arrangements, et
   cetera, are more than sufficient, the metacentric sites
   would be available under all probable loading conditions,
   and it states the requirements for stability test are waived
   and the stress information contained in the manual is
   applicable to the loading of the vessel and that the
   stability guidance information contained is sufficient to be
   in compliance with 46 CFR 45.105.
Q. Yes, sir. Is it fair to say that the letter forwarded
   the approved manual to Columbia?
A. That is correct.

COMMANDER LOOSMORE: Sir, I would request
   this letter and two pages be marked 51-D and 51-E for
   identification.

REAR ADMIRAL BARROW: Mark them so.
   (Exhibits Nos. 51-D and 51-E were
   marked for identification and made
   a part of the record.)
   (Brief pause.)

By Commander Loosmore:
Q. Mr. Stearn, I have handed you a copy of a letter of
American Bureau of Shipping, Cleveland Office letterhead.

Have you ever seen that before?

A. Yes, I have.

Q. Could you tell me briefly what that is?

A. It's the American Bureau of Shipping approval of the loading manual.

Q. All right, sir.

COMMANDER LOOSMORE: Sir, I would request that this copy of the letter be marked 51-F for identification.

REAR ADMIRAL BARROW: Mark it so for identification.

(Exhibit No. 51-F was marked for identification and made a part of the record.)

(Brief pause.)

COMMANDER LOOSMORE: I have a letter here, from the American Bureau of Shipping, Cleveland Office, addressed to R. A. Stearn, Incorporated, Sturgeon Bay, dated 17 October 1973, signed C. D. Moreland, Vice President; Thomas J. Steward by Direction, Principal Surveyor, Technical Staff.

(Brief pause.)

By Commander Loosmore:

Q. Mr. Stearn, would you refer to the cover of Exhibit 10
that you have in front of you?

MR. MURPHY: Excuse me. Before you start with another line of questioning, Commander, if the Court please, just for purposes of clarification, may we note just for the record that Columbia Transportation and Oglebay-Norton are synonymous, Columbia Transportation is a Division of Oglebay-Norton and the record may not be clear because the words have been used interchangeably.

REAR ADmiral Barrow: All right, thank you, sir.

By Commander Loosmore:

Q On Exhibit 10, which you have in front of you, what is the date of approval by the American Bureau of Shipping?


Q And on Exhibit 51-F?


Q Thank you, and the Coast Guard approval?


Q And the letter, 51-C?


Q Very good. Thank you.

Now, we were discussing the stability test and I believe you said that there had been a stability assessment. Do you know whether your organization or any other has ever performed a stability test on the Fitzgerald?
A. I know that we didn't, our organization didn't, and I don't know if any other organization ever did.

Q. No stability test of any form, inclining, dead-weight survey, nothing?

A. A dead-weight survey as such is not a stability test.

Q. All right.

A. We have conducted a dead-weight survey on the vessel in preparation -- in the preparation of the loading manual, but we did not conduct a stability test.

Q. Okay. When did you conduct the dead-weight survey?

A. At some time prior to the preparation of the manual; I don't know when it was.

Q. Very briefly, what did the dead-weight survey consist of?

A. Well, I can give you our general procedure for the dead-weight survey; that is to board the ship, sound all the tanks, note any cargo aboard, preferably we make a dead-weight survey with no cargo aboard because it's very difficult to determine the amount of cargo, and we generally try to have the tanks pumped out so that we won't have to estimate the amount of ballast water.

We check the amount of fuel aboard, other consumables, and note anything that's aboard that is not normal, check the drafts, and if we don't have complete plans on the vessel, check the general distribution and locations of major weight items and this sort of thing.
In the case of the Fitzgerald, we would have accurate drawings for the engines, and anything necessary for us to make a weight-distribution diagram.

Q. Do you have records with you to indicate when that dead-weight was conducted?
A. I have a calculation of the light ship weight. I don't know if it states when the survey was made.

(Brief pause.)

The weight estimate was prepared in 1970, and I believe was altered at a later date, although the alteration date is not shown on here.

The reason I say that is this includes the fuel system and combustion control and the fuel bunker and so forth that was put on at a later date.

Q. After 1970?
A. I believe so.

I think that was done in 1971-72, the winter of '71-'72.

At any rate, this is the weight calculation that was revised and prepared finally on October 4th of 1973 -- '73, excuse me.

Q. What is the final light ship weight that you determined with the study which you said went on for a couple of years?
A. What was the final light ship weight?

Q. Well, the first question was: Was that input to this loading manual, to the preparation of this loading manual?
A. Yes, it was.

Q. So that this loading manual, then, would have included all of the conversions up to this date?

A. That's correct.

Q. Referring to Sheet 7 on the loading manual, Mr. Stearn, the information included therein says that the angle of repose for ticonite is 30 degrees if I read it correctly.

A. That's correct.

Q. Where did you get that information?

A. Oh, I'd have to dig way back in our files for this. We have various reference data that we use.

We continually try to update this sort of information and that, to the best of our knowledge, is the angle of repose for the average type of pellets that are loaded.

Q. In the course of testimony before this Board there have been several people asked about that, principally the operators, and they have all been unable to give us any information about the angle of repose.

If you could provide some information to the Board at a later date by a letter, and your source of information, I know it would be very useful.

Could you do that?

A. Yes.

Q. I think late on in that same sheet there is a discussion of a 35-degree angle, is that correct?
A. On this same sheet, Sheet 7? Up here?

Q. At "Trim 35 normal angle of repose is 30." What is the significance of that difference?

A. This 35-degree angle is what we normally use for limestone and coal, when coal is self-trimmed and when limestone is self-trimmed.

The 30-degree angle mentioned is for trimming of coal. We don't -- this is a -- that is a capacity table here showing the capacity of the hold for various cargoes and for various methods of loading.

That is the purpose of this table here.

Q. You are referring to the table at the top of Sheet 7 of Exhibit 10?

A. But we do not include iron ore or iron pellets in this table because, as we note below, the cubic capacity of the, of pellets and ore is greater than the dead-weight capacity of the vessel and, therefore, we don't show the cubic capacities here which is essentially what is the cubic capacity of the cargo hold.

Q. Referring further to Sheet No. 9, we talked about assumed safe still water bending 4.0 tons per square inch?

A. Yes.

Q. Could you tell me, and you may have -- can you tell me what the assumed section modulus of the vessel was in order to determine that?
A. The section modulus is also shown on this set of calculations here.

The section modulus is 42,964 inches squared feet.

Now, the four tons is a stress that is required as a maximum by the American Bureau of Shipping for the maximum still water bending stress in the case of this particular vessel.

Q. All right. So you started, then, with 4.0 tons?

A. That's correct.

Q. Are those long tons or short tons?

A. Long tons.

Q. Long tons.

And the modulus is indicated as 42965 inches squared feet?

A. That's correct.

Q. Whatever that product gave you, basically it's the limited bending weight, then?

A. That is correct.

Q. All right. In calculating the section moduluses, did you include any stress concentration factor which we have heard discussed earlier this morning?

A. No.

Q. Well, then, would it be possible that under a bending load such as that you got a calculated stress of 4.0 tons per square inch; that in the vicinity of the hatch covers and
other deck openings and so forth that you might have a higher stress than that?

A. Oh, yes, you definitely will.

Q. Are you able to shed some light on what a reasonable concentration, stress concentration factor might be from your experience?

A. Well, there are books on the subject.

You can go as high as three, four, five, six times the local stress in concentrations around holes.

Q. Okay.

A. But, when you have a stress concentration factor applied to any normal irregularities, let's say that the ship's hold, I'd say that the factor would probably be a lot lower than even the three.

Q. Well, it certainly wouldn't be ten from what you are saying?

A. No.

Q. But it would be greater than one?

A. Well, always greater than one.

Q. All right. Mr. Stearn, do you have -- there is no information in that loading manual or in anything else we have received as to what kind of steel was in the hull of the Fitzgerald.

In developing that load manual, or in anything else that you have done with this ship, have you had occasion to
determine what the material was?
A. No, I wouldn't say that we haven't.

We know that it's built to American Bureau of Shipping Standards and it's undoubtedly an ABS grade of steel for the most part or the grade of hull steel that is required for that particular thickness and the location of the steel on the vessel; in other words, it's a medium steel, it's not the high-strength steel vessel.

Q. You have used the phrase "Grade A." What is the Grade A?
A. Yes, it designates a medium-strength steel with a yield in the neighborhood of 33 to 36 thousand pounds per square inch.

Q. Well, as I understand it, the American Bureau of shipping has included in their rules specifications for the different grades of steel which they call A, B, and C and multiple letters and so forth, and I am not -- I am really trying to distinguish between A and B and C and D.

What would a normal ship built like this in 1958 be built of? Grade A steel?
A. Yes, it would have been built of the steel that met the standards, oh, that were developed just post-war, in other words, not sensitive to the extent --

Q. Okay.
A. -- that the ships prior to that time were.
Q. And it wouldn't have been whatever was available in '58, steel, for example, or ABS C, but most likely A, you'd say?

A. Well, I am not --

Q. Fine, okay.

A. -- right up to date on ABS steel, but it is hull steel.

Q. I realize you didn't design the vessel, but you did design the loading manual. You designed the loading manual to still water bending.

What would your best estimate be of what the total state of stress would be in what you would expect to be a normal seaway?

A. When you say "a normal seaway," are you referring to something less than a sea that we have been talking about in this hearing?

Q. Why don't you -- I am really asking for a professional judgment.

I guess what I am after is, you certainly must have thought about what the total stress would be on the vessel when you designed that loading manual in spite of the fact that it's designed for still water bending; I wonder if you had a feel for what the total stress would be or the maximum stress, I guess is a better way to put it.

A. Well, we show a loaded still water bending stress of about two tons per square inch.

The allowable by the American Bureau of Shipping is four
tons.

We had run a calculation on this ship according to
the Matthews' method of 5.8 tons per square inch allowable
still water bending stress.

According to Matthews' analysis, this would have
resulted with the anticipated springing stresses and seaway
bending stresses and the total stress of 12.65 long tons
per square inch. If we say that Matthews was correct, we
would have the difference between 5.6 and 2 tons, which
would be 3.6 tons deducted from the 12.65 tons, to arrive
at a total stress. That amount would be in the neighborhood
of 8.05 long tons per square inch.

Q  Very good.

On Sheet 10, sir, there is a list of conditions.
Would you read this one for me, please?

A  "Ballast for propeller out."

Q  Could you describe what that means?

A  That means if it's necessary to repair the propeller,
the forward end of the vessel would be ballast four feet,
maybe No. 1 ballast tank, and that would tip the vessel up
until the propeller got out of the water sufficiently to
repair a blade, replace a blade, and that sort of thing.

Q  I see.

Is that condition again addressed on Sheet 18?

A  Yes. Yes, it is.
Q. Now, keeping Sheet 18 in mind, what did you calculate was the maximum still water bending stress in the ballast for propeller-out conditions?

A. 5.98 long tons.

Q. What does Sheet 18 show as to loading?

A. The loading? You mean --

Q. What does the vessel have on board?

A. Oh, it shows 570 tons of ballast or a zoning of six foot seven inches in the No. 1 ballast tank.

It shows 60 tons in No. 9, a total of 630 tons.

Q. Is there any cargo on board?

A. No cargo.

Q. Would it be possible to accomplish this with cargo aboard?

A. Not with any appreciable -- they may have a little cargo on the forward end, 570 tons over forward tank and not have to use any ballast. It would just replace te weight of the ballast.

Q. Suppose a third of the cargo that the ship carried would be on board, would it be possible to get the propeller up?

A. I wouldn't believe.

Q. Not even a part?

A. You wouldn't be able to get enough of a bucket over to replace it.

Q. Do you know if a ballasting for propeller out has been
done recently?
A. I would not on this particular vessel.
Q. Are you consulted when this kind of thing is done?
A. No.
Q. Okay. There was some discussion earlier about loading sequence.
Would you tell me where in the manual the loading sequence is set out, please?
A. The specific loading sequence is shown on "For Cargo Loading," now, this is shown on Sheets 19, 20, 21.
Q. On 19, 20 and 21? All right.
Now, can I find in there, if I were the second mate or the first mate in charge of loading, excuse me, where that manual would tell me to load Hatch No. such and such before I loaded Hatch No. so and so?
Take a moment.
A. We show here the detail of this particular sheet for a dual belt loading.
Q. Looking at Sheet 21?
A. On Sheet 21 and as it spells it out in the text:
"Within any hold the sequence of hatches loaded in the condition of the dual belt loading should be in the sequence shown on this table."
Q. So that if I was the ship's first mate loading Hold No. 2, for example, which would be the first hatch I would
load in Hold No. 2 on that sheet?

A  In this particular arrangement it would be with the
Rig No. 1, it would be Hatch No. 9 and with Rig No. 2, it
would be Hatch No. 13.

Q  What do you mean by Rig No. 1 and Rig No. 2?
A  Well, this table is made out for a two-belt loading
system such as they have at Silver Bay, and the two belts --
Q  Excuse me?
A  -- the two belts are used simultaneously.
Q  Is that why it says "Silver Bay" on there?
A  That's correct.
Q  Mr. Stearn, could you show me in the loading sequence
for loading at a dock such as at Superior?
A  To load at a dock like Superior, the mate would have to
take these tonnages that are shown for these hatches, and you
are talking about a chute deck --
Q  Yes, I am talking about a chute deck. Yes.
A  You would have to load that quantity into those hatches.

Now, the chute deck has multiple chutes and generally
loads into each hatch or every other hatch, or can load into
every hatch or every other hatch in case that there are 24-
foot centers on the hatches, so normally this would be
loading into every hatch.

Now, there is no loading shown here for that particular
load, but we would take the tonnages, for instance, in
Hatches 20-21 and load that quantity into those two hatches.

Now, the reason I say that is this: You examine this
diagram when you load the ship with two belts or with belts
at all. If the belts don't go into every hatch, you usually
keep a belt discharging into a hold, into an open hatch, for
a considerable length of time and material spreads out;
therefore, the next pile, as shown in this upper diagram on
page 19, the next hatch that you go into, in this case two
hatches away, will make another pile which will leave a hold
low between those two piles.

When you finally get back to the hold low you load
very little cargo in there.

Now, if you take the tonnage, for instance, located,
loaded into Hatches 20-21, and when you load with a chute
dock, you load that same quantity into those two, you will
come out with about the same distribution of cargo.

Q. I see. I see.

A. Now, the actual, the picture --

Q. Mr. Stearn, does that loading manual also describe the
deballasting which is supposed to take place while you are
loading that?

A. No, it doesn't.

Q. Does the loading manual include any information on
unloading?

A. No, it doesn't.
Q. Is unloading an important factor?
A. Well, the ship obviously has to be unloaded in a sequence that will not build up high bending stresses in the ship. However, we never include it. There is no requirement for unloading sequence in the law.

Q. Did you calculate one?
A. No.

Q. You did not.

To your knowledge have you ever done a calculation which would evaluate the state of stress during a loading, simultaneously deballasting and, conversely, an unloading and ballasting?

A. I don't believe we ever run one.

We considered the various possible combinations and the combinations are practically infinite.

It has been very difficult, in the first place, if I may just talk about a little bit -- it's been very difficult to get loading manuals prepared that are practical because we have 60 or 70 years of ship personnel loading these ships and passing down from generation to generation the loading procedures, and they worked up a very practical and evidently relatively safe method.

Now, when we try to analyze the optimum loading, we have the computer program that we feed all the data into and because it's a fairly length calculation to determine
what the bending stresses are, even on a single, a single
calculation, for instance dumping one pile into a ship,
it's a very lengthy calculation to determine what the
stresses of the vessel are because the ship changes trim
and you have a different water loading on the hull, and for
each one of the cargo loadings.

So we try to optimize the method of loading these
vessels and in the early stages we come up with what we
thought was a very good loading, low stresses, and give it
out to the mates and they practically disregard it, for
several reasons: They couldn't pump out water quite as fast
as they were supposed to to keep the trim that would be
required for the particular loading sequence we showed, and
any number of reasons.

So gradually what we did, and we did it in the case of
the Fitzgerald, was to get the actual loading sequences that
these mates have used and then we fed that data into our
computer program.

We check the actual stresses. If they are reasonable,
we try to improve on them some but not to any drastic degree.

We try to get the best stress we can without diverting
so far from what they consider a practical loading method
that it would be thrown out when they went to use it.

So for this reason I shudder to think of attempting to,
let's say, control the deballasting of the vessel except in
very broad generalities which they have from past practice right now.

Now, we do state in here, along those same lines, that in general stresses will be very safe if they maintain a straight keel line. Now, we know this is the general practice and is a good backup for any type of loading.

Q. Yes, sir.

Do you recall what -- you said if stresses are reasonable; do you recall what kind of still water bending stresses were obtained in this process that you described?

A. When you say "this process" --

Q. By taking the loading which was used and analyzing it during the loading and unloading sequences. You said if the stresses were reasonable you would try to improve; otherwise, they would be fine.

What is reasonable?

A. Well, I would consider during a loading operation a bending stress up to six or seven tons would be quite reasonable.

Q. What would you consider unreasonable, just to give us some idea of what's happening?

A. I would say ten or eleven tons, in a calculated condition, it would be unreasonable, because that doesn't leave very much leeway for error.

Q. I see.
A couple other minor things that I, with my limited understanding of this, didn't really grasp.

On Sheet 21 there is a statement that 200 tons of residual mud were considered.

What is "residual mud"?

A. Well, there is always some mud left in the ballast tanks after the water is pumped out of it. It gradually builds up over the years until the tanks are cleaned out again.

So when we run the calculations, there is always something unaccounted for.

It's been our practice to go in, survey the mud on a number of ships, we generally know when the last time was the mud was cleaned out, we know how much mud would be in.

We have to throw some figure in there.

Q. When you did the survey in 1970, did you examine and check to see how much mud was in there then?

A. I do not believe the ballasts were gone through.

I know the tanks were sounded, but I don't think they were inspected.

Q. Sir, you said there was, that you were involved in some other work on the Fitzgerald.

I don't know whether you have information right available at your fingertips to discuss that, but one of the particular things I am kind of interested in is the
conversion of oil. Did you design the entire conversion?

A. Well, yes. We planned the contract plans and specifications and the job was done at Fraser Shipyards and we did the working plans, some of the working plans for Fraser.

Q. I see.

Where did you put the fuel tank?

A. The location of the old coal bunkers.

Q. Does that make a difference in the loading?

A. It has some effect because there is less fuel aboard than when coal was used, but that was taken into consideration in our dead-weight analysis of the ship.

Q. Were any other structural alterations made that you recall, that your office has had -- structural changes meaning repairs?

A. Well, repairs -- we were asked to investigate a keelson weld failure, that was, I think, back in '68 or '69, and we looked at it and made a recommendation for repair.

Q. Did that have any change, any impact on the section modulus, and did you change the structure?

A. No, that didn't affect the section modulus.

Q. Did you change the structure?

Was there a multiplication in the fix at all?

A. Well, in the case of these keelsons they were serrated on the lower edge and there were some bars put in
in lieu of the serrations at the bottom edge in such cases.

Q.  Was this across the whole bottom section of the vessel?

A.  This affected two keelsons throughout, some part of

the length of this ship.

Q.  I have Exhibit 6-F here, which is in evidence, which is

identified as the midship's sections.

Would you point out on this exhibit where these

keelsons were, please, if you remember?

A.  I just want to be sure I'm looking at the right --

Keelson six feet off center line and 12 feet off

center line.

REAR ADMIRAL BARROW:  Do those have specific

numbers?  Are they numbered 1 and 2 keelsons?

THE WITNESS:  I don't see any numbers

on this drawing.

REAR ADMIRAL BARROW:  Would they be the first

and second off?

THE WITNESS:  That's correct.

By Commander Loosmore:

Q.  What was the modification again, sir?

A.  There was some crack welds in the bottom connection of

these keelsons to the shell and these were repaired by

adding bars to the bottom of the keelsons in some cases.

Q.  Let's just leave that stand right up there.  I think it

will --
Did you prepare a drawing of that, if you recall?
A. We prepared a report at the time, and I believe there are sketches in it.
Q. I have that information here if you'd like to see it.

REAR ADMIRAL BARROW: Commander Loosmore, I think there is a drawing that has been prepared to follow this up. I don't know whether they have it, whether we have it, or whether the owner, the operator's representative has it, but I think there is an engineering drawing on this specific item.

COMMANDER LOOSMORE: Yes, sir, that is where I am going. I am not within the other plans we received.

A. This is a sketch of the Fraser Shipyards to show how certain parts of this work were actually done. He does identify the Keelsons No. 1 and 2.

MR. MURPHY: Excuse me, Admiral, were you referring to the drawing I handed you yesterday?

REAR ADMIRAL BARROW: No, I think the Great Lakes Engineering Works drawing refers to this -- I don't know whether we have it or not.

Off the record.

(Discussion off the record.)

REAR ADMIRAL BARROW: Back on the record.
COMMANDER LOOSMORE: Sir, I believe this drawing relates to the overall structural arrangements of the vessel and perhaps would be important to the evidence in this case.

I'd like to request it be marked Exhibit 52 for identification.

REAR ADMIRAL BARROW: What is it?

COMMANDER LOOSMORE: This is entitled "Steamer Edmund Fitzgerald, Details of Repairs to Side Keelsons 1 and 2," and has the handwritten date on it, "1/20/1969."

REAR ADMIRAL BARROW: Mark it 52 for identification.

(Exhibit No. 52 was marked for identification and made a part of the record.)

(Brief pause.)

By Commander Loosmore:

Q. Mr. Stearn, we were discussing load sequence. You said that you went and got some of the loading sheets, that may be the little book that everyone else is talking about. By any chance would you have kept those? Would those be in your files for this vessel?

A. Well, we have -- I am sure we have the sheets that we had, we used at the time, yes.
I believe these are the 1970 loading sheets.

Q. Do you have those with you?

A. No, I don't have those with me.

These are usually commonly returned to the office of Columbia Transportation.

Q. Well, we asked Columbia Transportation for them and they told us they didn't have anything like that.

A. It's possible they requested them especially for us.

Q. Possibly so.

Could I ask you to look at the file for this vessel, whatever files you have for this vessel when you return to your office, and if you have anything that indicates what was the commonly accepted practice, if you would communicate to the Board, I think -- there seems to be a question about that -- you can do either through Oglebay to us or to the Chairman of the Marine Board, but if you perhaps have notes on the loading sequence which were in use in the last five years, I think they would be of interest to us very much; as a matter of fact, since you are going to send us angle repose information --

MR. MURPHY: I think, Commander, just to clarify it, Captain Zabinski has some planning samples that are of the type furnished to the ship but, obviously, since the ship went down there is no loading book available for what was done on this ship
this season.

If you are interested --

COMMANDER LOOSMORE: That is precisely why I am asking Mr. Stearn if his files contain something done before this season.

MR. MURPHY: I understand that.

I want to make it clear when you ask us for something pertaining to the ship for the season, which is not available --

COMMANDER LOOSMORE: Do you have something before this season?

MR. MURPHY: I don't know.

COMMANDER LOOSMORE: Would you --

THE WITNESS: I don't think so.

REAR ADMIRAL BARROW: Would you check and let us know?

THE WITNESS: As I recall, when we get into this we request loading sheets and it takes us some time. Evidently they have to get them from the mates.

COMMANDER LOOSMORE: Perhaps so, but I think we'd appreciate it.

Admiral, that is all I have on this subject.

REAR ADMIRAL BARROW: I think before we proceed any further, this witness has referred to notes on the survey as far as light ship survey. I think we'd like
to get that into the record.

THE WITNESS: This is our total calculation on this, I mean, it's an extra copy if that will do any good. It has a lot of computer printout sheets showing bending movements and the hull deflections under various conditions and so forth.

That is the copy of the calculations that we use in preparing the loading manual for the various loading conditions, it looks like, for example, "R. A. Stearn, Incorporated Form, Subject, SS Edmund Fitzgerald, Still Water Bending Movement Calculations, date, 10-4-73," and the front page says it is Sheet 1 of 37, and the last page says 37.

REAR ADMIRAL BARROW: Marked for identification as 53.

(Exhibit No. 53 was marked for identification and made a part of the record.)

COMMANDER LOSHORE: It has been marked No. 53 for identification.

Mr. Murphy, do you want to take a look at this?

(Brief pause.)

COMMANDER LOSHORE: That's all I have.

REAR ADMIRAL BARROW: Fine.

Just before I ask the other members of the Board
for questions, I am still not quite clear on the
extent of the modifications as effect the side
keelons.

Do you have any knowledge of the total extent of
the modification in terms of the --

THE WITNESS: We were asked to
investigate these failures.

I made the inspection with, I think it was
Captain Jacobsen and the American Bureau of Shipping
Surveyors, the U. S. Coast Guard Inspector, and, as a
result of that inspection, we made a report on what we
thought -- well, the extent of the damage or irregularity,
whatever you want to call it, and made a recommendation
for repair.

Then the repair was made by Frazer and that is the
drawing that you have there.

The extent of it, I have no record on the total
extent of repair.

We did have -- I know in this initial report of
the American Bureau of Shipping Surveyors' sheets on
the extent of damage --

MR. MURPHY: That's already in evidence.

REAR ADMIRAL BARROW: Yes.

THE WITNESS: And then subsequent to
repair we were requested by Columbia Transportation
Division to make an analysis of the results of this repair.

We made a vibration analysis.

REAR ADMIRAL BARROW: What were the results of that?

THE WITNESS: The results that we had showed, as far as we could tell, that the repair was effective. This included adding stiffeners to the keelsons.

REAR ADMIRAL BARROW: I see.

THE WITNESS: But part of the purpose of that survey after the repair was to determine whether the failures in the weld were caused by the cyclic loading, caused by loading or the cyclic loading of the weld caused by seaway stresses or the cyclic effect caused by propeller blade passing frequency, and we determined what we thought was the reason for that.

REAR ADMIRAL BARROW: What was your determination there?

THE WITNESS: The first mode hull bending frequency was a two-node frequency in response to wave action.

We thought that was the only thing that could have caused this, the buckling of these keelsons to the extent they would cause fatigue in welds.
REAR ADMIRAL BARROW: Is there a report on that?

THE WITNESS: Yes.

REAR ADMIRAL BARROW: Do you have a copy?

THE WITNESS: Yes.

COMMANDER LOOSMORE: May I see it?

THE WITNESS: This was the report on the fractures and this was the report on the survey after loss, the report on the fractures.

REAR ADMIRAL BARROW: I think we'd like those marked for identification and introduced into the record.

COMMANDER LOOSMORE: That is R. A. Stearn Report No. 304-1-R1, dated February 4, 1969, pages 1 through -- consisting of 21 sheets which includes the cover. I believe that would be --

REAR ADMIRAL BARROW: 54 for identification.

(Exhibit No. 54-A through 54-U was marked for identification and made a part of the record.)

(Discussion off the record.)

REAR ADMIRAL BARROW: Back on the record.

Mr. Stearn, while he is marking those pages there, perhaps we can proceed with a couple of additional questions here.
EXAMINATION

By Rear Admiral Barrow:

Q. You have indicated that in a number of cases, coinci-
dentially as part of the process of determining loading, that
you gathered from the various ships what had been the
practice and fed that into the computer and where the
results were not excessive in terms of stresses that you
made slight modifications to arrive at what was reasonable
in the way of a loading manual.

Is the loading manual which is introduced into evidence
here a result of that process?

A. Yes. As I explained, we did get loading sheets from
the Fitzgerald and we used basically that data.

We undoubtedly shifted that some. There is one
thing I should explain about that -- I did explain it
partially -- on the two-belt loading system which we
prepared this manual for, it's very difficult to determine
just how the piles flow out. In other words, you have a
slope side tank and you come up against the bulkhead and
you had a semiconical pile with a peak at the top,
depending on the chuting. That is the reason we collect
the data from the mates. They have already had experience
on that, and they know how much goes in a particular hold.

We have then worked backwards from that and analyzed
just what the shape of that pile must be, and then the
intersecting piles, and through the years we have developed a fairly good system for getting quite close. We can tell this by the trim of the ship as it comes out of our analysis. But the good starting point is to take the mates' data.

REAR ADMIRAL BARROW: Fine. May we go back?

COMMANDER LOOSMORE: Yes, sir. This marked out as 54-A through -U.

This is the investigation?

THE WITNESS: Yes, that was the post-repair survey.

COMMANDER LOOSMORE: The postage mark is A. A. Stearn Report No. 1304-1-RII, June 23, 1969, and consists of eight sheet including the cover.

REAR ADMIRAL BARROW: Marked for identification starting out with 55-A for identification.

COMMANDER LOOSMORE: That is 55-A through 55-R. "Bottom Structure Operational Survey."

(Exhibit 55-A through 55-R was marked for identification and made a part of the record.)

REAR ADMIRAL BARROW: Show that to Mr. Murphy.

(Brief pause.)

REAR ADMIRAL BARROW: I have not had a chance to look through your post-repair or modification
here, but in very brief terms, could you tell me
what was the cause in your judgement?
A. The keelsons, as the ship was built, are seven feet
high, that is the depth from the shell to the tank top,
and six feet long between floors. They had a large lightening
hole in them and they had no stiffeners.
When the vessel was in a hogged condition and these
keelsons were under compression, they would buckle, and we
feel that the cycling loading of the bottom weld due to
the buckling, initial buckling plus additional buckling
caused by the waves, by the ship in the seaway then caused
these failures to the weld.
So the remedy was to throw stiffeners on and make a
connection. Evidently it was a good remedy. The last
survey, there were no cracks found.
CAPTAIN ZABINSKI: When was the last survey?
The WITNESS: Well, the last survey was
the five-year -- last year. I believe there were some
cracks up on the tank top.
By Rear Admiral Barrow:
Q. This wasn't the five-year Marine Bureau Survey?
A. Yes.
REAR ADMIRAL BARROW: Captain Wilson, do you
have a couple of questions?
EXAMINATION

By Captain Wilson:

Q. You said that you took the evidence of the mates' experience loading, and as long as it wasn't too much in error, too far out, that you just made minor modifications.

Did you ever go back, did anyone ever go back and compare the loading manual as then developed with what the mates were doing?

A. Oh, yes.

We have had to continually follow up on these and, in fact, on the newer ships we are working on now we have continuous contacts with the mates for a year or so to keep getting feedback on the loadings.

Q. So you found that it works fairly well?

A. Yes. We do some adjustments later on on some of these manuals as a result of their findings.

Q. How do they physically do this?

I am sure the mate isn't carrying the loading manual around in his back pocket, so do they extract what they need and develop this into a card or something?

A. All he knows on the loading is how much tonnage to put in per hatch or hold, generally per hatch.

If it's a chute dock, he has to add up the various discharges into a hatch so he just has a card in his back pocket.
Sometimes they just take the one sheet.

Q. He just extracts what he needs from there?

A. That's right.

CAPTAIN WILSON: That's all.

REAR ADMIRAL BARROW: Captain Zabinski?

CAPTAIN ZABINSKI: Yes.

EXAMINATION

By Captain Zabinski:

Q. Would any of that comparison or checking of the mate's loading manual be in this Exhibit 53?

A. What is Exhibit 53?

Q. You have the mate's loading manual. Would any of that calculation or results be in this manual (indicating)?

A. Well, we don't have the actual loading reports in there. There are a number of reports.

Q. What are the results of what they cranked into the calculations?

A. On this -- this is weight distribution.

Well, we have in our feed-in here -- I find out what condition this is.

This is light ballast. You have to get back to a loading condition: Load 27, 9 mean draft.

Now, unfortunately, you won't be able to read these weights. These are the ordinates, the weight curve, this is the distance from the stern of the vessel in feet, this
is -- these are the ordinates of the weight curve
(indicating).

Q Indicating the first Column D and the second indicating
A, AWT, afterweight?
A Yes, that is the afterweight and this is the forward.
Q FWT, that's in the third column?
A This particular station.
Q Station 0.03?
A That would be the after end of the vessel.
Q You say after end, after perpendicular?
A Whatever we use on the after end of the vessel. In
this case I believe it would be the after perpendicular. We
go up to 759 feet.
Q Which would be the extreme, is that correct, about the
stem?
A Right. And this is the after perpendicular with the
zero, with the ordinates 1.18 feet.

Then one-tenth of a foot after the ordinates, 1.21
feet, and that goes level to the next point at 1.21 feet,
1.21 tons per foot.
Q What does this Column B stand for?
A This is the buoyancy ordinates.
Q And V, the next column?
A That's the veer, that is the result from the calculation.
Q The M column?
A. The M is the moment.
Q. And Y, the last column?
A. Y is keel deflection in inches.
Q. Now, looking through these, do you recall any of these are the mate's, would be his actual loading sheets?
A. No, that was what I was getting around to.
Our weights of cargo are worked into these figures here.
It must be on the auxiliary calculation sheet, which I don't have.
Q. If they are available, can they be provided, please, Mr. Stearn?
A. Yes.
Q. Mr. Stearn, while you are up on your feet -- I see you sat down again.
I wasn't over here when you indicated the keelson.
Which of these on Exhibit 8 did you exhibit were the keelsons?
A. This is the keelson (indicating).
Q. Eight?
A. And this is the vertical member in between, the vertical, and the first keelson.
This is a flat bar stiffener extending from the bottom to the top there.
Q. I see. Thank you.
Mr. Stearn, in your opinion, does it make any difference if the cargo loaded, as to the stress of the vessel, is
heated or whether at ambient temperature?

A. If the cargo is heated?

Q. Heated, yes, sir.

A. It will affect the bending of the vessel, yes.

Q. In what way?

A. It can cause expansion of the tank top and side tanks compared to the outside shell members.

Q. Would that -- could that add or decrease the longitudinal stress of the vessel in your opinion?

A. Yes, it could.

It would result primarily in localized stresses in the center connection from a tank top down to the shell plating.

Q. This taconite as I understand it is sometimes loaded at a temperature of, elevated temperature, is that correct, or do you know?

A. Yes.

I don't know what the practice has been at the docks that this ship loads at, but I know they are loaded warm at times.

Q. On the loading manual it's made out for any port or any loading facility that the vessel goes to, or is it one specific one?

A. This is made out specifically for a two-belt dock.

The one loading sheet there we have in it is made out for the two-belt dock.
Q. And do you know which one that was?
A. The rest of the manual is applicable --
Q. Do you know --
CAPTAIN ZABINSKI: Pass that down, please.
COMMANDER LOSMURE: Yes, sir.

By Captain Zabinski:
Q. -- what dock it was?
A. Silver Bay.

MR. MURPHY: Would you mind?
You said the rest of the manual is applicable to something. You didn't finish.

THE WITNESS: The rest of the manual is applicable to any dock in all of the ship's operations.

By Captain Zabinski:
Q. Would that manual be applicable to the Burlington Northern Dock at Duluth?
A. Yes.
Q. Or Superior, I should say.
They load taconite from their pockets. Would that manual be applicable at that dock?
A. Yes.
As I explained before, the mate can take the data here and utilize it for determining the amount of tonnage per chute, and then on page 19 we show the cargo distribution for chutes.
Q. While you have that before you, let me lead a loading sequence. For the moment let's assume it's a hypothetical loading into the Fitzgerald.

It reads, this sequence: The loading sequence was to make two runs, one pocket in each hatch on each run.

Do you follow that?

A. Yes.

Q. Okay. Then six pockets aft.

A. Six pockets aft?

Q. Six pockets aft.

A. Yes.

Q. Stop loading for deep ballasting for one hour, resume loading.

Six pockets are loaded forward, six pocket are loaded aft, another pockets are loaded forward, another six pockets are loaded aft, two pockets are loaded forward, two pockets are loaded aft, each pocket contains about 300 tons.

By reference to the loading manual that you have before you, would this assumed loading procedure that I have just read to you be in accordance with that plan?

A. That loading procedure doesn't tell what specific hatches you are going into?

A. No.

A. I would have to know the specific hatches, or working it the other way around, I can take this manual and tell you
how much to put into Hatches 21, 20, 19 and so forth.

Q. All right. Just for exercise, how much?

Let's assume we have 300 tons to a pocket, we load the full pocket into the vessel. Okay?

A. Yes.

Q. Could you give me the load sequence that should have been followed in that case, talking now of loading taconite at a dock that has single chutes.

(Brief pause.)

A. It would take some time to go through this whole thing. However, I can tell you what the total load should be and hatches for winter operation:

1800 tons in 21, 1800 tons in 20, 1750 in 19 and 1750 in 18.

Q. I am sorry --

A. 1800 in 21, 1800 tons in each of Hatches 20 and 21, 1750 tons in each of Hatches 19 and 18.

1700 tons in Hatches 17 and 16, and so on through.

Now, this is a total tonnage and their normal procedure is to make three passes to dump so much in whatever hoppers are for the first load and the second load and come up with this total tonnage.

All we are shooting for here in these manuals, and really the thing that is required is the final total tonnage loaded to give an acceptable still water stress at sea.
Q. But this does not insure, this loading manual, that all
through the load the procedure does not exceed a safe stress
figure, is that correct?
A. No, it doesn't, because it doesn't cover the ballasting
along with the other things, deballasting.
Q. Right.

Do you recall if the mate's loading book tells the
sequence of loading, let's say 300-ton pockets into his ves el.
Would his loading plan, as you recall it, show where
each one would go, what hatch it would go into or what the
loading sequence would be?
A. Yes.
Q. Far more detailed than what you have here?
A. That's correct.
Q. And really it shows to insure there is no overloading
or overstressing in any particular stage of loading, isn't
that correct?
A. Well, I'm saying this is what he would come up with,
he would take this, this is not made out for a chute dock
in the detailed loading sheet, but he would take the data and
on a dual-belt loader determine, according to his usual
practice, at a chutes dock.

This ship has loaded at chutes docks since she came out,
has previously loaded at chutes docks.
Q. Mr. Stearn, I don't know anything about loading cargo.
Can I go to that manual right now, knowing about ships, assuming I know something about ships, knowing nothing about loading or -- can I go to that manual and load the vessel without overstressing, no matter what I do?

A  Not unless you're an experienced mate, no.

Q  On this sequence of unloading, do you feel that this sequence of unloading is equally as important as the sequence of loading as far as stressing the vessel is concerned, in your opinion?

A  Oh, I would say so, yes, the proper sequence of unloading.

Q  Do you think that the loading manual to be fully complete must in some way be responsive to the practical thing of having to ballast and deballast themselves while they were in the process of loading?

A  If it were to be used by inexperienced personnel, I would say yes.

If it's used by experienced personnel and the ship is handled by experienced personnel, I think that normal ballasting procedures that they do use will keep the ship in a stress condition that is not anywhere near a dangerous condition.

Q  You have talked to a lot of mates, have you, in the course of your business as a naval architect and having to go to the ship and solve practical problems?
Yes.

Q  What do you feel the average mate -- and I am talking now, we will take the chief mate, what, in your experience with them, how much do you think the average mate knows about stressing of a vessel?

A  Well, they use the simple things instead of making it too complex.

They use the board over the side to keep a straight keel.

Q  How valid can the straight keel be using that as an indicator so that you know that the vessel is actually being stressed?

A  It's quite pertinent.

Q  I beg your pardon?

A  It's quite pertinent. That is the reason on all of the calculations we run out a deflection of the keel.

Q  In the extreme -- and you sat here while Mr. Cleary testified, and he indicated that the vessel could be loaded in the quarter points where you would have not either one curve sag or hog and still be highly stressed. Do you agree with that?

A  It's mathematically possible, but not practically so because in the first place nobody who sails on the Great Lakes vessels could load that specific concentrated point the way he was describing it. It's so far from the usual practice I don't think it's even worth considering.
Q I am not asking if it's unusual; I am asking if it's possible.
A I say mathematically it's possible.
Q Have you ever run any analysis on loadings that on an even keel that could produce unusual stresses within the hull girder?
A Well, I will put it this way: Whenever we have run a condition that has given a high stress, we have a lot of deflection so this is kind of inverting your question, but it brings up the same end result.
Q You indicated that you have checked periodically with the operating people who have prepared other manuals for other vessels, I assume from the other previous testimony, is that correct?
A Yes.
Q And you indicated that you go back to the ship and check their loadings in comparison to the manual you have prepared and they were supposedly using, is that correct?
A We get reports back from the mates.
Q I see, get reports?
A As to their actual loadings.
Q Do you know when the last time you may have received such a report from the mate on the, from the Fitzgerald was?
A No, I don't know if we have any from the Fitzgerald.
I was referring to new ships that we are working on,
ships built within the last three or four years.

Q As far as the practical -- let me say in practice, working with this loading manual on the Fitzgerald, have you got any feedback on that?
A I don't know if we have.
Q You don't know if they used it or not actually?
A I can only assume it's been used, and I'm not really in a position to know; the personnel who would have worked on this manual and who would have been closely in contact, Mr. MacLean and the other two fellows in my office, would have to be asked that question because I do not personally get involved in these manuals.
Q We had testimony here, I think I can summarize it, that said that when this loading manual was presented to one ship -- I don't know whether it was by your firm or by someone else's, and I think the master's comment on the ballasting procedure that was recommended was that it sure looks screwy and they used it anyway, and it seemed to work out in practice.
A There is a ballasting procedure.
Q Yes. He said it sure looked screwy, he was talking about the practical matter, he would not load that way was the inference, but it worked out very successfully and was quite satisfied with it.

I was wondering if you had such a feedback from the
Fitzgerald.

A. I really can't say. We have had comments of this type on some loading manuals.

We recommend a sag in the vessel and they try to load without a sag -- I am talking about a very small amount of sag as opposed to a hog.

Q. As a practicing naval architect, are you really interested if your results by going through somebody else's book, loading manual, are you really interested if the results work or not, or how does it work out?

A. We are very much interested because we don't want to do work that is not used.

Q. How do you find out it is working out or not?

A. That is the reason we are asking for feedback from the mates.

We have had a fair amount of it. We have turned out a number of manuals. That is the reason I am not sure that we have anything back on the Fitzgerald.

Q. Would you check your files and see if you have any feedback on the Fitzgerald?

A. We will do that.

Q. I am very impressed with the followup on the repairs on the keelson. Is this something you do for Oglebay-Norton?

A. No, this is requested by Columbia Transportation.

Q. After you make such a recommendation, don't you follow
up, or aren't you in a position to do that, to check how
the results are in comparison to your studies, let's say?
A. Well, we certainly like to follow up.
Q. Is it possible in a practical sense?
A. On most things we get feedback from what we have done,
yes.
Q. Do you have that type of relationship with Oglebay-
Norton and the other companies here on the Lakes?
A. Oh, yes.
Q. But if you would please check your files, I am very
interested in seeing what feedback you have on the
Fitzgerald's loading, anything they may have said or sent
in or loadings that you have actually monitored and cranked
through your system.

CAPTAIN ZABINSKI: That's all I have.

EXAMINATION

By Rear Admiral Barrow:
Q. Mr. Stearn, I have noted on Exhibit 53 for identifi-
cation, here on the top of each page there are dates listed.
A. Yes, sir.
Q. And flipping through the pages I note that some of those
are 11-12-1970 --
A. Yes.
Q. -- in which fuel oil, fuel bunkers are mentioned.
Some are 8/13/1971 in which fuel oil is mentioned?
Q. And I think the testimony has been that the modification from coal to oil was in 1972.

What is the significance of the specific dates on this exhibit?

A. Well, I partially explained that before, that we started work on this loading manual on the Fitzgerald back in 1970, and then it was first issued in 1972, and then again in '73.

In the interim, the data sheets were upgraded apparently without benefit of alteration marks on there.

Q. Without modification to the dates listed on them?

A. I don't know why, but they would have been retained. I suppose if we look at the original we would find some erasures.

Q. You have three dates: Some in '70 and some in '71 and some in '73?

A. Yes.

Q. But on each of those there is mentioned the fuel oil.

A. Yes, right. So they must have been modified because it was later than that we started on the fuel oil modification.

Q. Have you done any other work from the standpoint of a naval architect for the Fitzgerald?

A. Insofar as I know the loading manual, the boiler automation and the fuel oil conversion and the bottom keelson repair, I think those are all.
Q. I have an ABS report, which is our Exhibit 3H, in which there is mentioned that all 83 hatch corner combings radius were increased by two inches by flame-cutting the combing extension in the way of hatch siding girder and grinding them smooth.

It doesn't indicate this was in accordance with a plan. Do you have any knowledge of that?

A. I don't recall having anything to do with that.

REAR ADMIRAL BARROW: Counsel?

MR. MURPHY: Thank you.

EXAMINATION

By Mr. Murphy:

Q. Mr. Stearn, are you called upon frequently by Oglebay-Norton to do work in connection with their vessels?

A. Oh, yes, quite frequently.

Q. How many years have you been associated with them?

A. I know at least since 1958.

Q. Do you find them to be a company that is concerned about the maintenance and the repair of their vessels, or do you know?

A. Very much so.

Q. What other companies do you do similar work for?

A. Well, we do work for some other ship operators here: Huron Portland Cement, American Steamship Company, we do work for U. S. Steel Company.
Q Did you have anything to do with the work in connection with the lengthening of the Anderson?
A Yes, we laid out the contract drawings on that job.
Q Did you have anything to do with the preparation of the loading plans for the Anderson?
A Yes, we prepared --
Q You prepared that?
A We prepared the one that was used for the lengthening of the ship.
Q Is that the one in use at the present time?
A That's correct.
Q Have you prepared other loading manuals for other vessels?
A Oh, yes. We have prepared quite a few in the last six or eight years.
Q Would you be good enough to enumerate those that you prepared, not all, just name a few.
A All of Columbia, some Pickands Mather ships -- I can't give you the specific ship names of that company.
Q Any U. S. Steel ships in addition to the Anderson?
A Yes, U. S. Steel ships.

MR. MURPHY: I have no further questions,
Mr. Chairman.
REAR ADMiral BARROW: Any further questions from the Board?
CAPTAIN WILSON: I had one.

REAR ADmiral barrow: Captain Wilson.

Examination

By Captain Wilson:

Q. I am just a little bit curious.

I notice that you had quite a number of computer printouts there and you have attempted to use a computer-generated program to develop the loading manual. It would seem like you could get up with a better load-carrying capacity than just altering the mates' experience.

I think the owners would be very anxious to carry as much cargo as possible.

A. Well, we always lay out the manual for the maximum carrying, to the certain draft, whatever the draft is, winter, summer, or intermediate draft.

Where you run into a shortage of tonnage, if you have a ballast, in order to trim, you don't usually run into that in this sort of ship, but, no, we don't lose any tonnage by using their figures. We just save time in the initial instant in getting a loading arrangement that we know has been used in the past, if it's an existing ship. I am not talking about new ships, now because we have no past experience, but on these existing ships, we save time and we also then are in the same ball park with what they are used to. It's more reliable to be accepted.
CAPTAIN WILSON: That's all.
REAR ADмирAL BARROW: Captain Zabinski?
CAPTAIN ZABINSKI: Yes.

EXAMINATION

By Captain Zabinski:

Q In response to counsel's question about the numerous manuals that you have prepared for other ships and companies, were all the loading plans that you prepared similar and have the same limitation that you described for the loading manual for the Fitzgerald?
A What limitation is that?
Q Well, this is where you only indicate total loads within hatches rather than a loading sequence for the complete cargo.
A No. We will show loading sequence on almost every manual. It's just that this one we do not have a sheet here for a chute dock, and, therefore, the sequence for the chute dock is not shown.
Q If I understand now, other loading manuals that you prepare have information in addition to what is in this manual; is that your testimony?
A Oh, yes.

If we prepare -- there are three different types of docks we usually prepare for, sometimes a fourth type of dock. We have a multiple-belt dock, we have it for a two-belt dock, sometimes a single-belt loader, and sometimes for
chute docks.

Q   Perhaps I misunderstood.

As I understood you to tell me before, this manual
indicates a total amount of cargo to be placed in each hatch
in order to come up with the light load sequence, is that
correct?

A   No, excuse me.

I said that you can arrive at the total amount to put
into each hatch from this manual, whether it's for a chute
dock or any other dock.

Q   I see.

A   This does not show a breakdown by one pass, two passes,
whatever.

Q   But wouldn't the means by which those individual passes
were put into the vessel, wouldn't that be an important
factor for proper loading?

A   Yes.

Q   Not to overemphasize her?

A   That's correct.

Q   That does not show in the manual?

A   It does not show in here.

Q   Is it shown in other manuals you prepare for other
vessels?

A   In some manuals, yes.

Q   How practical in your opinion are those loading manuals?
We require them. I wonder how practical they really are.

A. Well, I think where a ship has been loaded through the years from experience that the manual is practical, but I am not sure it's used very much.

Where it's a new ship, especially those of unusual proportions, and I think to start off with, it is very important.

Q. Do you think it is an educational process, Mr. Stearn --

A. Why, very definitely.

Q. -- on the part of the operational personnel?

A. Yes.

Q. Do you think there should be efforts in this direction for them to use the manual, to rely on it more?

A. Well, I think by gradual experience and so forth that they will be used more and more.

You can accelerate the process I suppose by a little education.

Q. It seems you can really raise havoc by just taking the mate's loading book and hiding it for a couple of days.

A. He probably has been to the same place so many times he has it memorized.

Q. Mr. Stearn, we have here a very tragic accident. We have lost 29 people.

The circumstances, as the Board has developed them from the testimony, is that the vessel was underway, at sea, in
seas 20 to 30 feet high, the winds anywhere from 50, 60, 70
knots, the Master, sometime before the vessel was lost,
 notified another vessel that he was, that they had lost a
couple of vent covers, was taking on water, was pumping the
water out, and that the vessel was developing a list.

We have recovered the lifeboats, in some condition.
We have recovered the liferafts and many jackets, life-
jackets, but we haven't recovered any survivors or any
victims.

Given those circumstances, I wonder if you could
venture an opinion for the Board as to what may have
happened?
A. Well, I have heard the question asked many times in
the last several days.

Q. Yes, sir, I know. I am sure you have.

I feel it's a very important question, Mr. Stearn.

A. Well, number one, I am sure it was a sudden happening.
The evidence all points to something that happened very fast.
I can't believe that an open vent would create, even two or
more vents, I don't think would create an influx of water
situation that would be any hazard whatsoever.

If there was a list, it must have been -- if it was
any substantial amount of list, it must have been from a
fracture in the hull caused by grounding or other means.

I can hardly believe that a fracture of the hull, a
sudden breaking, would cause a sinking, it would be so fast
that you would not get any radio message or at least attempt
to get a couple of people aboard lifesaving equipment.

I just can't think that would happen unless there was
a simultaneous capsizing.

Q. Well, you are aware of the vessel's subdivision. You
have worked with the vessel, and given the vessel's sub-
division, let's assume she did break in two; how long do
you think the ends would remain afloat, given the sub-
division in a loaded condition?

A. I would think it should be at least a matter of five
to ten minutes because her ballasts are intact unless, as
I say, there is a fracture well down the side.

On the other hand, if there is a capsizing caused by,
let's say, a combination of free water, initial list, and
possibly a cargo shift caused by the listing, and maybe in
association with a large wave, a capsizing would blow the
covers, the hatch covers, and create a very sudden sinking
situation and put everybody in a position where they
couldn't get out of the cabins.

Q. Mr. Cleary ventured an opinion, a strong opinion about
subdivision would certainly improve the chances of survival
of the crew on the vessel to remain afloat.

What is your opinion on that?

A. A subdivision, if it's carried out practically, would
certainly increase the chance of survival.

The problem in the past has been, and I have been involved in discussions with Mr. Cleary before, that methods that are now used possibly are not satisfactory since damage to the ship will cause a listing situation unless you have some damage control program on the ship for equalizing the list.

On a boat carrier, probably this more of a possibility, of a practical subdivision, than there is on a self-unloader where you have a tunnel, although we are working on systems now on ships that we are building which have multiple gates, and we are working on seals for these gates, so you operate the cargo from the tunnel and each cargo hold is isolated from the next cargo hold.

But you would have to build a pretty strong bulkhead to withstand not only the influx of water, but if the ship broke, if there was a fracture of the ship and you got a severe trim, you'd have all of the cargo piled up on the bulkhead and they would have to be designed for that, so that would have to be a consideration.

In my previous discussions on this, I voiced an opinion, this was at the time when it was being considered, I said the money that would otherwise be spent on subdivision at the present state of the art would much better be spent on good lifesaving gear. It's a quite expensive operation.
Q. Mr. Stearn, if the demise of the Fitzgerald was so rapid, which witness after witness has reached this was the only conclusion, why was no one able to be saved, even if they made it into the water with a lifejacket and perished because of exposure, we would have found them, no one -- this thing happens that fast --

A. That's right.

Q. -- how can we get the people in the lifesaving equipment if we can't use the present lifesaving boats, and they were not used?

How long have you been here, Mr. Stearn, for the last couple of days?

A. I have been here since Wednesday.

Q. They have testified it's impossible to launch the lifeboats; they have testified the men have suggested that they have the inflatable liferafts, and they have those when the ship goes down, and perhaps it would float off free, and we had a Master yesterday who was probably the most practical one, who said the chances of survival in the water would be nil.

A. The only practical thing I see -- and, of course, the ship suddenly went down, who is going to get out anyway?

Q. Yes, that's correct.

A. But the only practical thing I would see would be survival suits of some type.
Q. But this goes to the state of the art. It takes time
to don these. How can we give the crews --

A. They would have to be donned as this happened so
suddenly, nobody would have a chance to survive.

Q. My question now is, can we protect the crews in the
time necessary so that they can prepare themselves for
some sort of event like this?

A. Well, we have to take a look at the unusual occurrence.

There is usually some time, but in this instance you
couldn't launch the boats. What are you going to do?

A guy can survive, but not on the water like that.

Q. We have testimony of it splitting in half. You have
read those accounts, I am sure, with great interest from a
naval architect's point.

We can save the crews, not in all cases, unfortunately,
but the crew is able to survive.

Why can we do this on the open ocean and we can't do
it here? Why is the track record on the Lakes so poor --
three casualties that I am familiar with, the Bradley, the
Morrell, and this one?

A. Well, usually it's an old tanker that breaks and not
one with compartmentation.

Q. You are familiar with this, and that is why I am very
desirous of your opinion, Mr. Stearn.

Obviously you are well respected in the community.
If there are any thoughts you may have on it, it would be valuable I believe to me, and I am sure to other members of the Board.

MR. MURPHY: May I ask a couple of questions along that line if you have completed, sir?

EXAMINATION

By Mr. Murphy:

Q. I think the testimony here earlier, Mr. Stearn, was that the Bradley and the Morrell sinkings were both light vessels and also we were considerably -- in ballast --

A. Yes, sir.

Q. They were both considerably older vessels than the Fitzgerald.

Now, that makes the Fitzgerald sinking rather unique with respect to the three that have been mentioned.

With your rather intimate knowledge of the condition of the Fitzgerald that you have described here today, and your equally intimate knowledge of the Anderson, having been involved in her lengthening, and your knowledge of her condition, knowledge and the fact that both of these vessels were operating in essentially the same waters, essentially the same storm conditions, under the same speed conditions, would it in your opinion be more likely that the Fitzgerald would break up from a sea condition than it would be from either spilling or having some contact, either direct contact
or close contact, with an external object?

A. No, I don't think it's likely at all that she would break up just because of a sea condition, from what we know of the ship's strength.

Q. In carrying that through --

A. Unless there is something to start it.

Q. That is what I meant to say, carrying it through, but something like that started and she was afloat for three, three and a half hours, during which she was in one of the heaviest, perhaps the heaviest, we have heard it described as one of the heaviest seas that the men who have testified so far have seen, and having started to break, fracturing the integrity of the vessel, a situation like that and the other things having developed to the extent that she was, she had free water in her, and the fact that she had, might have had all of the airtight doors or watertight doors closed to keep all of that mass of water out and she suddenly lost her stability and turned over with a large wave, could this explain why, in these circumstances, we have a very unusual situation that the Captain described. Would that be a reasonable explanation, or do you think that is pure speculation?

Of course, it's all speculation, I understand that.

CAPTAIN ZABINSKI: I agree with that comment.

A. No, you put one bad situation on top of another, you
have just a catastrophic situation develop.

Yes, it could happen if all these other things happened.

Q. Well, again, purely trying to find some idea from
people who have intimate knowledge of the ships involved,
I think that one of the key factors in the situation is
the fact that there was another ship, particularly another
ship with which you are fully familiar in the area, doing
exactly the same thing presumably, it presents a challenge
which I think is rather unique and it opens itself up to
certain conclusions.

I just want to ask that, as long as the Captain was
asking questions, to see if you had any views along that line.

A. Well, the answer is yes, this could happen the way you
described it.

MR. MURPHY:    Thank you.

REAR ADMIRAL BARROW: Commander Loosmore, do
you have any other questions?

COMMANDER LOOSMORE: No, sir.

THE WITNESS: I would like to put in
more of a pitch along the lines that what Cleary talked
about, and that is we certainly don't know everything
about the waves up there. We don't know everything about
the ships' stresses.

We need as much possible instrumentation on these
ships, to have the ships in the right place at the right
time to collect some of this wave stress data.

Now maybe the William Clay Ford collected some as she went out on this rescue mission. She had good seas.

There seems to be a dearth of information Columbia has on their own gone ahead on this instrumentation. One of their ships operated a whole year and didn't run into a good sea situation and data is not worth a lot.

REAR ADMIRAL BARROW: Have you worked with any of these committees which Mr. Cleary has mentioned?

THE WITNESS: well, I am on the Great Lakes ABS Technical Committee on which we have discussed the load lines and so forth considerably, and one of the men on the committee, a committee that Mr. Cleary is on, Joe Fisher, is out of my office.

REAR ADMIRAL BARROW: You have mentioned I think before the type of steel that went into the construction of the vessels after 1948 as being, I think, Grade A steel, and I think it was not as sensitive a steel?

THE WITNESS: Yes, it has higher notches.

REAR ADMIRAL BARROW: What particular impact does low temperature have on the steel that you are talking about?

THE WITNESS: well, this is the thing, I believe it had a 15 Charpy minus 20 degrees or
something like this. I am not right up on the actual characteristics.

REAR ADMIRAL BARROW: Can you tell me basically what this means?

THE WITNESS: Well, it means it has got a fairly good notch resistance at 20 degrees or 30 degrees below zero.

REAR ADMIRAL BARROW: How does this compare with the pre-1948 steel?

THE WITNESS: Well, I don't know the figures on it, but it had a lot less, or a lot greater notch sensitivity in these low temperatures.

CAPTAIN ZABINSKI: I wonder, Mr. Stearn, you had mentioned the instrumentation of the ships and so forth. How familiar are you with that program on the Great Lakes?

THE WITNESS: Well, I read some of the reports, have gone over a lot of the figures, discussed a lot of the results, and been in meetings with Ed Lewis, the Webb Institute Lab, trying to analyze a lot of this stuff.

CAPTAIN ZABINSKI: You feel it's a very necessary process?

THE WITNESS: It is tedious.

They have a lot of data collected, but they have
to analyze it, but the data they have collected, I don't know how much they have in real good sea conditions.

REAR ADMIRAL BARROW: Recognizing the purposes of the Board, Mr. Stearn, I know it's quite late, is there anything which you have not brought to our attention which might help us in our purposes?

THE WITNESS: Not that I can think of.

REAR ADMIRAL BARROW: Thank you very much for your testimony.

You are cautioned not to discuss your testimony with anyone other than counsel until the conclusion of the investigation.

MR. MURPHY: I think Mr. Stearn would like permission to return to Wisconsin if that is agreeable with the Board?

REAR ADMIRAL BARROW: Yes, sir.

Before we conclude this evening's activities, I think we had better take care of the administration of the particular exhibits that are in for identification.

Now, I believe they constitute from 51 to 55A through H?

COMMANDER LOOMIS: Yes, sir.

REAR ADMIRAL BARROW: Without objection those exhibits for identification are admitted into evidence.

MR. MURPHY: Counsel was just raising
the question as to the manner in which you would like
Mr. Stearn to contact you with respect to any further
information that he might have.

REAR ADMIRAL BARROW: I think we have indicated
the additional items, and he can write to the Board
unless you have some objection.

MR. MURPHY: No.

REAR ADMIRAL BARROW: They can send it right in
to the Chairman of the Marine Board of Investigation
in care of the Commander 9th Coast Guard District,
which would be fine.

COMMANDER LOOSMORE: Would it be possible to
include an updated version of the loading manual?

It was indicated there was a later version, just
for completeness purposes, to include that?

THE WITNESS: I will check that when we
go back.

MR. MURPHY: Certainly we will check
it out.

REAR ADMIRAL BARROW: Fine. Thank you very much.
(Witness excused.)

REAR ADMIRAL BARROW: We will adjourn at 8:54.

We will convene at the Cleveland Harbor, Old Coast
Guard Station, Whiskey Island, tomorrow at 1300.

(Whereupon, the hearing was adjourned to
reconvene on Monday, November 24, 1975.)
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DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

In the Matter of:

Marine Board of Investigation
Sinking of the SS Edmund Fitzgerald
on Lake Superior 10 November 1975

31st Floor
Federal Office Buildings
1240 East Ninth Street
Cleveland, Ohio

Monday, November 24, 1975

The above-entitled matter came on for further hearing, pursuant to adjournment at 10:00 a. m.

BEFORE:

Marine Board of Investigation:

Rear Admiral Winford W. Barrow, Chairman
Capt. Adam S. Zabinski, Member
Capt. James A. Wilson, Member
Cdr. C. S. Loosmore, Recorder
APPEARANCES:

On behalf of The Oglebay-Norton Co.:

Jaeger & Murphy, by
John T. Jaeger
Thomas O. Murphy
Richard C. Binzley
2700 Terminal Tower
Cleveland, Ohio 44113

and

Arter & Hadden, by
Robert G. McCreary, Jr.
1144 Union Commerce Building
Cleveland, Ohio 44115

and

Bradley, Eaton, Jackman & McGovern, by
Warren A. Jackman
135 South LaSalle Street
Chicago, Illinois 60603

On behalf of the Toledo Trust Company:

John J. Schuchmann
700 Security Building
Toledo, Ohio 43604

On behalf of Cargo Aboard the SS Edmund Fitzgerald:

Bigham, Englar, Jones & Houston, by
Donald M. Waesche
99 John Street
New York, New York 10038

On behalf of Seafarers' International Union,
James Pratt and John Poviach:

Ned L. Mann
Victor G. Hanson
Rodney Coleman
APPEARANCES (Continued):

On behalf of Marine Engineers Beneficial Association:

Gerald Lackey
Merritt Green II

On behalf of United Steelworkers of America, Local 5000:

Samuel Gaines
James J. Courtney
PROCEEDINGS

10:08 a. m.

REAR ADMIRAL BARROW: Good morning, ladies and gentlemen. Let the record show we reconvened at 10:08 a. m.

Let the record also show that the Board reconvened at Old Cleveland Harbor Station, Whiskey Island, on Sunday the 23rd of November, 1975, at 1300 to examine debris recovered from the Edmund Fitzgerald.

Counsel representing Oglebay-Norton were present at the time.

There will be appended to this record an inventory listing those items with observed conditions and photographs at a later date.

The Board has taken into its possession with intentions to send to laboratories for further examination two carbide water lights which were attached to 30 inch ring buoys; the results of that investigation will be appended to the record.

Cdr. Loosmore, call your next witness.

CDR. LOOSMORE: The Board calls James W. Villar.
JAMES W. VILLAR

was called as a witness and, being first duly sworn, was
examined and testified as follows:

EXAMINATION

By Cdr. Loosmore:

Q  Mr. Villar, would you state your name, address,
and occupation?
A  James W. Villar, 503 Maple Street, Ishpeming, Michi-
   gan, Manager of Research and Development for the Cleveland
   Cliffs Iron Company.

Q  Mr. Villar, are you holder of a Coast Guard license
   or document?
A  No, I am not.

Q  How long have you been at your present occupation,
sir?
A  Since 1956 and then I returned to school in 1958 and
   received a Ph.D. in geology and returned to employment
   with Cleveland Cliffs in 1961.

Q  How long have you been manager -- did you say Manager
   of Research and Development?
A  Manager of Research and Development since 1968.

Q  Mr. Villar, this Board is concerned with the loss of
   the Steamer Edmund Fitzgerald which was reportedly carrying
   a cargo of taconite.

   Your purpose here, of course, is to discuss and to
explain to the Board what you can about that particular
cargo.

First of all, do your duties as Manager of Research
and Development include anything that has to do with
that particular commodity, and if so, what?

A. Well, within my sphere of activities, basically I am
responsible, or our group is, for developing the processes
for concentrating and pelletizing the iron ore for the
Cleveland Cliffs Iron Company.

That would be directly applicable to this particular
thing. There are others.

Q. Could you summarize briefly the process that is
involved in manufacturing this cargo?

A. Well, very briefly, the procedure is to re-mine the
crude iron ore by open pit methods. The material is
drilled, blasted and then crushed and then it is ground
to a fairly fine size consist, depending on the particular
iron ore property.

Then the iron is oxidized and then liberated from
the silica material and waste material. The iron ore
concentrate is then essentially a fine powder, and then
it is dewatered to about 10 per cent moisture, rolled
into balls or formed into balls, spherical objects.

It is then placed upon a heat machine and there are
various processes where the water is driven off. The
material is then permitted to form some strength on a grate. This can all be done on a grate with a heat treatment process taking place, and it is then either discharged into a kiln, which is one method, integrated into temperatures in the neighborhood -- oh, it will range about 22 to 24 hundred degrees Fahrenheit.

It is cooled and then placed either on a stockpile or in railroad cars for transportation to a facility or a stockpile near a port.

Q  You said it was rolled into balls or spheres.
A  About what size are they?

A  The final product normally runs about 90 per cent plus 3/8 inch, minus 5/8 inch.

I am speaking now of a normal operation. You could have up to four per cent, minus 3/8 inch, four to five per cent or more.

Depending, again, because this is a variable that will change with the particular product.

Q  Okay. What does one of these little balls weigh?
A  The weight of an individual ball I am not certain of. The bulk density of the material is generally in the range of 130 pounds per cubic foot. That's dry, incidentally.

Q  You said this commodity was stockpiled. Do you have information on the angle of repose of this stuff?
A  The material as we stocked it outside normally contains
around one per cent moisture. This is in the pores.

Thé angle of repose is 26 degrees generally.

Q. And about how much would that vary?

A. Actually it is relatively constant with the material we have, the pellets we are dealing with.

There is not too much variation within the pellets between different properties. In our pellets in a normal pile, it would be within two or three degrees.

Q. Would moisture in the pellets tend to contain that?

A. Really, we have no basic data on what it would look like, say, if it was in a flooded condition, because we had no reason to measure that.

There has been some minor work done in containers. Again, the angle was close. This was crude measurements of about 26 degrees.

The porosity within the pellets itself, at least the material I am familiar with, is about 25 per cent.

Q. What temperature is this commodity transported?

You said it was cool.

A. It would depend on the mode of transportation or how it is removed.

Generally each one has the pelletizing machine, which has a cooling system. The pellets normally are reduced in temperature to 200 degrees or less prior to stocking.
They are generally cool enough so one can grab a 
sample. Actually, if the pellets were discharged at high 
temperatures, in most systems it would burn up the 
conveyor belts, so therefore, they are necessary to cool.
Q. Do these pellets give off anything; do they discharge 
gases or anything after they come out of the machine?
A. The chemistry of the final pellet, the material is 
essentially under normal atmospheric conditions. It 
will run 64 to 66 per cent iron oxide, five to seven per 
cent silica with the remaining constituents being in 
minor amounts of calcium oxide, magnesium oxide, and 
aluminum oxide.

This is in the oxide pelletizing.

There is no intent to make a reduced product. I would 
say essentially, no. The only additive to this material 
is a clay that is added to enhance the balling characteris-
tics of the material.

This is added up to quantities of one per cent. 
It is a bentonite material, essentially a calcium-
magnesium-sodium oxide with silica.

Q. Are these little pellets magnetic? Are they attracted 
to a magnet?
A. The starting material for most of your mine iron ore 
is a magnetic material.

In Michigan we have one that is a magnetite. During
the pelletizing process, it is oxidized to hematite, and
under normal conditions the ferrous iron, which would
be an indication of how much magnetite, would be very,
very low.

For all practical purposes, the material should be
nonmagnetic.

Q. Sir, you mentioned or used a phrase "oxidized pelletizing
process."

Is this the only process which is in use?
A. This is the only process that makes the bulk of
the pellets. There is work under way; I believe there is
one operation in Canada. They just started, where they
make the so-called pre-reduced pellet.

Here the material, some of the oxygen is driven off,
and I am not familiar with that operation, but these pellets,
the intent is to contain or to reduce it to contain metallic
iron.

Q. Then to your knowledge are the other pelletizing pro-
cesses used by other companies within essentially the
Great Lakes area the same as you have described?
A. Yes.

Q. Is there any significant variation in any of these
properties from time to time or place to place?
A. The variations might be, but they are not really
significant. I wouldn't consider them significant.
The size of the material, here we are talking three or four per cent more or less fines.

By fines I keep thinking of the quarter-inch material. That's basically the compressive strength of the material.

As I know them, they run generally the same 500 to 800 pounds. The process incidentally for concentrating can differ.

However, this should not affect the final product.

Q. Are there any peculiarities in the handling of this material in bulk that might bear upon the transportation of it?

A. Not that I really know of. The material is essentially -- well, it is made up of spheres and will act like spheres under most transportation conditions.

It does not hang out; it flows fairly free through chutes.

Q. Do you know of any problems in the transportation of this material that wouldn't be readily apparent?

A. No, I don't. No specific problems. As far as the handling of the material, the material -- and of course, we are speaking of this in the relative sense, and it is easier to handle than, say, natural ore materials which are mined for pelletizing because it is easier to convey, easier to handle. It flows free.

Q. Could you compare the handling characteristics and
possible problems in transportation of this material to
washed gravel, for example?
A. Well, if the washed gravel, if it was a size
gravel, it should be very similar, again, at the same
size consist.

Of course, the pellets themselves are less angular.
Q. Less angular?
A. The pellets are less angular. They are more
spherical.

I have, incidentally -- I am not saying these are
typical, but those of you who have not seen it, I have
a little jar of pellets.

(Handing.)

CDR. LOOSMORE: Mr. Murphy, would you
like to see these?

MR. MURPHY: No, there is no need to.

I have seen quite a few of these in the past, sir.

CDR. LOOSMORE: That's what I have, sir.

REAR ADMIRAL BARROW: Capt. Wilson?

EXAMINATION

By Capt. Wilson:

Q. Sir, you said that upon completing the process, it
was cooled to 200 degrees Fahrenheit or less.
A. Yes, generally that is the intent to cool it.
Q. Before stockpiling.
Is it ever directly transmitted to, say, a ship?

A. As far as our particular properties are concerned, and of course I don't have the knowledge of other people, but ours either go into a stockpile or into a railroad car and from the railroad car to the point of ship.

Q. Have you ever noticed in the railroad cars any distortion of the cars?

A. You mean as a result of the heat from the pellets? I have not, no, and I have not heard of any. You can get hot zones in these pellets and the cooling operation can go off, but it is an unusual thing and normally it will cool off by the time it ever reaches a point of shipment.

Q. How rapidly do these cool in, say, a 50 degree temperature?

A. I couldn't give you the specifics. I don't think we have ever measured this.

How it would cool in a pile, if you had a big pile and piled it up, I would imagine it would be somewhat insulated and it would take longer, but I couldn't give you any specific duration.

Q. So in a 50 degree temperature, there would be no other way other than examination to see how cool it is?

A. It may be possible to calculate this, but I don't have this available.
CAPT. WILSON: That's all I have, Admiral.

REAR ADMIRAL BARROW: Capt. Zabinski.

EXAMINATION

By Capt. Zabinski:

Q Mr. Villar, you indicated that generally these should be nonmagnetic.

I was wondering, because we have sent out a plane and so forth with magnetic detection gear on it to try to locate the Fitzgerald.

From what your testimony is here, their detection would be based more upon the hull structure than on the nature of the contents of the cargo.

The cargo would not add anything to the magnetic detection; is that a fair statement?

A I am not really familiar with what instrument they use to detect it. When I stated that the materials were nonmagnetic, normally they would not adhere to a normal magnet.

But with the instruments, and even in minor amounts, for example, that we use in the exploration for iron ore deposits, we essentially detect magnetic anomalies with a matter or material that would not be attracted to a normal magnet.

There will be some ferrous iron.
Q. So even though this, in and of itself, is not magnetic, it could produce magnetic anomalies?
A. Yes, with the sensitivity of these instruments.
Again, I am not familiar with the one they are using. It is very possible that some of this might be detected.
The oil companies, for example, use these for exploration in great depths for very minor amounts of magnetizing.
Q. Do you have a specific gravity or anything for this material?
A. Material as we have it, say the ground up pellet, what I showed you here, has a specific gravity of about 4.85.
That, again, is for a pellet containing about 64 per cent iron and 6 per cent silicone, generally.
Q. Would you have a stowage factor?
You have indicated the weight in pounds per cubic foot. Would you have a stowage factor for us? How many feet would it take for a ton of this material?
A. I can't readily convert that, but I would have to do it. I am sure it can be readily done.
Q. 130 pounds per cubic foot?
A. Yes.
Q. You indicated, as I understand it, the compression strength of about five or six hundred pounds per square inch.
A. Yes.

Q. Is that correct?

A. That is right.

Q. In normal carriage. Are some of the pellets on the bottom of the pile crushed because of the weight above them?

A. Generally this should not happen.

In fact, the purposes for the induration process and one which dictates how we go about manufacturing these pellets is to withstand these types of pressures and that is the intent, to see that they do not crush.

The steel industry does not want fine material in this material. There will be some, but I would surmise at 500 pounds, if there was any degradation of any substance, we would have certainly heard about it.

Q. Do these pellets dissolve in water? What is the reaction in water?

A. Water is a natural pH. They would not dissolve.

I am trying to think right offhand of anything that might be in them, but I can't. These pellets themselves are completely saturated.

Incidentally, the water penetrates the pellet itself at a rather slow rate. I don't have the rates because we have never measured them, but I know it takes a long time. They will hold about 6.8 per cent moisture, which
is for the particular pellets we are working with.

Q: If we take a cargo hold, for instance, of a vessel and load it with these pellets and there was accidentally some flooding of water or rainwater or whatever was introduced into the cargo, your testimony is that the water would not be -- these would not be soluble to any appreciable amount by the water?

A: It should not dissolve the pellets themselves.

Of course, there would be a lot of water in the pellets, in the interspaces, but --

Q: Is there any interreaction that the introduction of water into the pellets might have?

A: Not in the oxide pellets, no.

Q: You indicated the angle of repose is approximately 26 degrees.

The angle of repose, that angle between the surface of a pile of this material and a horizontal line, is that correct?

A: That is correct, right.

Q: I haven't done any measuring or anything, but I have seen a couple of piles of this material in ports here, and my estimation would be that the angle of repose would be somewhat greater in fields that I have seen.

Would there be any reason that the angle of repose might be different, let's say on one big pile being loaded
or coming down from some conveyor belt or something from
the way you arrived at a standard angle of repose?

A. The angle of repose that I mentioned is 26 degrees
on our normal stockpilings at our ports and at the mine
sites.

If there are fine materials and if you would build
up a high pile, that angle could increase. We have
what we call a high level measurement that can increase
that angle by about 10 degrees.

Q. This would be a very, very high pile?

A. Yes, it certainly would be.

As I say, under our normal stacking, this would not be
the angle. Also, of course, if you had a lot of fine
material in a granular pile, it might hold a higher angle.

Q. Assuming this is a height of about 25 or 30 feet,
would the angle of repose be about what you normally
would expect?

A. I would estimate about 26 degrees.

Q. In a ship it would be about 26 degrees?

A. That would be my estimate; yes.

Q. Another situation, a hypothetical situation: We have
a container containing a free stowage of these pellets,
and we put in a considerable amount of water, enough water
to, let's say, cover all the pelletized cargo.

In your experience, would that have an effect on the
pellets themselves, talking about their stowage and their 
ability to maintain this angle of repose or any other 
observations you might have?

A. We, of course, have had no indication to measure this.

We did look at a container, it was just a tub, and we 
put pellets in it and loaded it with water.

Again, this was very preliminary in nature in that 
the angle of repose -- well, the fellows measured it and 
then flooded it with water, and it was approximately the 
same.

Now, again, this is very, very preliminary in nature, 
and it would take some model work to see really what would 
happen.

Q. How stable a commodity is it?

We put it in a vessel that is rolling quite heavily.

You have had some experience aboard ships, or have you 
ever been on ships?

A. I have been on ships, yes. I have not seen these 
pellets, however, in a vessel.

Q. Have you ever ridden on a ship with the pellets in 
them?

A. Not with the pellets in them.

Q. Would you have any opinion or any ideas about their 
relative stability in a vessel that is, say, loading 
30 degrees in a seaway?
A. I would imagine that. Although, you would think it would have to reach the angle of 26 degrees, but if the kicking action was relatively sudden, you might get some of the surface material dribbling at some lesser degree.

There must be that energy of the listing or whatever it might be doing, but I have not witnessed this.

Q. Well, if you do happen to have any studies made along this line, it would be very helpful to the Board if we had a copy of it.

We're talking about the pellets in a submerged condition or any references that you may have.

A. I doubt very much if we do, but I will certainly check it again.

EXAMINATION

By Rear Admiral Barrow:

Q. You indicated that you had done some sort of test of water with the pellets in it?

A. That was last week. I just asked the fellows to look at it.

Q. What size container was it that you were using?

A. It was a regular normal tub, standing maybe two feet high. That's with regard to this flooding.

As far as the porosity, this work we have done over the years. The physical characteristics of the pellet itself,
we do this on a continuing basis.

Q Has this process changed very much, say, over the
last 10 years?

A In the last 10 years, no. The process itself of
pelletizing first came about, I believe, in 1954. Our
first pellets were in 1956, and the process we are using
has been going on since about 1961.

There have been internal improvements in the mechanism,
but the basic heating and the final firing has basically
been the same.

Q You have indicated that you either stockpile this
in the vicinity of your pelletizing plant, or you ship it
in railroad cars to vessels or perhaps to a stockpile
and loading point.

How far is the pelletizing plant from the piers
from which this material will be loaded?

A Again I am speaking of Michigan in that we have two
points, one at Escanaba, which is approximately 60 miles,
and I am giving you round numbers, which is from our
pelletizing facility; and there is the point at Marquette,
which is 12 or 15 miles.

Q You load this material into cars with a weight of
material that is somewhere on the order of 75 tons.

Would this be about right?

A I think that is approximately right with the pellets.
I think we have 100-ton cars where they build up the sides.

Q. Generally speaking, in that range, if you were down to the 200 degrees at the pelletizing plant and shipping them in railroad cars, your judgment would be what, as far as the temperature at the loading point?

A. Under most normal conditions, I would say there would be ambient. In the center of the pile they would be warm.

You can see, for example, when they are being loaded into a car on a cool day, there would be steam coming off. By the time they get down to the stockpile, and again, I don't have occasion to visit the stockpiles at the ports very often, but I have not seen much of this type of thing. Generally, the pellets are quite cool. Now, I have heard of occasions where they might be warm on stockpiles. The material gets into the center of the stockpile, but nothing on high temperatures.

Q. Capt. Zabinski asked you a few minutes ago about a situation where the water in a cargo hold or container might cover the material, and the impact of this on the characteristics of the material itself.

I think you indicated that with a sharp roll of the vessel there might be a little dribbling over the side and it would cause the angle of repose to be a little different.
How about a wetting itself as opposed to a complete
covering of the material itself?

Suppose you had a wetting of this material of the
same thing. Would the same thing be true?

A. I know what you are asking, but I am afraid I can't
answer because we don't have occasion to observe this.

Q. Does wetting down change the surface characteristics
of the material to flow easier?

A. Where a pile has maintained the same angle after a
heavy rainfall would be the only indication. The penetration
into the pellet is very slow.

REAR ADMIRAL BARROW: Counselor?

EXAMINATION

By Mr. Murphy:

Q. Mr. Villar, as I understand it, the comments that were
being made about the angle of repose in stockpiles had
reference to a free standing pile on a dock?

A. That's correct.

Q. And that if a pile were to become considerably higher,
that angle could increase?

A. Yes.

Q. Now, when the cargo was loaded into the hold of a
vessel, it is not free standing in the sense that there are
no limitations or perimeters to the pile.

The sides of the vessel will form a cup more or less,
will they not?

A Yes.

Q So that in a sense — not only in a sense, but you are, in fact, filling or partially filling a cargo hold, and then the angle of repose is that angle which exists from the top of the pile to the side of the cargo hold, wherever it meets the cargo hold.

Does that have any bearing either on increasing or reducing the angle of repose?

A I wouldn't think so, but I imagine this thing would hold about the same angle.

Q The reference that you have made to the angle increasing if the pile became higher would not necessarily hold true where the side of the pile was being retained by the sides of the cargo hold, would it?

A My opinion would be no, that it would not. It would pretty well stay at this 26 to 28, in that neighborhood, at the angles that we measured.

Q You mentioned you were employed by the Cleveland Cliffs Iron Company; is that correct?

A That's correct.

Q And your company operates a fleet of vessels on the Great Lakes; is that correct?

A That's correct.

Q Are you familiar at all with the operation of those
vessels?

A. I know of it.

Q. Do you know, for instance, where they load pellets, the various ports where they load pellets?

A. To the best of my knowledge we load out of Escanaba, Michigan; out of Marquette and I believe we have vessels loading out of Silver Bay.

Q. Do you know whether or not you have vessels loading out of the Burlington-Northern ore dock, do you know whether or not you do?

A. I am not certain.

Q. To the best of your knowledge there are some of your vessels which load at that dock? I don't want you to guess, but what is your knowledge on that?

A. I am really not certain.

Q. I do have information to indicate that the Sterling and the Cleveland Cliffs Victory, both of which are Cleveland Cliffs boats, are they not?

A. Yes.

Q. I do have information that they loaded cargoes out of the Burlington-Northern ore dock during the 1975 season. So far as you know, do you have any information to indicate that would not be correct?

A. No, I don't.

MR. MURPHY: I have no further
questions, Mr. Chairman.

REAR ADMIRAL BARROW: All right. Thank you.

Are there any further questions by the Board?

CDR. LOOSMORE: No, sir.

EXAMINATION

By Capt. Zabinski:

Q Mr. Villar, has any study been made on a surface
friction characteristic of these pellets, their ability
or the frictional resistance?

A If there has been, I am not aware of it, but here
again is definitely something I can check and find out if
there have been any studies.

Q In other words, are the surface frictional characteris-
tics the same as when it is wet or dry? That's what I
would be interested in knowing.

A I know precisely what you want, but I can't answer at
this time.

There may have been work done, but I don't know about
it as yet.

Q You have been asked questions about Burlington-
Northern. To your knowledge, do you know whether or not
vessels load at Burlington-Northern?

A No, I don't know. Cleveland has no pelletizing plants
as such in Minnesota. Our vessels, of course, haul for
other people, but I wouldn't know.
But from your personal knowledge, you don't know?
No, I don't.

CAPT. ZABINSKI: That's all I have.
REAR ADMIRAL BARROW: If you have any materials
which indicate the characteristics when wetted, the
Board would appreciate it if you would send it to
the Chairman of the Marine Board of Investigation
for our perusal.

THE WITNESS: All right.
REAR ADMIRAL BARROW: Is there anything
else that we have not asked for but which you have
within your personal knowledge of the characteristics
of this material which you think would be of use in
our determination?

THE WITNESS: I am afraid I don't.
REAR ADMIRAL BARROW: Thank you very much.

We appreciate your testimony. We caution you not
to discuss your testimony with people other than
counsel until the conclusion of the investigation.

(Witness excused.)

(Recess had.)
REAR ADMIRAL BARROW: Thank you very much for your patience.

Let the record indicate we reconvened at 11:13. Counsel for the parties in interest are present as indicated this morning.

Cdr. Loosmore, call your next witness.

CDR. LOOSMORE: The Board calls Mr. Roy T. Anderson.

Mr. Anderson, would you stand, please?

ROY T. ANDERSON called as a witness, being first duly sworn, was examined and testified as follows:

CDR. LOOSMORE: Please be seated.

REAR ADMIRAL BARROW: Mr. Anderson, we are trying to get your testimony down as fully and completely as possible by the reporter here who is taking it down, so I would ask you to speak up distinctly, please.

THE WITNESS: Okay.

EXAMINATION

By Cdr. Loosmore:

Q Mr. Anderson, will you please state your name, address and occupation?

A Roy T. Anderson, 1803 Elm Avenue, Marquette, Michigan.
I am a second mate at the present time.

Q. Mr. Anderson, do you hold a Coast Guard license or document?

A. Yes, I do.

Q. Will you describe it, please?

A. It is a first-class pilot's license for any waters between Gary and Duluth and Buffalo and the tributary waters, and any gross tons.

CAPT. ZABINSKI: Do you have the license with you, Mr. Anderson?

THE WITNESS: Yes, I do.

(Handing.)

By Cdr. Loosmore:

Q. The number is 364103, issue 4-4 to Roy T. Anderson, First Class Pilot of Steam and/or Motor Vessels of any Gross Tons upon the Great Lakes, their Connecting and Tributary Waters between Duluth, Gary and Buffalo; also Radar Observer, issued at St. Ignace, Michigan on the 22nd of December, 1970.

CAPT. ZABINSKI: What is the date of issue?


It is to Roy T. Anderson, Social Security No. 367-18-6052.
REAR ADMIRAL BARROW: The license expires in December of this year?

THE WITNESS: That is correct.

REAR ADMIRAL BARROW: Let the record show that the license was returned to the witness.

CDR. LOOSMORE: The license also includes the notation Z or Book No. Z438459Dl. Your license is returned, sir.

By Cdr. Loosmore:

Q Mr. Anderson, you described your present occupation as mate.

Are you presently serving on board a vessel?

A I am a second mate on the Arthur M. Anderson.

Q How long have you had that job?

A I have been second mate on the Anderson since October 23 of this year.

Q Would you describe some of your experience prior to that, please?

A Well, this year, this is my third vessel this year. I was off and on mate and second mate on the Governor Miller for a good portion of the season, and this spring, for a month and a half possibly, I was on the Homer D. Williams as a temporary mate.

Q And before that, sir?

A Last year I was aboard the Eugene J. Buffington as mate.
I got my license in 1956.

Q. How long have you been sailing on the Great Lakes?
A. I started sailing in 1942 on the Great Lakes, but it has not been continuous on the Great Lakes.

I was in the Navy two different times, and I sailed saltwater, but I have been continuous now since 1952 on the lakes.

Q. What did you do in the Navy, Mr. Anderson?
A. I was Second Class Quartermaster in the Navy. Most of my duty was on amphibious ships. LST was the class. 1084 was the vessel.

Q. And you said you had saltwater experience as well?
A. I sailed in 1943 as an A.B. on the SS Adolf Sutro for the Moore McCormick Lines or Company.

Q. As I believe you know, this Marine Board of Investigation is concerned with the loss of the Fitzgerald and we have had previous testimony to indicate that the Anderson, your vessel, was in the immediate area of the Fitzgerald just prior to the time it was lost.

I want to discuss with you some of the things that you saw and observed on the day or the days immediately preceding the loss of the Fitzgerald.

Were you on board the Fitzgerald on the 9th and 10th of November of this year?

CAPT. ZABINSKI: You mean the Fitzgerald?
Q. I mean were you on board the Anderson?
A. On the 9th and 10th?
Q. Yes.
A. Yes.
Q. What were your duties then?
A. I was second mate.
Q. What did that involve?
A. Well, second mate under way, he sees that the vessel is on the course that the master set out or on a lake carrier course, for your destination, and you pass off of certain points at given distances and make your course alterations, and I am over the helsman to see that the course alterations are made at the proper time.

It is also my duty to keep a check of all vessels in the vicinity and whatever, and this is on the Great Lakes, of course, I am speaking of.

Q. Were you standing watches?
A. Yes, we were standing watches.
Q. What watch did you stand as second mate?
A. Second mate stands the 12:00 to 4:00 watch. That's 12:00 to 1600, 0000 to 0400.
Q. What zone time was maintained on board the Anderson?
A. Eastern Standard Time. It is still the time that we have right here.
Q. Then did you come on watch at 12:00 o'clock on the
10th of November?

A. Yes, sir.

Q. Was it precisely at 12:00, at noon?

A. No, sir; no, sir. We usually relieve 15 to 10 minutes prior to the watch.

Q. Is there a given day that you want to know about?

A. 9th and 10th of November.

Q. How long were you on watch?

A. Well, I was on watch until 1520.

Q. And then what happened?

A. Well, the first mate's watch, he has to have relief for chow, evening chow, so he relieves me at 1520, and then I come back at 1620 and relieve for a half hour for chow until 1650.

Q. And did you do that on the afternoon of the 10th?

A. Yes, sir.

Q. Mr. Anderson, you testified that your duties as watch-standing second mate include the navigation of the vessel. Do you recognize the chart that is on the poster there?

A. Yes, I do.

CDR. LOOMIS: For the record, the chart referred to is Exhibit 30.

Q. Could you tell me what that is?

A. That is the charted course of our course from Two
Harbors. Two Harbors is not on there, but it is from Two Harbors to our ultimate destination, Whitefish Point.

Q. Have you ever seen this chart before?
A. Yes.

Q. Where?
A. Aboard the Arthur M. Anderson.

Q. Was this the chart you were using?
A. Yes.

Q. Did you as navigating officer and watch-stander make any marks on this chart?
A. Yes.

Q. Did you make any on the afternoon we are discussing?
A. Yes, sir.

Q. Would you step up here and point to them one at a time and describe them?
A. Here is 155.

Q. Was that during that afternoon watch?
A. Yes.

Q. 0155?
A. Oh, that afternoon, on the 10th?
Q. Yes.
A. I came out here, this is 11:50.

Q. You are pointing to 11:50, which is circled on the chart?
A. Yes. I don't remember if I put this line in, but the third mate, I believe, designated that we were hauling to
149, I believe, and if I can have the log --

Q. I have here the log of the Anderson for that date.

I am looking specifically at Exhibit 33-B and 33-C.

I am referring instead to 33-D and 33-E, excuse me.

Were you also responsible for making entries in the log?

A. Yes, on my watch.

Q. And did you make any of the entries on those sheets in front of you?

A. All the entries from 1150 to 1520 are my entries.

Q. What's the first entry you made on that after assuming the 12 to 4 watch?

A. At 1152, a course change, which I have designated here, "C/course."

Q. And what was that course?

A. To 149.

Q. And where was the Anderson at that time?

A. The Anderson was as the third mate had stated, he said, "We were coming to 149," so that would be this course here (indicating).

Q. At this position which you have indicated, which is marked 1150 with a circle around it, there appears a dot.

Did you make that dot?

A. No, sir.

Q. Who determined that?

A. It may have been the --
Q. Do you know?
A. No, I don't know.
Q. All right, sir. What is the next mark you made on that, sir?
A. My mark off Otterhead, Otter Island Light, which is my mark.
Q. Indicating a dot with a circle around it to the south-west of Otterhead approximately --
A. A little over 10 miles.
Q. What does the log say?
A. 10.8.
Q. 10.8?
A. Yes.
Q. 10.8 what?
A. 10.8 miles.
Q. Is that a position of the vessel that you determined?
A. That is gotten by radar. That is by radar range and bearing, a beam bearing.
Q. So again would you repeat -- what time was that, please?
A. That was at 1252.
Q. And that was a radar beam bearing?
A. Yes, sir.
Q. What was the next --

REAR ADMIRAL BARROW: Excuse me. Was that from
Otterhead Light?

THE WITNESS: Otterhead Light, yes.

Negative. Well, yes, Otterhead Light; but on the
chart it is called Otter Island Light.

Q. All right, sir. What was the next position you
determined on that chart?

A. The next position I determined -- this is my line here
(indicating).

Q. Indicating a line running northeast to southwest
on this chart, Exhibit No. 30, ending in the northeast
corner at a circle marked 1400?

A. What does that indicate, sir?

A. That indicates an abrupt course change off the given
course of 149.

I say here and now when we plot our course in the log
at 149, it depends on what your wind is; and in this case
the wind was south-southeast 30, and we do not log what
we hold up for weather and with the wind at south-southeast
and a loaded vessel, I believe, I was steering 148 at
the given time.

Q. Do you keep a record at all of what the ordered course
was, what you were steering?

A. The record we have is what goes in the log here.
We always hold up, or what we call "holding up."

Q. What is the course of the entry that is in the log?
A. 149 degrees.

Q. What course were you telling the wheelsman to steer?

A. 148.

Q. How did you estimate the one degree difference?

How did you obtain the one degree difference?

A. This is an estimate.

You judge by the wind, and where the wind is, whether you are loaded, and under those conditions, if the boat had been light, I would have held up possibly four degrees to port; but with a loaded boat you don't hold up.

They do not set as much by wind drift.

Q. All right. You testified right at the beginning of your testimony that you insure that the vessel make good the courses that the master ordered. Is that essentially what you said?

A. Yes.

Q. Now you are testifying that the log entry is something other than what the course was steered?

Who made that determination; was that you or the captain?

A. The captain designated the course of 149 and at times, with his experience being senior to mine or whatever the word, the proper word is, he will say, "Hold up to the left" so much, and I don't remember in this instance whether it was my decision or his decision.
Q.  Was he on the bridge at the time?
A.  Yes, sir.
Q.  Okay. You said that at this time there was an abrupt
course change.
What course did you change to?
A.  We changed -- well, we had a course change here.
We had not spoken of the change at Otter Island Light at 154.
Q.  All right, sir. When did that occur?
A.  That occurred at Otterhead Light.
Q.  Does that show on this chart?
A.  No, sir; the line is not on here. I did not put
the line on here at the given time. It is not there.
Q.  What time did this course change occur?
A.  That course change was at 1252.
Q.  Where was the vessel at 1252?
A.  Right here off of Otter Island Light.
Q.  The position previously indicated was approximately
10 miles generally southwest of Otter Island Light.

REAR ADMIRAL BARROW:  Excuse me just a minute.
That was at the time that there was a beam bearing
of 10.8 miles from Otter Island Light, from that
position?

CDR. LOOSMORE:  Is that correct, Mr.
Anderson?

THE WITNESS:  Would you repeat that
REAR ADMIRAL BARROW: You have indicated that at 1252, I believe, there was a radar beam bearing of 10.8 miles from Otter Island Light.

THE WITNESS: That is correct.

REAR ADMIRAL BARROW: And at that point the course was changed, is that correct?

THE WITNESS: To 154; yes, sir.

By Cdr. Loosmore:

Q. What was the next course change after the 1252 course change?

A. The next course change --

REAR ADMIRAL BARROW: Cdr. Loosmore, may I ask one other question?

CDR. LOOSMORE: Yes, sir.

REAR ADMIRAL BARROW: You indicated you changed the course to 154 degrees at that time.

Did you also hold up for that or is that actually the course you were steering at that time?

THE WITNESS: I don't remember.

By Cdr. Loosmore:

Q. To go one step further with that, Mr. Anderson, where was the wind at that time?

A. The wind at that time was southwest 11.

So we was getting -- which is a very definite change of
wind.

Q  Now, with a southwest wind at 11 and a course of 154, although you have testified you don't recall, would you have ordinarily steered the course you were trying to make good?

A  In this case, since I really don't remember, I would say that I wouldn't have held up in this case.

Q  Would not have held up?

A  At a low velocity like that; no, sir.

Q  Then would you have steered the course you were trying to make good?

A  I would have steered 154.

Q  All right, sir. What was the next course change you made?

A  Well, the captain -- we had been keeping weather charts and it was very indicative that the wind was going around to the western and we -- the captain in that case, wanted to go to the southern or to the west. It is a southwesterly direction. So with the wind in the westerly direction at our course and on the increase, it was evident that the wind was increasing, that that was not the course to be on at that given time, so he wanted to come around there far enough so he was well clear of Michipicoten West End Island Light and to get the wind over his stern and we would ride much better.
Although at this given time we were riding good
because there was no wind velocity, but we did have the
weather forecast and looking ahead, we could suspect that
with the wind increasing, it was very apparent.

So this is why I believe that and why the captain
would make this move, this course change. The captain
made the course change and it was up to me to see that
the helmsman carried it out.

Q. Did you discuss this with the captain?
A. About this.

Q. Yes, the reasons for this course change.
A. No, I don't believe so, because I knew the reason
and I knew that he knew it; or I assumed he knew it.

Q. Did you discuss when you were going to make that
course change?
A. No, sir; no, sir.

Q. How did you know when to make the course change?
A. Well, there is really not a given time where it could be
made. I mean, it is indicated that the wind had shifted
and the captain made the decision by his observing the
sea conditions and the wind.

It just happened to be at this given time that he felt
he better make this course change.

Q. And what time was that?
A. That was at 1400.
Q. What does the log indicate?

A. 1350 in the log.

Q. Did you make that log entry?

A. Yes, sir.

Q. What time was the course change made?

A. The course change was made at 1350.

Q. What was the significance of your earlier statement then of 1400?

A. I do not remember. I see 1400 on the log, but this is my fix.

CDR. LOOSMORE: Indicating a point with a circle around it and the numerals 1400 following it on Exhibit 30.

Q. By "my fix," what do you mean?

A. Well, a fix, once again, this is from the west end of the light of Michipicoten.

Q. The fix means you determined the position of the vessel?

A. Yes.

Q. How did you do that?

A. With radar.

Q. Radar range?

A. Radar range.

Q. All right, sir. Now, what was the next thing the vessel did as far as navigation is concerned?
A. Well, we stayed on that given course of 230 until 1455.

REAR ADMIRAL BARROW: Excuse me, Cdr. Loosmore. I am getting a little bit lost.

What was that course change either at 1350 or 1400, what was the course changed to?

THE WITNESS: 1350 was to 230.

REAR ADMIRAL BARROW: Is there any indication that you held up in either direction for that specific course?

THE WITNESS: No, sir.

By Cdr. Loosmore:

Q. Do you recall?

A. No. We steered 230 because this is well over, on this given course.

Q. All right, sir. What is the next course change?

A. The next significant course change?

Q. Of any course change.

A. It was 1445. That is when we changed courses to 130.

CDR. LOOSMORE: The witness is referring to Exhibit 33-D.

Q. Where was the vessel when that course change was made?

A. The vessel was in this vicinity here (indicating).

Q. By "this vicinity here," you are indicating generally
to the west of Michipicoten.

Can you show precisely on the chart where the vessel was when the course change was made?

A. I believe it was right there (indicating).

When we came around at this given point, we were shaped that we would be 7.7 miles off of the West End Light.

Q. All right, sir. Would you indicate with the point of these dividers where the vessel was when the course change at 1445 was made?

A. I would say in here (indicating).

Q. Indicating a position west of Michipicoten Light but no particular mark.

There is an intermediate mark there, sir, one northeast of that. What does that mark indicate?

A. I believe I took a given range and bearing of the light at that given time just to determine how we were advancing on this given course.

Q. All right. What does that mark say?

A. That mark says 1425.

Q. And did you make that mark?

A. That is my writing; yes, sir.

Q. Do you recall making that and finding your position there?

A. Yes.
Q. Did you change course at that position?
A. No, sir.
Q. Well, what did the vessel do then?
A. Well, we continued on and then we came around to this point where we figured we would be 7.7 off Michipicoten West End Light.
Q. All right. And at what time did you make that course change?
A. At 1445.
Q. What course did you change to?
A. We changed course to 130.
Q. And does this chart indicate the position where the vessel was when that course change was made?
A. No, sir. From my memory, I believe I was there, I guess, and I didn't label it (indicating).
Q. Would you indicate that position again, please?
A. Right here.
Q. Indicating the intersection of what has previously been described as the 230 course line; is that correct?
A. Yes, sir.
Q. And another line heading roughly southeasterly directly beneath a sounding mark of 116; is that correct?
A. That is correct.
Q. And there is no mark on this chart to indicate that time?
A No, sir.

Q To what course did the vessel come at that time?

A We gave it 130.

Q Is there any mark on this chart that indicates that course?

A No, sir.

Q What do the marks on this chart indicate from that position?

A From this position?

Q Yes.

A From this position it indicates a course change, but it is not labeled; the time is not labeled.

Q Is the direction labeled, the course labeled?

A It is not labeled on the course.

Q Does that course reflect the course you were steering at 130?

A Yes, sir.

Q It does?

A Yes, sir.

Q Would you verify that for us, please?

A If you hold this big triangle --

Q I am talking about that --

A That line there. I will hold --

REAR ADMIRAL BARROW: Can we go off the record and take the chart down and let Mr. Anderson
take his time. He can verify this, and then we'll
go back on the record.

(Discussion off the record.)

REAR ADMIRAL BARROW: Back on the record,
please.

By Cdr. Loosmore:

Q. What does that line indicate; what course does that
line indicate?

A. 130.

Q. All right. Thank you. Again, what course was ordered?

A. 130.

Q. And what course were you steering?

A. The wind was northwest, and we were going 130, so
the wind was over my stern. I was not holding up.

Q. All right. Is it your testimony that you recall
that you were not holding up or that you now believe
that you were not holding up?

A. I believe that I was not holding up because with the
stern wind, you do not get as much set on the starboard
quarter.

Q. So now we have the vessel logged on a course of 130
and steering 130; is that correct?

A. Yes, sir.

Q. All right, sir. What is the next course change
or the next log entry, whichever occurs first?
The next log entry is 125.

Q. At what time, sir?

A. At 1520.

Q. And where was the vessel at that time?

A. The vessel was abreast of the north tip -- correction.

At that time we were 7.7 miles abeam of Michipicoten Island at the West End Light, or am I getting my -- I didn't bring this in.

Yes, that is it.

Q. Indicating a position of --

A. It was a range and bearing by the radar, once again.

Q. Is that a position marked on this chart?

A. It is not marked on the chart.

Yes, the beam line is, but the time is not marked on the chart. The perpendicular to the light is marked there.

Q. All right, sir. You said the beam light is marked on the chart. There is nothing to indicate what that line is.

Could you point to that line at all and describe it?

A. (Pointing.) It's this line here to there.

Q. From here to there is a line extending in a southwesterly direction from West End Light to the intersection of three other lines, approximately.

I believe you said that was approximately seven or eight miles?

A. 7.7 miles on radar.
Q. So it is not approximately, it is precisely.
A. It is precisely 7.7.
Q. What did the vessel do at that time?
A. We retained this course.
Q. You retained a 130 course?
A. Yes, sir.
Q. You didn't change courses at that time, then?
A. No, sir.
Q. You stayed on 130?
A. Yes, sir.
Q. What time was that?
A. That was at 1520. We were abreast of Michipicoten, 1520 that was.
Q. All right. What did you do at that point when you were abreast? By abreast, do you mean abeam?
A. No; the course was changed to 125, I would say, prior to that. I did not log that. I believe that would have been for a margin of safety because we had plenty of water in that direction to the east of us, but I got abeam:-- well, that's where I got off watch then. I logged in at Michipicoten West End Light a course of 125 degrees.
Q. What your testimony is is that this log entry was not a change of course at that time?
A. A beam bearing course.
Q. Did you log the time at which time the course was changed?
A. No, sir, I did not.
Q. To your best knowledge, what time was the course changed?
A. I would say maybe it would be five minutes before, possibly.
Q. Okay, and what course were you steering at that point, steering?
A. Prior to the course change?
Q. No, once you made the course change, I think you just testified the course was changed to 125.
A. Yes, that is correct.
Q. And with a 125 course, what were you steering, that is, were you holding up any?
A. No, sir, I was not holding up.
Q. You testified that this happened at 1520 and you have also testified that you went off at 1520.
A. Yes, sir; I happened to be relieved at this time. I followed this entry with my being relieved.
Q. Did you determine the position of the vessel at the time that you were relieved?
A. Yes, sir.
Q. Did you put that on the chart?
A. That is this point here (pointing).
I have not labeled this point.

Q  Indicating the same point which has been previously described to be 7.7 miles on a line 7.7 miles southwest of West End Light.

    CAPT. ZABINSKI:  Could you label that point some designation, please?

    CDR. LOOSMORE:  Do you want me to mark it on this chart with that, Captain?

    CAPT. ZABINSKI:  That's all right.

    It is the original.

    CDR. LOOSMORE:  This is the original navigation chart.

    CAPT. ZABINSKI:  I will withdraw that.

By Cdr. Loosmore:

Q  All right, Mr. Anderson, at that point as you were relieved from the watch, and I believe you testified you made a log entry to that --

A  Being relieved?

Q  Yes, sir.

A  Yes, sir.

Q  All right. Then what did you do, Mr. Anderson?

A  I did not leave the pilothouse at that given time.

Prior to my leaving, the captain had received a call from the Edmund Fitzgerald.

Q  All right. Sit down and we will talk about that.
A. I overheard the captain -- the mate, speaking of the
message that the Edmund Fitzgerald had lost two, or lost
some air vents and had damaged some fence rails and was
developing a list.

I was off watch, but you never leave. As a rule,
you don't go right out the door when you are relieved.

I would say this is possibly 10 or 15 minutes after I had
been relieved.

Q. Where was the Fitzgerald at that time as best you knew?

A. I would say she was -- I did not take a range and bearing
on her at this given time, but my last check, I believe
she was in the vicinity of eight to ten miles ahead.

Q. All right.

A. And, of course, this was by radar.

Q. All right, Mr. Anderson, and then you said you came
back for supper relief. What time did you come back
on watch?

A. I came back at 1620.

Q. Is there an entry in the log when you resumed the
watch for relief?

A. No, sir, there is not.

Q. When you relieved the watch for supper, do you usually
determine the position?

A. The mate that you relieve -- it is always a practice
that prior to you turning over the watch to the other mate
on watch, that you tell him all the particulars of the watch and the course and so forth and such, and I had been fully informed as to where the vessel was and what course we were steering.

Q. Was a position determined before you were relieved on supper relief?

A. Yes, I always check. I did not -- there was no range and bearing. The course was given as 125 and we were at that given time -- well, the indication was that we were coming up on Caribou Island.

Q. Yes.

A. And the course was shaped for six miles off, off of the north tip of Caribou Island, not the light; and this was visible on radar.

Q. Was there a position determined and indicated on the chart as you relieved for supper?

A. No, sir.

Q. All right. Now, at 1620, is it correct, you were back on watch?

A. Yes, sir.

Q. And what was the vessel steering at this time?

A. The vessel was steering 125.

Q. 125? And I believe you testified you were on watch for approximately half an hour while the other mate had his supper; is that correct?
A That is correct.
Q Were there any positions determined during that half hour period?
A Well, yes; I got -- just at the end of my watch, I got the fix by radar once again, a range and bearing from the north tip of Caribou island, and of course when I was relieved or when I relieved, I looked in the radar and I did not log -- every time you look in the radar, you don't log. You look to see if your vessel is going to be this distance off.
Q You said you got, I believe, the position of six miles off?
A Yes.
Q Did you indicate that on the chart?
A Will I indicate it?
Q Did you make a mark on the chart?
A No, sir.
Q Is there any mark on this chart?
A There are marks; yes, sir.
Q Do you know who made those marks?
A There is a mark here. I don't remember if I put that mark there or not, but I definitely -- I took this bearing and I had a good picture and good radar at this fix here.

CDR. LOOSMORE: Indicating a dot
with a circle around it located approximately three-
quarters of an inch in a northwesterly direction from Caribou Island.

CAPT. ZABINSKI: Northwest or northeast?

CDR. LOOSMORE: Northeasterly from Caribou Island between a sounding mark of 109 and a sounding mark of 71. That position is unlabeled as to time.

By Cdr. Loosmore:

Q Just so I understand again, Mr. Anderson, is it your testimony that you did or did not make that mark?

A I don't remember.

Q Did you take any other fixes?

A During that relief time?

Q During that relief time.

A No, sir.

Q Now, I think you said something about a course change at that time; is that correct?

A There was a course change, yes, to 141.

Q All right. Now, what time was that?

A That was at 1652.

Q Is that your handwriting, sir?

A This is my handwriting here. See, this is the first mate's watch. I am in part of his watch here is what I mean to say.

Q Would you read that entry?
November 10, 1652, north tip of Caribou Island, six
miles off, one hour 32 minutes from last fix, 141 degrees,
which was our course change at that given point.

Q. Okay. Fine.

Now, at that given point you made a log entry, and
you just said that that was a course change?

A. Yes, sir.

Q. Does that log entry indicate that you changed courses
then?

A. Yes.

Q. Okay. Is that the time at which you changed courses,
1652?

A. Yes, sir.

Q. I thought you said that was the time you took the
position from Caribou?

A. Well, that is where we made our course change.

Q. What was that position exactly?

A. Six miles off the north tip of Caribou Island.

Q. How did you determine that position?

A. By radar.

Q. Do you recall the radar bearing at that time?

A. The radar bearing would have been 90 degrees. At 90
degrees you are abreast of the given course. At 141,
that would have been 231.

Q. Mr. Anderson, what I am getting at is that we seem
to have a logging of a position and also a logging of a course change simultaneously.

A    Yes, sir.

Q    Did you determine the position from Caribou before you changed to 141 or after you changed to 141?

A    Well, it is at that point that the course change was made.

Q    All right, let's talk about the radar bearing for a minute.

        You stated that you take an angle 90 degrees to the heading.

        Is the radar you were using a relative or true radar bearing?

A    In this case, you can -- this was a relative bearing. I have my curser and my bearing circle, and I set it at 90 degrees from the ship's head.

Q    Is there a gyro input to the radar?

A    There is on our Raytheon. I was talking all of this off our Calvin Hughes.

Q    Well, is there one to the Calvin Hughes?

A    I am not aware of it. I don't believe there is on that one, but there is on the Raytheon.

Q    As you are looking at the radar, is there anything or any picture to indicate what the true direction of the heading was?
A. No, sir.

Q. As you set this cursor up 90 degrees from the heading of the vessel and waited until that particular whatever it is you are taking it from comes up to that 90 degrees -- is that substantially what you do?

A. Yes, sir.

Q. At the point it is at 90 degrees, how do you know what the heading of the ship is?

A. I have the gyro -- the helmsman. He tells me what he is steering at.

Q. Do you ask him?

A. He gives you his course every time the bells ring, every half hour.

Q. How about when you are taking a bearing?

A. At this given time I don't remember if I had asked him or not.

Q. Is it generally your practice to ask him what the heading is when you are taking a bearing?

A. No, sir. If the helmsman is off an appreciable amount, he usually lets you know, but there are times during your watch that you will glance at your gyro to see how your helmsman is doing.

Q. How do they do?

A. They do very well.

Q. In weather like this?
A. In these conditions with a stern sea, if the helmsman can hold a course one or two degrees both ways, he is doing good.

Q. A 750 foot vessel with a stern sea, can he hold it within two or three degrees either way?

A. I believe so, yes.

That, once again, is determined by the speed of the vessel. If the vessel is slowed down, then your steering way becomes a little more difficult.

Q. What would you estimate would be, under the conditions that you had this particular time while you were on the supper relief, what would you estimate would be the — may I call that the variation from the desired course?

A. I would estimate that would be about two degrees.

That would be the maximum, but I mean the majority of the time possibly would be one degree, but if the sea hits the vessel at a certain time, it might be a given time that it might go to that two degrees.

Your wheelsman coming around the course like that, it is going to take him a little while to get the feel of the ship. The longer he is on that course, the better he will know how the vessel is reacting and will be able to keep it closer to a given course.

Q. Yes, I suppose he would.

You testified that you took this beam bearing, this
relative bearing radar on the course of 141. You said
that it was --
A. I took the bearing on 125 and then made the course
change to 141.
Q. I believe that is different than what you said before.
Let's talk about that a little bit.
A. That is not what I meant then.
You don't take the beam bearing after you make the
haul. You take it on the course you were on coming to
the light, and then you come to your 141.
If I said otherwise, I surely didn't mean that.
Q. All right. Now, here we are steering along on --
A. 125.
Q. -- 125. And you take a beam bearing at what range
to the north point of Caribou?
A. We were six miles off.
Q. And then what happens?
A. Then I tell the helmsman, "Right rudder," and he
comes to 141.
Q. Do you tell him how much right rudder?
A. No, sir.
Q. What is the next thing you do?
A. The next thing I do is wait until he gives me the
course change, and then I check to see that he is on
the right course change, and then we get our magnetic
reading.

Q. When do you make the log entry in this whole process?
A. I make the log entry right when I am abreast, when I was right abreast on 125, and then you look up -- you look in the radar and you see when you are abreast and look up at your clock.

You know prior to being abreast, minutes before, that you are going to be -- I mean within minutes you are going to change. If your radar circle says six miles, a matter of a half minute, then you tell the helmsman, you already know what you are going to steer from there, and you tell him to go to 141 in this case.

Q. All right. You have logged that entry?
A. Yes, sir.

Q. Now, you described both a position on a 125 course and a change of course as occurring, I believe you said, at 1652; is that correct?
A. Yes.

Q. How did you get the time? Let me put it that way.
A. When I was abreast at 125, I looked at the clock and then I went over and logged it in. It says "1652 abreast north tip of Caribou Island, six miles off."

Then I tell the wheelsman to come to 141. We do not make an entry upon completion of the course change.

Q. Did you make an entry on this chart for that position?
A. I don't remember if I did. This is not my writing here, and I was relieved at this point.

Q. Is there an entry or mark on this chart which indicates that position?

A. I would say yes, right there (indicating).

CDR. LOOSMORE: Can we have a second off the record to verify that?

REAR ADMIRAL BARROW: Let's go off the record for a few minutes.

(Discussion off the record.)

REAR ADMIRAL BARROW: Back on the record.

By Cdr. Loosmore:

Q. Mr. Anderson, does this chart indicate the position which you have now described to us was where you were when you began this course change at 6.0 miles?

A. The chart does not indicate it; no, sir.

Q. Let me finish the statement. Correct me if I'm wrong, but 6.0 miles away from the north tip of Caribou Island, the north tip of Caribou Island, dead abeam on the starboard side with the vessel on a course of 125, does that chart indicate that position?

A. No, sir, it does not.

Q. But your testimony is, and the way you remember it, that that is where you were when you began turning?

A. Yes, sir. I got this fix on the radar and I remember
very distinctly.

I had a good picture and in my opinion, I have no doubt whatsoever as to the accuracy of any radar fix.

Q  Okay, fine.

You have testified that you stood watches throughout this entire voyage, and I don't mean to talk about anything prior to this time, but were there any subsequent marks made by you on this chart?

A  Subsequent to what?

Q  Subsequent to -- we are talking about -- I believe you said you got off watch at 1652.

A  Yes, sir.

Q  Was there anything about 1652 that happened to cause you to make a mark on this chart?

A  I don't remember. I don't remember.

Q  Fine. Well, while we are talking about the chart and just sit down for a minute because I want to talk about this a little bit.

Just slightly west of Caribou Island, there is a sounding right there, which is a figure 6 with a pencil circle around it.

A  Yes.

Q  Do you know who made that circle?

A  I am not sure; I think I did, but possibly -- I would rather say I don't know.
Q. What was happening at that time? Why would you have made a circle there?
A. I don't remember when that was put there. We knew what the course was on this given vessel. We wanted to stay clear of that area, and I think once again that I put that circle on there.
Q. Do you recall discussing that with anyone?
A. Yes, we discussed that. The captain and I and the mate was up there then, too.
Q. I see.
A. No, the mate wasn't here in this given area. The captain was, and he mentioned that we must stay clear of that area.
Q. Do you remember -- do you know roughly where the vessel was at the time you were discussing that?
A. No, sir, I don't know.
Q. Do you know roughly what time it was?
A. No, sir; no, sir.
Q. Okay. Sit down.
We have gone step by step to the Anderson's position because I want to be very certain where the Anderson was, so that we can discuss where the Fitzgerald was during your 12 to 4 watch.
Now, did you have contact with the Fitzgerald when you came on watch at 1152?
A. What kind of contact?

Q. At the beginning of the afternoon watch?

A. Yes, sir; I had visual contact.

Q. Did you have radar contact, too?

A. Yes, sir; radar was on all times.

Q. Did you recall where the Anderson was at the beginning of your watch -- or the Fitzgerald, I am sorry.

A. The Fitzgerald, well, like I say, each time you look in the radar, my main job is to know where my vessel is and I did see the Fitzgerald ahead and I would estimate eight to 10 miles ahead and possibly just a wee bit to the starboard.

Q. How would you know that?

A. At a given time when you look in the radar and you are observing the vessel ahead, and I knew what vessel this was when I got relieved, because the third mate would say, "The Edmund Fitzgerald is still ahead," and I would even ask that because I knew that we were running with them, but as I say, at various times when you look into the radar, you only determine, when you jot down times on the position of a vessel ahead, and this is when you are standing in danger of his course.

He was going ahead of us and there was no apparent --
well, he was going with us from what the watch man before
me had told me, and so I didn't -- you don't jot down the
time.

Q. Did you plot the Fitzgerald's position at all either
on the radar screen or on a chart?
A. No, sir; I did not.

Q. Is your radar the kind that you can plot it right on
the radar screen with a grease pencil?
A. I don't plot on a radar screen, so I don't know.
I plot on the maneuvering circle.

Q. Did you do a maneuvering circle plot?
A. No, sir, not on this.

Q. Was the Fitzgerald -- well, I will correct that.
Where was the Fitzgerald when you got off watch at 1520?
A. Well, at that precise time I could not say.

Q. To the best of your knowledge?
A. When I looked in the radar within my watch, he was
ahead of us, once again, I would estimate eight to 10 miles,
and to the starboard a little bit, just to the right of
the course line.

Q. Did you change that relative position at any time
during your afternoon watch?
A. Not that I was aware of, but once again I did not
plot his course and I assumed that he was running a parallel
course with us.
Q. A parallel course? Did he also make this abrupt, what you have described as an abrupt change?

A. No, sir. He did not make that course change. When we got to that point, yes, when we got to that point, again, naturally the Fitzgerald would change.

Then we come back around again.

Q. What happened when you came back around again?

A. Well, then I plotted the fix of our vessel and I don't know. I don't know if I could tell you where the Fitzgerald was at that time.

Once again, each time I looked into the radar, and if I did see him ahead, from my observation, I noted that I was not standing in its danger, so consequently I never kept a maneuvering board plot on him.

Q. Why would a maneuvering board plot be important?

A. The maneuvering board plot is important if you are reading a vessel and if he holds his course. If you are holding a bearing on him, then you have to take necessary action if he is the vessel with the right of way.

This was not a crossing situation.

Q. This is, as you have described it, you said the two vessels were on roughly parallel courses.

Why would you need a maneuvering board here?

A. No, I wouldn't, and I didn't.

Q. All right. Would a maneuvering board plot, if you had
made one, tell you?

A. You can plot a vessel's course on any direction, if
he is going with you, if you are meeting him; but once
again, I had no reason to plot the Edmund Fitzgerald.

Q. Is there any way you can estimate what his course
was without plotting a maneuvering board?

A. Not exact, not exact.

Well, yes, you could take, if you assumed, and you
still wouldn't be exact, but if you assumed he was abreast
of a light at a given time; but this I did not do.

Q. That would be kind of a guess, wouldn't it?

A. Right. You can assume within several degrees, but
I believe the radar was on a 24-mile range and a difference
of a couple of degrees is not too indicative in that
respect.

Q. Do you recall where the Fitzgerald was when you
relieved for supper?

A. Where the Fitzgerald was when I relieved for supper?

Q. When you relieved watch for supper, when you came back
on watch, which I believe you testified was 1620 or so.

A. Well, at that given time, yes, during that half hour,
he was ahead. I would say possibly he had gotten away
from us at 16 miles, roughly. That would be an estimate.

Once again, I did not plot him. He still was to the
starboard of us, but not, I don't believe, an appreciable
amount.

Q. How do you know he was starboard of you?
A. Because he was to the right of my heading line, the ship's heading line.

Q. Do you have any idea how far of your heading flasher he was?
A. No, sir. How far ahead?

Q. How far to the right of the course?
A. To the right, no, sir.

Q. Could you estimate in degrees? Was it five degrees?
A. No, it was not five degrees.

Q. One degree?
A. I would say possibly between one and two, maybe.

Q. One and two degrees?
A. And that would be an estimate. Once again, I did not plot it, you know.

Q. I am still a little unclear about this relative bearing radar business.

Is it a case where, as the vessel yaws, that the indicated position on the radar of a target such as the Fitzgerald or Caribou Light, moves, or does it stay pretty steady?

A. The heading marker?

Q. Not the heading marker, but the target.

You are looking at the target on the radar screen.
A. Yes, sir.

Q. Okay. Now, I am pretty sure that if the ship changed course, the position on the radar of that target would move, isn't that true?

A. Yes, sir; right.

Q. Okay. Now, the vessel is yawing a little bit, isn't it?

A. Yes, sir.

Q. Does that little dot then, which is a target, move as the vessel yaws?

A. Not very much on a 24-mile range.

Q. Does it move some?

A. Once again, when you say some, how much do you mean? Do you mean increments of a degree?

Q. Yes, one degree.

A. I can't be sure. I wouldn't give an answer to that.

Q. As the Fitzgerald's target moved, did it ever come back to the port side of your heading device?

A. Not that I am aware of.

Q. Always to starboard?

A. Like I say, every time I looked into the radar and seen the Edmund Fitzgerald, he was to starboard.

Q. All right, sir. Did his relative position change appreciably while you were on watch during the supper relief from 1620 to 1650?
A. One again, I say he was 16 miles ahead, and that is
an estimate, so I did not plot him in within a half hour's
time. I can't answer that.

Q. Did you have or did anyone else on the bridge have
any conversations with the Fitzgerald during either one
of your watches that afternoon?

A. There was one conversation. Prior to making the 2:30
course change, the captain noticed the wind was shifting,
and then we made -- it was in the process, I believe,
in our making this course change that he called the Fitz-
gerald to comment on the wind and how it was changing.

Once again, it was kind of an expected thing from the
weather chart.

I don't know what kind of a weather checkup the
Edmund Fitzgerald was having.

Q. I wasn't asking that; I was asking what conversations --
A. The conversation was -- well, the captain said,
"I am coming to the southern, and I want to get this over
the stern," along with discussing about the wind, what
the wind was.

The captain was back in the chart room, and he was
talking on 6. I was at the front window, and the pilot
radio was on 16, the open channel.

In going to the door, I heard him say that the
Fitzgerald was rolling some, but that was the extent of it.
I guess.

He didn't make any suggestions or anything as to what he was going to do, from my recollection.

Q. Did you personally have any conversations with him at all?

A. No, sir.

Q. Did you hear any other conversations?

A. Not while I was on watch.

I spoke of that conversation when I was just off watch. I mentioned that before.

That was where he talked to the captain.

Q. And said --

A. He had this damage. He had lost air vents or his air vents had been damaged, and there was some fence rails or something, and he was taking on water.

Q. And what time was that again?

A. I got relief at 1520 and it was 1530 or 1535.

Q. It was about an hour before you came back for the supper relief then?

A. Part of an hour.

Q. Did you and the other mate discuss the problems with the Fitzgerald when you resumed the watch for supper?

A. I believe I did. No, he never mentioned that he was -- now, I don't remember. You hear conversations later on when you are off watch.
I believe we spoke of it, but the understanding I got was that the Fitzgerald was not having any problems that he was really worried about. That was it, I guess.

I knew that he had called about this damage.

Q. "He" meaning --
A. The mate that I relieved.

Q. The mate that you relieved for supper knew that he, who, the Fitzgerald? You said that "he" knew that "he" had called about this damage?
A. Now you are speaking --

Q. I am trying to get clear who you are talking about. You and the mate are discussing the Fitzgerald?
A. Yes. I had gotten off watch at -- do you mean when I came on at 1620?

Q. Yes.
A. Well, that's right; that's what I was saying. Probably, and I don't remember, but we probably were talking about the Fitzgerald having these problems.

But the mate at the given time -- I was told that he was not in any standing danger. His problem was that he was not having any problems, and I believe if he was that he was to call us on that.

Q. Who did you relieve for supper?
A. Morgan Clark.

Q. Did he leave any instructions to you at his supper
relief relative to the Fitzgerald? Was there any special thing you were to do about it?

A  I believe so. He said that the Fitzgerald was having these problems, and if the problems magnified then he was going to call us.

I think that's the way he mentioned it, if his problems became greater.

Q  Let's talk about the supper relief.

What was the weather like at that time?

A  Well, we still had the wind at the end of that watch northwest by west. So it was in a northwest by west direction, which is what I logged out at.

It had not changed much while I was on for that time.

Q  What kind of a force are we talking about? Did you make a log entry?

A  58 knots.

Q  How did you determine that?

A  We have an anemometer that you can get for your wind. You get your apparent wind and your true wind, and you get your course direction.

You put your marks on this indicator, and by putting your wind over your course, you have a space between the two. A measurement between the two at that time is your true wind, the velocity in knots.

Q  Did you do that little calculation when you were making
this last log entry?
A. Yes, sir.
Q. We discussed this log entry as being made after the course change was ordered?
A. Yes.
Q. Do you recall whether you made the wind calculation before or after the course change was taking place?
A. Either in the process of the course change being made or I would say after. It was probably after. That goes in my log entry.
Q. All right. Then what would you estimate was the vessel's course heading, the vessel's heading when you read the anemometer?
A. 141.
Q. Do you recall whether that's what you used for the calculation?
A. I believe so, yes.
Q. Is that a maximum wind or an average?
A. There were gusts that were higher, but it seemed to rev at a given time more at the 58 or at that reading there, and then upon putting it on my circle there, getting my true wind.
Q. What were the seas like, Mr. Anderson?
A. The seas? I would estimate them to be about 25 feet.
Q  From what direction relative to the ship?
A  On our starboard quarter.
Q  Dead on the quarter?
A  No, sir; not dead on the quarter. It was between the quarter and the stern.

The seas were coming right up to the deck, but we had been on a quarter.
Q  Coming right up to the deck? Do you mean there was water on the deck?
A  There was very much water on the deck. The seas were faster than the vessel, and they were hitting the aft side of the forward cabin.
Q  Were you keeping track of that?
A  I don't understand that.
Q  The action of the sea along the hatches and so forth, did you look back there frequently?
A  Very much so, yes.
Q  Would you tell me as you looked back there and pictured it in your mind, because you probably did observe it, how many crests there were along the length of your ship which existed?
A  No, I couldn't determine that.
Q  Can you guess at it?
A  I could guess at it, but I would say possibly three of them. There might have been 150 to 200 feet between
them, and the vessel is 700 some --

Q. That would be more like five?

A. At least three. I didn't figure it out.

In that respect we rolled well.

Q. Was the vessel pitching much?

A. Not much at all. No, sir, we rode real well.

Q. Was it pitching enough so that as you looked at the aft house you could see it moving up and down with respect to the horizon?

A. Not very noticeable; no, sir.

Q. Was it rolling much?

A. No, sir, not with that sea.

You might have had a little bit, but it was not noticeable. As a matter of fact, that was the only course to be on, and we rolled well.

Q. How would you compare that, Mr. Anderson, with your saltwater experience?

You were in a 58 knot blowing wind with 25 foot seas and had no pitching or rolling?

A. My saltwater experience was with naval ships. I was on smaller ships also.

LST's are not even three-quarters of the Arthur M. Anderson and your bridge is aft. I don't recall. I know I was in lots of heavy weather out there, but I can't really answer that. I have seen seas that heavy.
Q. Mr. Anderson, do your duties on board the Anderson include any aspect of the loading of the vessel?
A. Yes, sir. I load the vessel.
Q. You load the vessel?
A. Yes, sir.
Q. Would you tell me a little bit about how the vessel is loaded? Have you ever loaded the Anderson at the Burlington-Northern dock in Lake Superior?
A. No. We have not run to Burlington-Northern.
Q. Have you ever loaded at a chute dock?
A. Yes, sir.
Q. Could you tell me how that is done?
A. I loaded at Two Harbors.
Q. Is that a chute dock?
A. Yes.
Q. Could you describe that process to me?
A. After the boat is tied up and it is apparent that they are going to start loading on arrival, which is predetermined, then the master will call the engine room and have them start pumping on the 5, 6, 7, 8 and 9 ballast tanks.

He usually lets me know by walkie-talkie that he has done this.

Then I must be cautious that if I see any delay due to broken spouts or for some reason they are not starting on the dock, then I have to stop the pumping, because the
vessel will get too high.

Take in this case in Two Harbors, there was no reason
to stop because pellets run real good; next to water, they
run real good.

They are spherical in shape, and there is nothing to
stop them. You start in aft, and I believe we have four
car pockets, each pocket and four cars.

I took what you call a run through her, all the way
through.

Q. What's a run?

A. Well, a run is a four-car pocket in every hatch from
24 to one. Once again, I said that I started pumping on 5,
6, 7, 8 and 9.

When I get up around 10, the No. 10 hatch, then I
start pumping on 1, 2, 3 and 4.

I do not want to start too early there, because once
again, if I am delayed through the run, your vessel comes
up forward and your spout comes down. You are up high to
begin with.

If your vessel is coming up too fast, a spout will be
raised up, and all your pellets will be outboard. You
can't get a trim vessel in that respect, so this is why
you hold up 1, 2, 3 and 4.

If it is a fast load, there is no reason in the world
when you get up to 10 that you can't go all the way
through, which in this case I did.

So I had one run of four car pockets.

Now, I have to shift the boat to line her up with another run.

Q. How do you do that?

A. The boat is shifted by electric winches.

You have a man forward and a man aft and two deckhands on the dock to move the lines.

If you are going astern --

Q. Do you mean you move the vessel along the dock?

A. Yes, by use of the winches and cables.

Q. Go ahead.

A. So I have a pocket number that I am going to line the boat up to for my next run.

When I get her spotted there, I have my four wires on deck, and then the No. 1 wire and the No. 6 wire on the stern is there, because there is quite a force when all those pellets are pushing against the ship.

We have six wires to hold the boat against the dock.

Once again, if the boat is pushed out, your oar is not going to go where you want it to go.

I took a full run through once again. Then I had to shift again, and then I took a run in the last eight hatches, which is the last hold or what we call the hold.

Then when I got up to 16, from 16 to 9 is what we
call the center portion of the ship.

If I can refer to these, we have a loading photostat here. Can I refer to these?

Q Yes. As a matter of fact, to avoid confusion you can refer to this, Exhibit 33-F.

A You don't take a full run through the middle then. I took No. 16, 15, I believe 13 and I think it was this one that I got relieved at.

Q Mr. Anderson, what is that you are pointing to, this No. 12? What is that?

A Up until now I said that I had two runs up in here. That's two times four, which is eight.

Q Well, "in here," do these particular lines mean some-

A Yes. Your hatch numbers are over here.

In other words, this is the 16 hatch.

CDR. LOOSMORE: The witness is pointing to the page adjoining Exhibit 33-F, which is not in evidence, Admiral.

At this time I would like to request that page be marked 33-G.

REAR ADMIRAL BARROW: Mark for identification Exhibit 33-G. (Exhibit 33-G was marked for identification and made
Q. Where does it indicate the hatch number, Mr. Anderson?
A. Over here to the far left, from 1 to 24.
Q. All right. Now, what does this numeral -- take line 24, for instance, what does this numeral 16 indicate?
A. This indicates that there are 16 cars in this hold at the completion of the load.
Q. In that hatch?
A. In the hatch.
Q. This is indicating the one at Two Harbors, No. 2?
A. Yes.
Q. That's the one you are speaking of that you did?
A. Yes, and this is one -- this is the load that the Arthur M. Anderson had in her at this time.
Q. At the time of the trip that we are talking about with respect to chart or Exhibit No. 30, the one that that applies to?
A. That is correct.
Q. All right, sir. Then I believe you said you select certain hatches to put a pocket in for your third run?
A. Yes, but I got relieved at this point on this load. I was relieved by Morgan Clark.
Q. How do you know which hatch to select?
A. Well, you check your draft fore and aft, and we have draft gauges and then also we have a man on the dock,
and walkie-talkies, and from time to time we check the trim of our ship.

It varies upon what time during the load you are aft. When we start out, when you first start out, you always want to keep a good, what we call, "a rake."

You want to have a vessel higher forward than aft because the vessel, the water ballast is being pumped out of the vessel, and if you are down by the head, water does not run uphill.

The pumps are on the after portion of your tanks, and so you must keep a good rake to the vessel; but in the process of this loading, as you go along, if it is a good load, there is no problems presented, that you pump it out.

Q. But on your third pass you said you selected some hatches to have cargo and other hatches to not have cargo.

How do you know which ones; is there a procedure set out, or do you try to keep it down by the stern, or what?

A. Well, like I say, this is a procedure that you follow from all the other loads that are set out here.

For the final load, I do not put the sensor in until I am near the finish of my load.

This loading plan is set up by marine consultants.

Q. Is there a plan?

A. Yes, we have a plan.
Q. Does it work?

A. Well, the first mate has been on this vessel some time, and he has instructed me as to this method, and when we finished on this load, we had a very good trim and we were on the marks. So it is indicative that it does work.

Q. All right.

REAR ADMIRAL BARROW: Cdr. Loosmore, I think this witness has been testifying for some substantial time.

Now I would like to break at this time for recess until 1400.

(Whereupon, at 12:53 p.m. a luncheon recess was had, to reconvene at 2:00 p.m.)

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AFTERNOON SESSION

2:08 p.m.

REAR ADMIRAL BARROW: Let the record show we reconvened at 1408.

Cdr. Loosmore, continue.

ROY T. ANDERSON resumed the stand and testified further as follows:

EXAMINATION

By Cdr. Loosmore:

Q. Just a couple of more questions, Mr. Anderson.

REAR ADMIRAL BARROW: Do you want to remind him he is still under oath?

CDR. LOOSMORE: Yes.

Q. You are reminded you are still under oath.

A. Yes.

Q. You discussed a phrase when we were discussing the navigation of the vessel, and you mentioned "shaped up."

Could you describe what you mean by that?

A. Did I say that or did I say "shaping a course"?

Q. I believe you said, "We were shaping up to be so many miles off something or another."

A. Well, probably better would be shaping a course.

That means we come around on a given course with the intent of being a certain distance off a certain landmark, light or point of land or buoy or whatever the case may be.
Okay. Mr. Anderson, you said there was a course change that you didn't log.

Having thought about the entire transit, or in thinking about the entire transit, we discussed your 12 to 4 watch and then your relief for supper.

As best as you can recall, was there anything else that you did not log or that you didn't log immediately that you might have been off on the time a little bit?

A. No, sir. I have no recollections.

Q. You said you were standing by the front window.

What front window were you referring to?

A. In the pilothouse. We have all windows on the forward side of the pilothouse, and I don't stand there at all times, but most of the time I would be in there because I will be in the center of my ship and I will know how the vessel is tending in that respect in relation to seas and so forth, visibility.

Q. Are those windows open?

A. Yes.

Q. Do you recall whether or not there was a window open on this particular watch?

A. Yes, I believe there was.

Q. I'm sorry; I didn't hear your answer.

A. Yes, I believe the windows were open. Yeah, the window was open.
CDR. LOOSMORE: I believe that's what I have, sir.

REAR ADMIRAL BARROW: Capt. Wilson?

EXAMINATION

By Capt. Wilson:

Q. Mr. Anderson, you mentioned that you were in the Navy. I think you said it was at two different times.

A. Yes, sir.

Q. And you were a Quartermaster Second Class?

A. That was my highest rate; yes, sir.

Q. When you got out of the Navy the second time, you were a Quartermaster Second Class?

A. Yes.

Q. How many years did this encompass, your two tours in the Navy?

A. Oh, I don't remember. It was pretty close to four years total.

Q. Four years total. Did you, during this time, did you go to any schools for the use of radar or any special navigation schools?

A. Well, not what they call Class A schools. I went to Quartermaster School in Little Creek, Virginia, and we done lots of studying on piloting and celestial navigation, visual communication.

This was an amphibious training program because I was
going -- this was for an amphibious fleet.
Q. You also mentioned that you were relieved earlier because you had the supper relief.
   Do you eat before or after you are relieved for supper?
A. I eat after.
Q. That is the normal routine, then?
A. Yes.
Q. When you went for supper, did you go on deck or did you go through the tunnels?
A. I went through the tunnels.
Q. You also mentioned that you would plot a vessel if she were standing in danger. Did that mean with the other vessels, the two vessels?
A. Yes.
Q. Would you plot your vessel, for instance, more frequently if you were in an area of known hazard, say, if you were closer to the beach, say, for instance, if you were in a hazardous area?
A. Oh, yes, much more so.
Q. When you heard the conversation concerning, the first conversation where they said, if I recall it correctly, where they had lost an air vent or air vents and some fence rails?
A. Fence rails.
Q: Did they indicate at that time any list?
A: I believe he said he was taking on water. He may have said list, but I couldn't say which way he was listing.
Q: So there was no indication, to the best of your recollection, of any indication of a list or either a port or starboard list at that time?
A: No, sir.
Q: Did you ever hear any conversation with the Fitzgerald to indicate whether it was a port or starboard list or if they had a list?
A: Do you mean while I was on watch?
Q: Yes.
A: No.
Q: Or while you were in the pilothouse after you were off watch?
A: I don't remember if I did or not, really.
Q: I believe you said when you were off Michipicoten the Fitzgerald was eight to 10 miles ahead of you? Did you say that; was that the point?
A: Off Michipicoten?
Q: Yes.
A: Prior to Michipicoten.
Q: Well, that was when you were on --
A: Like I say, I can't give you a time on that.
Q: Do you recall --.
But during that period of that watch, I said he was eight to 10 miles ahead.

Q. Do you recall which heading you were on at the time?
A. No, sir.

Q. When the Fitzgerald contacted the Anderson and mentioned the damage that she had sustained, did she ask the Anderson to do anything?
A. Well, like I say, I heard the mate discussing it, and I don't know if I got all the message.

Q. You did not hear the conversation?
A. No, sir; I did not.

Q. You also mentioned when you made the turn, the run between Michipicoten and Caribou, you were on, I believe it was 125 at the time.

You said that was the only course to be on. What determined that?
A. You determine where your sea is and how it is riding. Under those conditions, this is where I want my sea, at my quarter and not at right angles or at my bow. This was very much proven by the way we rode.

Q. The vessel rode very well?
A. Very well.

Q. Did she roll at all?
A. Not that it was really noticeable.

Q. If I understood you correctly, when you take a beam
bearing with radar, and I believe you said all these
were radar bearings you took during your watch?
A. Yes.
Q. You take it at 90 degrees to your heading flasher?
A. Yes.
Q. Is that correct?
A. Yes.
Q. So at that time it is abeam of your vessel?
A. That's correct.
Q. Whatever your vessel is heading?
A. Yes.
Q. Do you get a mark from the helmsman; how do you know
if you would catch him when he is two or three degrees
off course?
A. If I take radio bearings, I will ask for marks.
Q. So at the time you were coming up on 90 degrees,
do you ask him for a mark or some indication whether he is
on course?
A. Yes, sir.
Q. And if you should be off course, when you reach 90
degrees, you will just wait until you get a 90 degrees
course heading?
A. Yes, or else allow for it.
Q. So you actually know at the time you get your beam
bearing, you actually know what the heading of your ship is?
A. Yes, sir.

Q. You loaded at Two Harbors. You were on for part of the loading operation.

What is the temperature of the pellets? Were they cold or normal in temperature?

A. I would say normal.

Q. Not warm? You can pick them up in your hand?

A. Oh, yes; yes.

Q. You say when you load the vessel that you had a plan for loading, as you discussed with us?

A. Yes.

Q. You keep that with you?

A. Well, we have the book and we have what we call an immersion table

Q. And that you pass from mate to mate, the book?

A. That is correct.

Q. Then when do you report it in the log? When you go off?

A. The load in the log, yes, as soon as possible after the load is out on the water.

Q. So you transcribe what is in the notebook, the small book, to the log?

A. Yes.

Q. The loading book is just a notebook that you keep?

A. Yes, it is a book about three inches wide and
maybe about seven inches high, because you can't carry this. It is convenient to carry on deck and sometimes you are loading and it is raining and it has to be put in your pocket, and this is why we use this loading book.

Q  Thank you, sir.

CAPT. WILSON:  I believe that's all I have.

REAR ADMIRAL BARROW:  Capt. Zabinski?

CAPT. ZABINSKI:  Yes.

EXAMINATION

By Capt. Zabinski:

Q  Mr. Anderson, it is very important that we go back and review. Would you read -- I would like for you to go by reference to the chart and also by reference to your log book, and I would like for you to give me the fixes, just the fixes that you had obtained from the time that you came on watch, from the time you went off watch, and also the times that you came up for relief of the chief mate.

Can you do that for us? Just review now.

A  Well, in the log at 1252 --

Q  Yes, sir.

A  It is fixed at 12.8 miles off. That would be abreast.

Q  Off of what point?

A  Off of Otterhead Island Light.

Q  Now, what course were you on when you were at 10.8 off,
sir?
A. I was on 149.
Q. 149?
A. Yes, and I altered to 154.
Q. What is your next one now?
A. My next course change was 1350 and that was to 230 and that's when this wind was going around, where we had to go around and get wind over the stern.
Q. I'm sorry, sir. You changed course at what time?
A. At 1350.
Q. At 1350, and you changed your course to what?
A. 230.
Q. Did you get a fix at that time?
A. No, sir. I didn't plot it in. I have prior fixes indicating my progress, but at this given time, I did not.
Q. Why don't we take what's in the log and then we'll take what is on the chart.
A. All right.
Q. What else is in the log?
A. At 1445 we changed course to 130.
Q. Did you get a fix then?
A. Yes, but I did not put it on the chart.
Q. What is your next one in your log book?
A. Well, at Michippocoten West End Light, we were on course 125. We hauled to that, which I didn't log.
As I say, I believe it was five minutes prior to that.

Q Did you get a fix then?
A I got a fix at this point, Michipicoten West End Light on a 125.

Q Well, the 125 is a course line, or is that a bearing line, sir?
A That is the course line.

Q What was the fix; what were the coordinates of the fix?
A It would be 90 degrees to that.

Q That was abeam?
A Abeam Michipicoten West End Light.

Q When you were on a course of 125 degrees true, is that correct?
A That is correct.

Q And what was the distance off, sir?
A 7.7 miles.

Q And what's your next fix?
A That was the end of the first watch, and my next fix was at 1652, the north tip of Caribou Island, six miles off. That was radar.

Q And what was the bearing on it?
A It was abeam.

Q Did you take any other fixes as indicated in the log book?
A. Well, as I say --

Q. As indicated in the log book?

A. No, sir.

Q. By referring to the log book, could you tell me if the mate, and this is from the time he relieved you until the time you came up to relieve him for supper, during that period of time did he indicate or log any fixes in the log book, or did he make any course changes?

A. From the 125 or 1520, no, he was on 125 until I got to the north tip of Caribou Island.

Q. And then you changed there to 145?

A. No, 141.

Q. I am sorry, to 141.

A. Yes.

Q. But did the mate take any fixes or indicate that he took any fixes by the log book?

A. Not by the log book; no, sir.

Q. Now, I would like you to take the chart that you have there, and this is the chart that was in use on the Anderson at the time.

Tell me, or list for me the coordinates of the positions that you took to fix the vessel's track from the time you came on watch until you left on relief, whether you put them in the log book or not.

A. Well, there is one here at 1400 on the chart.
Q. 1400? Was that your first one? How about 1252?

You had that one, didn't you?

A. No, sir.

Q. Who took that one?

A. Well, I just relieved the third mate who said we were on that course and were coming around to this given course.

Q. Were you on watch at 1252?

A. Yes, sir.

Q. Did he take the fix or did you take the fix at 1252 abeam of --

A. I don't have it indicated here, but I believe I took -- what I would do, and I assume I did, is see what this course was on Otter Island.

Q. Is it your testimony then that, although you took this fix, you did not plot it on the chart; is that correct?

A. That is correct.

Q. What is the first one that you plotted on the chart that you took?

A. Abreast of Otterhead.

Q. And what was that range and bearing?

A. That I also logged.

Q. All right. What time was that?

A. That was at 1252, 10.8 miles off.

Q. I asked you just a few minutes ago if you had plotted that range and bearing at Otterhead at 1252, and I understood
your testimony to be no; is that correct?

A. Let's put it this way: I have a circle on here, but I do not have the time.

Q. That you put on there?

A. Yes.

Q. So you did plot a range or a fix at 1252?

A. That's correct, but the time is not on the chart. The time is in the log.

Q. But you are positive that you did plot the 1252 position off Otterhead on the chart which you have on there as a circle; is that correct?

A. Yes.

Q. And that would have been 10.8 miles off a beam on a course of 149 degrees true; is that correct?

A. Yes, sir.

Q. All right. What is your next fix on the chart whether you logged it or not?

A. At 1400, which was not logged. That was after we made our course change.

Q. To what, from what to what?

A. To 230, yes. We made the course change, and then I plotted -- I got a radar fix off Michipicoten West End Light, but this was at 1400, and I did not log it. However, I put a circle on the chart with the time.

Q. Can you give us the coordinates for that?
Do you recall that?

A. I do not recall that.

Q. You will have to take the chart off, I guess. Would you assist him, Cdr. Loosmore, please. Take your time because it is very important that we establish these positions.

(Pause.)

A. The bearing was 117 true.

Q. The distance?

A. .5 miles.

Q. Okay. What is the next position that you plotted on the chart, whether or not you logged it in the log book?

A. 1425.

Q. What were the coordinates?

CDR. LOOSMORE: Excuse me. The prior position was 9.5 miles from Michipicoten's West End Light.

By Capt. Zabinski:

Q. 117 degrees true?

A. Yes.

Q. And your next position at 1425 was what, sir?

A. 098 true.

Q. And what light were you looking at?

A. Michipicoten West End Light.

Q. Bearin 098 degrees true, what was the distance?
A. 11.8.

Q. 11.8 miles?

And your next position that you plotted on the chart, whether or not you logged it in the log book, was what?

A. Abeam of Michipicoten West End. That was just as I got relieved.

Q. What time was that, sir?

A. 1520.

Q. Abeam of Michipicoten West End Light.

What was the range and what was the bearing?

A. Well, it was abeam.

Do you want the true bearing?

Q. Yes. Please give that to us.

A. 039.

Q. And the distance?

A. Well, 7.7 is in the log book and it is very close to that. It's very close to seven miles off.

Q. What was the next course change that you had?

I'm sorry. What was the next fix that you made on the chart, whether or not you plotted it or put it in the log book?

A. Abeam Caribou.

Q. Abeam Caribou, and the time was what? What time was that, sir?

A. That is abeam of the north tip of Caribou Island at
Q. Is that what you have plotted on the chart?

Would you check that for me, please?

A. I have 214 true.

Q. And the distance?

A. It shows an actual seven miles.

Q. It shows seven miles.

You indicated in the log book you were six miles.

A. There is a circle here, which I believe I said that I wasn't sure if I put there or not.

Q. What circle is that; could you indicate the circle for the record?

A. That is very close to --

Q. Which one are you talking about?

CDR. LOOSMORE: The one I previously described as between 109 sounding mark and the 71 sounding mark, all of this on Exhibit 30.

By Capt. Zabinski:

Q. Did you plot that on the chart, do you recall, when you took it at the north tip of Caribou, which was at 1652? You got a range on it of six miles off abeam; did you plot it on the chart?

A. I don't remember. This was right at the change of the watch.

Q. However, it is plotted on the chart as being seven
miles off?

Q. Did you plot that on the chart or did someone else?

A. This was my range and bearing of Caribou Island at that time, abreast.

Q. Did you plot it on a chart, or did someone else plot it on a chart?

A. I think I did, but I can't be sure.

Q. Would you have plotted it at six miles or at seven miles, as indicated there?

A. It is my practice with the dots and circles, and the other one just indicates a line across. I don't remember if I put that there or not.

Q. But your testimony would be that the vessel was actually six miles off the north tip of Caribou at 1652?

A. Yes, sir, from the radar I remember distinctly; I had a good picture.

Q. Yes. That's fine. You indicated in your testimony that the Fitzgerald was anywhere from six to eight miles ahead of you to 17, I believe, at some time.

Could you recollect for us when she was the closest to you and what that distance was, and when she was the furthest from you and what that time or position of the Anderson might have been?

A. I couldn't give you an exact time, but this eight to 10
miles was between the times of when I was at Otterhead
and -- well, I would say from 1152 to maybe 1252.

Q. Yes, sir. And did she increase distance after that,
the distance between the two ships? Did it increase
after that?

A. From my watch, I don't know. At that time I looked
at it, and I just have no idea -- he was getting away
from us. If we were closing on him, then I would be
concerned.

Q. Why was he getting away from you?

A. Because he was a faster vessel.

Q. And at what time would you say his furthest distance
was away from the Anderson?

A. At or near the time I was -- I wouldn't say at
Caribou, but in the vicinity of that 1652, during my supper
relief, in which he had not gotten away.

Q. Do you think that the weather you had while you were
aboard the Anderson was any different from the weather
they were experiencing on the Fitzgerald that was eight
or 10 miles or even 17 miles ahead of you?

A. I don't think he was that far ahead that he did not have
-- I think he had what we had.

Q. The same thing?

A. Yes.

Q. Do you make weather observations, Mr. Anderson?
A. Yes, sir.
Q. We had a gentleman here from the National Weather Service, a Mr. Kennedy, who goes aboard the ships.

He gave the ship's people a very high recommendation as to how well they take weather observations, and he said that part of his job was to train people.

Did you ever receive such training from Mr. Kennedy?
A. No, sir. I have just been on this vessel since October 23.

You see, not all our vessels are what we call weather boats. I received my instructions from the man who I bumped. I bumped a second mate back to third mate.

If you understand the term "bumping" --
Q. I think I do, but maybe some of the others don't.
A. I laid up the other vessel, and I had more time as a second mate than he, so I was assigned to this vessel. He had to take one step down.
Q. You asserted your seniority prerogative?
A. Yes, and as I say, this is the first time I had been on the Anderson, so he acquainted me with this. Back in 1960 I was on a weather boat as a third mate, but you don't send the weather as a third mate.

So this fellow I bumped, he filled me in and acquainted me with this procedure. Also, we do have publications which I have read on it.
Q. Have you ever been trained in taking weather observations?
A. Trained ashore, do you mean?
Q. Anywhere.
A. I don't know if I understand.
Q. Have you received any kind of training either from
the National Weather Service or in your experience or in
your training as a quartermaster as to how to record the
wind, the true direction of the wind?
A. I haven't had the training with the use of the anemo-
meter, but I have had training as far as the resolution
of forces and the principle of the apparent wind and the
true wind.
Q. How about gauging wind velocity and wave height?
Have you ever received training along those lines?
A. No, sir, not to accuracy, but estimating.
Q. Were you taking in any kind of water?
You indicated that you were taking some water on
over the stern; is that correct?
A. Well, not exactly on the stern.
The sea was on our starboard quarter. It was between
our starboard quarter and the stern.
Q. Were you taking any water on the spar deck?
A. Very much; the sea was coming right up to the deck,
yes.
Q. How deep would you say the water was on the spar deck?
A  To the hatches.
Q  Would you say it was over the hatches in some cases?
A  In some cases, yes.
Q  Were the waves of a uniform height, or would you say they varied one from the other?
A  I would say they were uniform. However, this changes from time to time because of the velocity.
Q  Yes, but let's say on your course at 141, were the waves pretty uniform? Were the seas building, or was it stabilized by then?
A  That's when I got relieved, and that was more or less -- it was stable then, I would say, as far as I know.
Q  Did you hear any conversations or have any conversations with the captain about the passage of the Anderson past Caribou Island?
A  Yes, and you always discuss, if you are going to make a course change, and even though the captain may assume that I am supposedly aware of what's up ahead, he will remind me and we will discuss it.

We very definitely were aware of the six fathom shoal area.
Q  Are you talking now about what is indicated as Chummy Banks; is that correct?
A  No, sir. The six fathom shoal is at the north end of Caribou Island.
Q. Is that indicated on the chart; is that the six fathoms directly north of the north tip of Caribou?
A. Yes. There is a circle on this chart.

CDR. LOOSMORE: This chart being referred to as Exhibit 30.

Q. This is the same position we were referring to before that was circled and as to who had circled it?
A. Yes.

Q. And your testimony on this circled six fathoms is what; did you put it on or did someone else?
A. I was uncertain.

Q. Well, the captain; what was his conversation about this six fathom shoal in relation to your vessel?
A. Well, he said we will have to be far enough off Caribou so we are well clear of that and take even more precautions. That's six fathoms when the water is calm, and with those heavy seas, it is going to be less.

Since we had good water the other side of us, that's the only way to go.

Q. Did the captain indicate how far he wanted to go off this six fathom shoal?
A. He wanted to be in the vicinity of six miles off.

Q. Did the captain have any conversation with you or did he say anything about the passage of the Fitzgerald in relation to Caribou Island or this six fathom shoal?
A. No, sir.

Q. Did he indicate that the vessel, the Fitzgerald, may have been close in or far off of Caribou?

A. Not that I remember.

Q. On a course of 141, you indicated previously that the Fitzgerald was a little on starboard of your course line; is that correct?

A. Yes, sir.

Q. And you indicated that was just a matter of degrees?

A. On a 24-mile range, yes.

Q. Could it have been as much as a point on your bow; do you think?

A. No, sir.

Q. Do you think that the Fitzgerald passed between your track line and Caribou?

A. I think he may have, but I think he was closer to our course line. This may be supposition.

Once again, when he was in that area, I didn't plot him.

Q. Well, what I am asking is about Caribou Island, you were past down or north of Caribou. Did the Fitzgerald pass inside or outside of your course in relation to Caribou?

A. He passed between me, our ship and Caribou, inside, that would be, I believe.

Q. Did you or any of the other crew aboard the Anderson
have any concern about the safety of the Fitzgerald, knowing the facts as you did?

A. When we determined that he was -- he never let us know that he had problems.

Q. He just indicated --

A. When we reached a point that I heard they lost contact of him, then we were very concerned about him.

Q. But you were off watch at that time?

A. Yes.

Q. How did that information come to you?

A. I don't remember where I got it. I don't remember or I don't know if it was prior to my coming on watch or what.

Q. Well, when you were on watch relieving the mate, were you concerned then about the welfare of the Fitzgerald?

A. I hadn't heard anything from him that he was in dire distress.

Q. Did you assume that he was or was not in trouble?

A. I assumed he was not in trouble.

Q. But my question was: Were you concerned knowing that he had called earlier about the vents and the bent over fencing or the missing fencing and developing a list?

Were you concerned about those facts?

A. The thoughts were there all right and, well, you keep your ears open to hear calls of any changes.

Q. Did you talk at all to the Fitzgerald during that watch?
A. No, sir.

Q. What was the last conversation that you heard from the Anderson to the Fitzgerald before you went off watch?

A. The last conversation?

Q. Yes.

A. At 1340 when the captain was about to come around on that 230 course.

Q. What was the nature of that conversation?

A. The nature of that conversation was the weather and the change of wind.

Once again, I did not hear it at all, because it was not monitored. But I will tell you what I did hear.

Q. All right. Tell us to the best of your recollection.

A. Our captain said he was coming around to the southern...

No, first he said, "What do you think of this change of wind," and I don't know what he said.

Then the captain said, "Well, I am coming around, and I am going to get it over the stern." I don't know what he said; I don't believe he said what his plans were.

He said he was rolling a little bit.

Q. And he called in at that time that he had trouble with the vents and the fencing?

A. Not at that time.

Q. That was subsequent?

A. Yes. Does subsequent mean before?
Q. Later.
A. Later? When he called about the vents, yes, that was later.
Q. Do you recall that conversation at all?
A. As I testified, I was going off of watch and then the mate -- I was still in the pilothouse and the captain had been receiving this call, and I heard him and the captain and the mate talking that the Fitzgerald had mentioned that he had some damage to his fence and fence rails, and he was taking on water.
Q. What do you think happened to the Fitzgerald, Mr. Anderson?
A. I don't know.
From the way we were riding and the way our ship was holding up, we were well battened down. Now, his, I don't know his condition in that respect.
Q. What do you mean "battened down"?
A. We were watertight and secure. All our hatches were secure and the boat wasn't laboring. We were riding well.
Q. What is the normal procedure on lakers that you have sailed on, including the Anderson, about proceeding to sea after you have loaded the vessel?
A. After we have loaded the vessel, well, we make sure our vents are closed and we batten down all the hatches
and check the boat throughout and see that all the ports are closed, any openings that will take water on are checked, and then when you get the report and all that, then you know your ship is secure for sea or for the lake.

Q. With the sea condition that you experienced and let's say that your vents on the ballast tanks were open, would you have made water into your ballast tanks?

A. If our vents were open, we would have made water, but I don't know how much.

Q. Well, you would have made water?

A. Yes, each sea there would have been some go down there.

Q. Mr. Anderson, one of the things that are of concern to us is that the Fitzgerald was fitted with two lifeboats, 50 persons in each, two inflatable life rafts, many life jackets, life rings, and yet we have not been able to either find any survivors or recover any victims, and I am wondering if you can make a comment on that in light of your experience aboard lake vessels.

A. Well, the way those seas were, any men who ventured to go out on deck or the aft, any portion of the open deck, and up around the boat deck area, he wouldn't make it.

Q. He would have been washed over or what?

A. Yes, sir, very much so.

Q. Were you taking seas on the boat then?

A. Yes, sir. Well, we were taking -- well, yes, you
have seas. I didn't look up on the boat deck, but with
25-foot seas, I wouldn't attempt to go up there.

Q  How could you go off of the ship on those weather
conditions, Mr. Anderson?

A  You couldn't get off on a lifeboat.

Q  Why not?

A  Because you couldn't get back to the lifeboat, but
if you were back there, see, the inflatable rafts are all
right, but when they are thrown off of the side, your
chances of getting to it under those conditions are no
good, I think.

The only possible thing is sitting in the raft and
waiting for the boat to go down and hope for the best.
You would inflate it on board the vessel, but then you have
got to -- you must have an area that is snagproof, because
if you snag anything, then you get punctured, so the
inflatable raft in that respect is the only way I can see
it.

But under those seas, I don't know how you would have
been saved.

Q  If you had a life jacket on or let's say washed over-
board, as you indicated going on the lifeboat, as you have
said, for instance, how long do you think you personally
would have survived in that weather?

A  Two or three minutes, maybe. I can't be sure on that.
Q. Not very long?

A. No, sir.

Q. Very cold was the water; it was very cold?

A. Yes. I don't recall. I think it was around 41 degrees, I guess.

Then there is shock. Wherever the individual may be, there is a big shock there and it depends on how strong your heart is. Some are harder than others.

Q. You think two or three minutes for you?

A. Yes.

Q. You look in pretty good shape to me, Mr. Anderson. Are you?

A. Well, I think so.

CAPT. ZABINSKI: Thank you.

EXAMINATION

By Rear Admiral Barrow:

Q. Mr. Anderson, aside from what happened when the Fitzgerald finally disappeared some time after 1900 on the 10th, something initially happened to the vessel which was reported by that vessel to the Anderson at some time around 1530 or 1540, but I think it is very important for the Board to have the best testimony that we can have as to the Fitzgerald's position in the time frame from, say, 1415 through until 1530.

So I am going to ask you to again think very closely
about what you may have seen on the radar screen. I know
you have testified that you were not keeping a plot on it,
but I will ask you several other questions, several
questions which you may have been asked before, and I will
ask you to try and recollect as closely as you can.

When was the last time you saw the Fitzgerald visually?
A Somewhere on my coming on watch at 1152 until the
Otterhead area, I believe, when we were at that area.
Q Fairly early in your watch. Are you saying that the
visibility at that time was such that you couldn't see it?
A Yes.
Q And that the last time that you saw the Fitzgerald,
you indicated it was eight to 10 miles ahead of you; is
that correct?
A Visually?
Q Yes, sir.
A Yes, it would be in that time range, yes.
Q Do you recall subsequently on either the 149 course
that you were following or the 154 course, the position
of the Fitzgerald by radar?
A Subsequently from the 154 course?
Q While you were on either 149 or 154 degrees true.
Do you recall?
A I would say, yes, he was to the starboard of us, to
the right of us.
Once again, not a great amount.

Q. How far ahead?
A. Eight to 10 miles.
Q. Eight to 10 miles still?
When you changed your course to 230, do you recall by radar any particular position of the Fitzgerald?
A. Well, I don't know. I don't believe I checked them at that given time because I was concerned. We were making this change and the wind was changing, and I can't say where his location was at that time.
Q. Do you recall at any of these times noting the Fitzgerald's position with relation to Michipicoten Island?

How far off would you say that the Fitzgerald passed?
A. I couldn't say.
Q. When you rounded to your course of 125 degrees, could you give me any idea, with relation to Michipicoten Island, where the Fitzgerald was?
A. To my recollection, it seems that he was always to my starboard, to the starboard of us.
Q. Even after you made your turn onto 125?
A. Yes.
Q. On the chart which shows the Anderson's track, and I believe that is what -- what exhibit, Cdr. Loosmore?

CDR. LOOSMORE: Exhibit 30, sir.
Q. There is an indication of a course change at 1425
and then just immediately below that, there is another line.

Can you look at that chart and tell me which represents
the actual turning of the Anderson?
A  No, sir; I don't remember. I do know the range and
bearing.
Q  At that time?
A  But, at the point of the hull it is not indicated
on the chart.
Q  Thank you, sir. You may sit down.
During your passage from your loading point down the
lake, can you give me an idea of how many vessels you
cited passing in the same direction or at least going in
the same direction you were going?
A  I can't recall passing any other vessel.
The only other vessel I know of is the Edmund Fitz-
gerald.
Q  The two of you?
A  Yes.
Q  No others were cited going in the same direction as
you were?
A  No, sir.
Q  All right.

REAR ADMIRAL BARROW: Counselor?
MR. MURPHY: Thank you, Mr.
Chairman.
EXAMINATION

By Mr. Murphy:

Q. Mr. Anderson, there is a little confusion in my mind about the two marks that were referred to as having been circled, and I think that the last mark that you referred to was a fathom mark, which you stated that you had put a circle around of six fathoms.

A. I seem to think I have. I am not 100 per cent sure on that.

Q. But your recollection is --

A. This is what I do at times. If something has to be brought to my attention, I will make a mark on the chart so that it will emphasize my memory.

Q. And in this case, I think you testified, the captain, in fact, did bring that to your attention?

A. Yes, we discussed that. Under these conditions, the seas and weather and so forth, we discussed it; yes, sir.

Q. And he emphasized that that's what he wanted to stay away from?

A. Yes, sir.

Q. Do you think it is quite likely you put that circle around that six fathom mark?

A. It is possible.

Q. What is your best recollection?

A. Yes.
Q. It is?
A. Yes.
Q. Now, the other mark with a circle around it is the mark that is six miles off the north tip of Caribou Island, which was the position of your vessel when you marked that in the chart, as you have testified previously; is that correct?
I just want to get the two marks with the circles correct.
A. This mark here, I was uncertain if I put that there (indicating).
I do know for certain that I took the range and bearing off a radar.
It is very possible that after I got my range and bearing that I put that there.
Q. But that mark is six miles off the north tip of Michipicoten Island?
A. Yes.
Q. And you marked your position in your chart as being six miles off the north tip of Caribou Island?
A. Yes.
Q. So I just wanted to get that straight as to the sixes and the circles. I wanted to get that straight.
With reference to your last visual contact of the Fitzgerald, I believe you stated that she was approximately
eight to 10 miles ahead on approximately a parallel course
and something off to your starboard.

Your recollection is that she was always off to your
starboard?

A Yes.

Q As your vessel was approaching Michipicoten, prior to
the time that the captain made the course change of 230
degrees, what was the distance that your vessel would have
or should have passed off Michipicoten if you recall?

A If we hadn't made that haul with the south-southeast
wind?

Q Yes.

A Three miles off the west end of Michipicoten Island.

Q If you had stayed on that course, it was your captain's
intention to pass three miles off Michipicoten Island?

A Yes.

Q As you observed the Fitzgerald ahead of you before you
made that change to 230, did she appear to be still off
to your starboard; is that correct?

A Yes, I believe so.

Q Now, as I recall, the Fitzgerald, being that far
ahead, would have been down below Michipicoten before you
made this haul to 230; am I correct there or do you know?

A Well, no; I don't know, but say eight to 10 miles
down is the only thing I could estimate.
Q. Would you use the dividers and indicate whether that
would or where that would put her with respect to your
position when you made the haul to --
A. Do you mean at this point?
Q. No, before you left your prior course, when you made
your haul into 230.
A. In this area here?
Q. Yes.
A. That would have put him in the vicinity of West End
Light if this is where I had checked his distance, and
once again, I don't know what time that was.
Q. But in any event, you did not see the Fitzgerald
either through radar or visually? You didn't see her
make any radical changes in the vicinity of Michipicoten;
is that correct?
A. No, sir.
Q. Now then, as I recall, you mentioned that your captain
indicated that he talked with the Fitzgerald on the telephone
and there was some discussion about the wind shifting
around.

If the Fitzgerald at that time was at the West End
or slightly below the West End of Michipicoten, then the
Fitzgerald didn't have to be concerned when that shift came
with respect to any danger of the westerly winds taking her
too close to Michipicoten Island; is that correct?
A. Yes; that's correct.

Q. On the other hand, where your vessel was, if that northwesterly shift came while you were still up above Michipicoten, then that could have been of some concern to your vessel?

A. Very much so.

Q. And that was one of the captain's concerns in making the haul to 230; wasn't it?

A. Yes, that was his concern. Yes.

Q. So in addition to wanting to get his waves off his quarter, he also wanted to get far enough west of Michipicoten so when that north-northwesterly wind came around, he wouldn't blow in that direction.

Was that one of his reasons?

A. Yes.

Q. And isn't it true that another one of his reasons for making that haul is that he wanted to be clear of Chummy Banks? Did he tell you that or did you hear him say that, or did he say anything about that?

A. No, sir.

Q. You have no knowledge of that?

A. The biggest discussion was that six fathoms, but this probably was his concern.

Q. It would be a normal concern, wouldn't it?

A. Yes.
Q. Because of the shoal area to be shown here at Chummy Banks, and that's shown as how much, if you know, on this chart?

A. You have nine fathoms.

Q. Now, you were asked a question as to how it happened that at one time the Fitzgerald was eight to 10 miles ahead and the next time, at another time, 16 miles ahead, or when that took place; and I believe your answer was that you did not have any answer for that.

Could the answer be that before you made your haul to 230 she was eight to 10 miles ahead, and while you were on that 230 course, she was still continuing on her other course, and the distance between you opened up during that period?

Would that be a reasonable estimation?

A. Yes.

Q. And do you believe that's what happened?

A. That is one of the reasons. Once again, I said he was a faster vessel, and this would also increase his distance between us along with his faster speed.

Q. I understand. But it was in that area that the distance opened up, was it not, from the eight to 10 to the 16?

A. Once again, I can't say exactly what area it was, but it would have had to have started at that area.

To go from 10 to 16, which was at my supper relief --
Q. Your captain testified that your vessel was on full speed at all times?
A. Yes, sir.
Q. And if he was at full speed at all times during that time, even though you weren't there, this would explain how, during that period you were on relief, that the distance opened up from eight to 10 miles to 16; would that be a fair statement?
A. Yes.
Q. And you believe that's how it occurred and that's when it happened?
A. When the distance changed?
Q. Yes.
A. Partially, yes. Not entirely due to our course change, but his being a faster vessel.
Q. I understand. But I am just trying to ascertain when it happened in the course of these events, and this would be an explanation for when it happened, wouldn't it?
A. Yes.
Q. Do you know of any other explanation?
A. No, sir.
Q. So that's the only obvious explanation, isn't it, sir?
A. Probably so, yes.
Q. Now, you said that you stayed in the pilothouse approximately 10 minutes or so after you went off watch at
1365

1530; is that correct?

A. Yes.

Q. 1520, I'm sorry. I beg your pardon.

A. You don’t usually leave right away.

Once again, I didn’t look at the clock, but I knew it was after 1520.

Q. And you were still in the pilothouse when the call came from the Fitzgerald telling about the vents and the fence, and she was taking on water, as you had testified?

A. But I didn’t hear the conversation until the captain -- until I heard the captain and the mate talking.

Q. But you were there and you know the conversation took place?

A. Yes.

Q. I would like you to look at your radio telephone log if you will, please, and that is Exhibit No. 35-A.

I would like you to indicate whether or not that log shows approximately when that first call from the Fitzgerald was received?

A. The call was 1540 to 1542.

Q. So that call then, sir, came in approximately 20 minutes after you were off watch?

A. Yes, sir.

Q. And that's the call that we have had testimony previously as to when the Fitzgerald advised the Anderson of
these facts that you have testified to previously; is 
that correct?
A. Yes.
Q. And you believe that's the call because it is just a 
few minutes after your watch?
A. Yes, sir.
Q. So that in that time when that call came in, your 
vessel had traveled approximately 20 minutes beyond the fix 
that you took at Michipicoten Island?
A. Yes, that would be correct.
Q. And I don't know if you had any opportunity to determine 
your vessel's speed or not, but did you?
A. I figured we were making about 14.5 with the wind over 
our stern. It could be a third of that.
Q. A third of that?
A. Four plus miles.
Q. So your vessel was approximately four plus miles 
beyond Michipicoten Island when that call -- when that 
call was received? Although you didn't hear all of it, 
you were there, and you know it was received?
A. Yes.
Q. And at that time the Fitzgerald was approximately 16 
miles ahead of your vessel; is that correct?
A. No, sir. He was somewhere between 10 and 16 miles off.
Q. Had the distance closed from the time that you came off
watch until this moment or this time?

A  This is 20 minutes after I was off watch?

Q  That's correct.

A  I had no check on him.

Q  But while you were on watch, the distance increased to
16 miles. You just indicated that?

A  That was during supper relief.

Q  Your supper relief took place after you took the fix
at Michipicoten; didn't it?

A  Yes.

Q  And all of the changes that your vessel made to go to
the westward took place before you reached Michipicoten;
didn't it?

A  Yes.

Q  So that the distance between the two vessels, the
time period that that occurred, took place before you went
off watch?

A  Yes, sir.

Q  So the increase in the distance had taken place by
the time you took the six at Michipicoten Island?

A  Not the total increase.

Q  Approximately 16 miles?

A  Approximately, yes.

Q  Once again, I can't say, but I would assume that, yes.

Q  Yes. That would be the normal time, so do you have any
knowledge that after that increase in distance took place, prior to the time your vessel reached Caribou, do you have any knowledge that there was any shortening of the distance?

A. No, sir.

Q. So to the best of your knowledge they were still 16 miles apart?

A. Yes.

Q. As a matter of fact, you recall when I came aboard the vessel and you wrote a statement out for me the day after this occurred, and I think you did indicate that in the statement, didn't you?

A. Yes, I believe I did.

Q. Now, when you received that information about the call and you didn't hear the call, but you heard the discussion in the pilothouse about it, weren't you somewhat interested in knowing where the Fitzgerald was at that time?

A. Well, you are going to be concerned, yes, but I didn't plot his position.

Q. I understand that, but didn't you look in the radar to see where she was?

A. When the call was received?

Q. When you learned about it.

A. When I was off watch, no, I didn't go back to the radar.
Q. I understand when you were off watch. As I understand, in response to questions by the Board, you were concerned about the Fitzgerald?

A. Well, he said he was going along.

Q. But he had indicated that he was taking some water. He lost some fence and something about vents. That would cause concern to anyone on a vessel?

A. Yes.

Q. Even though you were off watch and even though you didn't plot any position, didn't you go to the radar to look to see where he was at?

A. No, sir.

Q. You had no concern and had not enough interest to look at the radar to see; is that your testimony?

A. My testimony was that I was off watch, and I don't know what the mate testified to.

Q. I am not asking about what anyone else testified to. I really would like to know what you did, and as I recall your wording here a few moments ago when the Admiral was questioning you, it was that you had a natural concern.

Now, wasn't your natural concern enough that you at least went to the radar to look at it to see where it was when you reported this situation that you described?

A. I don't remember whether I had or not.
Q. Your testimony is that based on your present recollection you did not?

A. Yes.

Q. Did you at any time from the time you last saw the Fitzgerald visually look to see where she was in the radar to the extent that you could point out a position, other than the fact that she was always off to your starboard?

A. I never plotted his position.

Q. I didn't ask you that. I am asking you, did you look to see?

I know you didn't plot a position and I am not questioning that. I just want to know if you didn't, as a vessel officer, having an interest in another vessel that was nearby, if you didn't go look in the radar to see where she was?

A. At what time was this?

Q. Well, I think you indicated previously in your statements and in your testimony that you did look in the radar when you noted that she was 16 miles ahead of you before you went off watch at Michipicoten.

Now, at any time thereafter, did you not look on the radar to see where the Fitzgerald was?

A. I may have, but I can't say what time. Each time I looked in the radar on a beam bearing, I naturally would look, but I would never plot. I didn't plot it.
Q. Yes, sir, I know you didn't plot it.

I don't want to suggest that you plotted it.

I am not meaning to suggest that you did, but I am just saying that when you were at Michipicoten, when you were still on watch, you noticed that she was 16 miles ahead and then you heard a phone conversation indicating that there were some problems that you had described to the Board.

Did you not at that time go and take just one look at the radar to see where she was?

A. I don't recall. I don't honestly recall.

Q. You don't recall whether you did or not?

A. I was not on watch.

Q. I understand, sir. I am not questioning that you had any obligation to, as an officer, you were off watch; but you were in that pilothouse and your radar was working and you heard the conversation.

REAR ADMIRAL BARROW: Counselor, I think he has answered that question for me and for you.

He said that he does not recall.

By Mr. Murphy:

Q. Mr. Anderson, would you be good enough to look in your vessel's log, which is Exhibit No. 33-D and B, and would you tell us what the wind directions and velocities were, commencing with 0300 on November 10th?
Would you just read the entries of the wind direction
and velocity?

A. The wind direction on November 10th, it's at 0300.
It was northeast by north 42.

Q. And the next one, please, sir?
A. That's 350, I signed off watch at northeast by north 42.

Q. What time was that?
A. 350.

Q. And that first one was northeast by north 42?
A. Yes.

Q. Would you just step up to the chart, Exhibit 30,
and just indicate what direction that would be from?
A. It would be up in this area here (indicating).

Q. From what direction is it coming?
A. It is coming from this area (indicating).

Q. Coming out of the northeast, pointing from the right-
hand side or the top corner?
A. Yes.

Q. All right. And the next one, sir; would you read the
next one?

That would be 350 a.m., is that correct?

A. Yes, that was the same velocity.

Q. And out of the same direction?
A. Yes, sir.

Q. What was the next one, sir?
This was into my next watch.

Just read the time and the velocities, please.

South-southeast 30.

No, sir. The next one as it appears in the log.

Oh, this is on Morgan Clark's watch.

I don't care which watch.

He gives northeast 23.

And that was out of the northeast at 32 knots?

Yes, sir.

And the next one?

Northeast 31.

And the time of that one, sir?

7:30 in the morning.

And that was out of the northeast?

Yes, sir.

And the next one, please?

7:50, northeast 31 to 34.

And the next one?


And that is generally out of the northeast but a little more out of the north?

Yes.

And that was 26 knots?

Yes.

10:30 was north-northeast 26.
Q. All right, sir. Now, then, after 10:30 the wind changed to south-southeast, did it not?
A. Yes, sir.
Q. That means then from 0300 until 1030, a period of seven and a half hours, the wind was blowing up from 26 to 42 knots out of the northeast?
A. Yes, sir.
Q. What would that do to the seas in the vicinity between the Slate Islands and Michipicoten Island? What would that do to the direction of the seas in that area?
A. The direction would be in the direction of the wind.
Q. So the wind would be from the direction -- from the northeast to the southwest, during that period?
A. Yes.
Q. And that would be in the area between the Slate Islands and Michipicoten, wouldn't it?
A. Yes.
Q. What would that do to the sea in the open area between Michipicoten and Caribou Island, if you can tell us?
A. It would do the same thing, wouldn't it?
Q. And that is a rather long sweep down through there, isn't it?
A. Yes, sir.
Q. Can you tell approximately how many miles that is?

Would you be good enough to just indicate that on the chart?

A. 53 miles.

Q. So over a sweep between those two points from Michipicoten and Caribou, for a period of approximately seven and a half hours, there were strong knots of wind up to 42, sweeping across that area of 53 miles?

A. Yes.

Q. Now, if a vessel were in the area between Michipicoten and North Caribou, under the influence of seas from that direction, it would set that vessel to her starboard, if she were heading down toward Whitefish Point, would it not?

A. Yes, sir.

Q. You may sit down, sir.

As I recall -- well, first I would like to ask you this: What was the reason, if you recall, for making the change, the course change, to 125 degrees, approximately five minutes before you took your fix at Michipicoten, a change that you did not log? What was the reason for making that?

A. For a margin, an extra margin of safety, I would say.

Q. Margin of safety with respect to what?

A. With respect to the given area there.

Q. And the purpose of that margin of safety was to hold up to the eastward, was that correct?
A. Yes.

Q. The purpose for holding up to the eastward at that time was because the prevailing sea had been from the eastward, was it not?

A. The prevailing sea had been there, but that's where the good water is, too, and our concern was, by all means, to go to port and not starboard.

Q. By all means go to port to stay as far off to the eastward, to clear Caribou, so that the effect of the northeasterly sea would not cause you to set down towards Caribou; is that correct?

A. That is correct.

Q. And this was the purpose of your vessel heading up as high as 125 degrees?

A. Yes, sir.

Q. But the fact is, in heading up to 125 degrees, you ended up six miles off of Caribou, which indicates that even though you were heading up that far as your track progressed, your vessel was set to some extent to or toward Caribou, was it not?

A. Yes.

Q. Would you have expected, since this happened to your vessel, that this same situation would have occurred to any other vessel in the area?

A. Yes, if it happens to mine, it will happen to all of
them, I would imagine.

Q. Certainly. Thank you.

You mentioned having been outside. I beg your pardon, you haven't mentioned it -- well, I will rephrase the question.

You mentioned that the pilothouse window was open and this is rather standard or that is the standard procedure.

A. Yes.

Q. Does the vessel always navigate with her front window at least partially open?

A. Yes, sir.

Q. You mentioned the height of the seas and the velocity of the winds that you recorded at 58 knots and higher in gusts; was this a noisy wind? Was it a howling wind?

A. Yes, I would say so; yes.

Q. Would you describe the seas as being wild seas? Would that be a fair description for the seas as your vessel progressed down south of Caribou?

A. Well, I am not sure I understand what you mean by wild. They were strong. They were big seas, and your definition of wild, yes. If I assume how you define wild, I would say yes. They were wild, but they were definitely coming from the given direction, from the northwest.

Q. With respect to your first period of your watch before you were relieved, shortly after Michipicoten,
do you recall whether Capt. Cooper was in the pilothouse
the entire time of that watch, or whether he was in and out,
or what is your recollection of the fact?
A. You mean on my watch?
Q. Or regular watch, yes.
A. He was in the pilothouse most of the time. He may have
gone down to the restroom, but I would say nine-tenths of
the time he was there.
Q. What about the period when you relieved the first mate
for dinner; was Capt. Cooper there at that time?
A. Yes, sir.
Q. Did Capt. Cooper leave at any time for dinner that you
know of?
A. Not that I know of. I don't believe he did. No, sir.
Q. During the course of the transit of your vessel between
Michipicoten and Caribou Island, do you have any knowledge
as to whether your vessel was traveling under the right
rudder or left rudder or maintaining any rudder to keep her
heading?
Do you know that?
A. I believe she was carrying both wheels.
Q. How do you know; would you explain that?
A. I did ask the helmsman at various times how she was
steering and he says he could handle her.
Q. He said he could handle her all right?
A. Yes.

When you are astern, see, you have to steer -- it is a little more difficult to hold a course than it is in a head sea.

Q. Thank you.

MR. MURPHY: May I have just a moment, Mr. Chairman?

REAR ADMIRAL BARROW: Yes. Off the record for a few minutes.

(Discussion off the record.)

REAR ADMIRAL BARROW: Back on the record.

Mr. Murphy?

MR. MURPHY: I just have one more question.

By Mr. Murphy:

Q. When you relieved the first mate for supper, what information did he give you about the conversations that had gone on between your vessel and the Fitzgerald in the interval when you were gone?

A. Well, I heard that conversation prior to going off and the information that I got was that he was -- we were to keep our ears open for the Fitzgerald, and if his problems became worse, that he was going to notify us.

Q. So when you returned, what discussions, if any, occurred between the two of you about what had transpired
while you were gone? Anything?

A. I believe from memory, I think that's all. We were to keep our ears open for a call from them, that we were going to stand by if he had any big problems.

Q. He told you that when you relieved him for supper; is that what you said?

A. Yes.

Q. You had no recollection that he said anything else?

A. No, sir.

Q. Did he say anything else at all or do you recall him saying anything at all about the fact that the Fitzgerald was going to slow down to close the two distances between the ships? Was that relayed to you?

A. I did hear that. It is very possible that he did say that.

Q. At that time?

A. He did tell me that and I just didn't remember that.

Q. Well, would you think a minute and see if there is anything else that you recall?

A. I heard the mate. He was saying that if he wants us to keep with him, he is going to have to slow down. We were having problems keeping up with him.

Q. And do you know whether the Fitzgerald did that? Did the distance close down some?

A. I didn't check.
Q. You left the pilothouse?

A. Yes. Whatever check I made, like I say, I was 16 miles ahead.

MR. MURPHY: I have no further questions.

REAR ADMIRAL BARROW: Is there anything further by the Board?

CDR. LOOSMORE: Yes, sir, I have a couple of short questions.

EXAMINATION

By Cdr. Loosmore:

Q. Mr. Anderson, when you and I were talking earlier this morning, you were talking about holding back something on the course. I don't recall the exact words.

A. Maybe I said holding up.

Q. As I understood what you said, that meant that you steered a slightly different course than the course which was in the log.

A. Yes.

Q. And I think you went further to say that the course in the log was what? What was the course in the log that was represented?

A. At what given course?

Q. When you were steering one thing and logging another, what did the one in the log mean?
A. The one in the log meant that's the course that we wanted to make good. In other words, if we were going 149 and I have the wind to my port, and depending if we are a loaded vessel, I am going to hold up one or two degrees in that case.

This boat was loaded; that was the condition.

Q. So what was the helmsman trying to steer during this period on your watch when you were logging 149? What were his instructions from you?

A. To steer 147.

Q. 147?

A. Yes.

Q. And I believe you have testified that he was able to hold that pretty well perhaps within one or two degrees. Now, what course did you draw on the chart; was it 147 or 149?

A. I don't remember if that's my line or not.

Q. Let me rephrase that. What course would you have drawn on the chart?

A. I would have drawn 149.

Q. 149?

A. Yes, but from time to time you will check if you are in a vicinity of a light to see what you are holding up and it is proper. This holding up goes with experience.

Q. All right, sir. Now, when you made the course change
from 230 to pass between Michipicoten and Caribou, you

came back to the southeast to go between Michipicoten and

Caribou?

A. Did you say 230 or 130?

Q. I didn’t say; I said from 230.

A. 230.

Q. You were heading generally southwest?

A. Yes.

Q. And I believe you testified that you took a bearing and

then changed course?

A. 130.

Q. And you did not quite do those exactly at the same

time?

A. No, sir.

Q. What was your desired course at that time? What was

the new course?

A. My new course was 130.

Q. And what did you steer?

A. At this time I had the wind over my stern. This is

the basis of it all.

Q. What did you steer?

A. 131.

Q. 131? Okay. I had understood your earlier testimony

to be that, as best you recalled, your steering course

was 130.
Now, why would you have been steering to the right of your intended course when there is an island down there 20 miles away?

A. I had the wind over my stern quarter.

Q. I realize we are talking about pretty small numbers; but as I understand what you are telling me, and I believe you are trying to remember and we have been talking about this all day, and things do come back as you discussed it, which is why we go through this procedure --

A. The wind on the starboard quarter is not going to upset you as much as it is on the bow.

Q. Or on the beam, I suppose?

A. If I said 131, I am not sure of that.

Q. All right. As best you remember, did you steer anything to the left of your course?

A. Not from 130.

Q. Then a few moments later you changed course to 125?

A. Yes.

Q. Now, is 125 the steered course or the log book course?

A. That would be the steered course.

Q. The steered course?

A. The log course.

Q. The log course?

A. I got the wind behind me now, so there is not going to be that much set.
Q: Okay, just so we have this clear. We are heading southwest back on 230. Let's go back about an hour in time.
A: All right. Okay. Go ahead.
Q: Where is the wind?
A: The wind at 230 is southwest.
Q: The wind, when you are on a course, 230 is out of the southwest?
A: A changed course to 230? No, I am looking at the wrong line.
Q: I think so.
A: Northwest by west. I'm sorry.
Q: Where is that with respect to your ship?
A: At 230 I have got it over here (indicating).
Q: Dead abeam?
A: Yes.
Q: And what's the ship doing?
A: The ship is rolling a little bit.
Q: Yes, sir. Now, you changed course to the southeast to 130?
A: Yes.
Q: And where is the weather?
A: Where is the wind then?
Q: Yes, sir.
A: It is over my stern quarter.
Q: And what did you steer?
A. I steered 130.
Q. Or 131?
A. I don't remember if I held up on that course or not.
Q. Okay. Fair enough.
Where was the weather when you changed to 125?
A. The wind was over the stern. It was on the starboard
quarter a little bit.
Q. And I believe you got off watch right after that.
Where was the weather when you came back for the
suppertime relief between 4:30 and 5:00 o'clock in the
afternoon?
A. It was still northwest by west. It was increasing.
Q. And where was it with respect to the ship?
A. Over the starboard quarter.
Q. Who all was in the wheelhouse with you? We talked
about the captain, and we mentioned the wheelsman a couple
of times.
Can you tell us who else was up there? Let's talk
about the suppertime relief.
A. I was up there, the wheelsman and the captain.
Q. And the captain?
A. Yes.
Q. Was there anybody else in the wheelhouse?
A. It was still daylight. No, I believe it was just the
three of us.
Q. And between the 12 to 4 watch, between 1150 and 330 when you were relieved, was there anybody else up there?
A. No, sir.

CDR. LOOMISMORE: Thank you, Mr. Anderson.
That's all I have.

REAR ADMIRAL BOW: Capt. Wilson?

EXAMINATION

By Capt. Wilson:

Q. You have two radars on the Anderson?
A. Yes, sir.

Q. Do you use both of them for navigation, position fixing, or do you use one?
A. I am partial; I like the Calvin Hughes, and that is the one I use most of the time.

Q. You use that for everything, for position fixing and for watching other vessels?
A. If I want a true course, I will use my Raytheon, but 90 per cent of the time I use the Calvin Hughes.

I have always had good luck with it. I am satisfied with its performance.

Q. Does the captain and the other mates, are they partial to the Calvin Hughes also?
A. Well, I am not on their watch.

If the visibility gets real extreme, I think the Raytheon is better, but under these conditions here, the
Calvin Hughes was performing satisfactorily, to my knowledge.

Q. Well then, you read the Calvin Hughes set on the long-range scale generally, unless you want to use it for getting a fix?

A. Yes.

Q. Do you usually leave it set on the long-range scale?

A. For my targets or at a distance. Our next scale down from there is 12. If I want something less, I will come down, but 24 miles is a good overall distance for getting a good picture for anything in the area.

Q. So you leave it on 24 unless you are going to take a good in close bearing?

A. Yes.

Q. So the bearing you took in establishing these positions you would have shifted down to the lowest scale; is that correct?

A. You don't have to. I may have shifted to 12; I don't remember.

        I can still get my fix on 24. I have a variable range marker.

Q. But you normally would shift down to the lowest scale you can use to navigate and then go back up?

A. Yes.

Q. So then generally, if you were taking one of these positions, you wouldn't, if you dropped down to the 12-mile
scale, you probably wouldn't be able to see the Fitzgerald while you were getting your radar range when she was beyond 12 miles?

A. Right.

Q. Did you see the Fitzgerald when you were getting the range and bearing on Caribou? Can you recall that, whether she was on there or not?

A. I don't remember.

Q. How far is your Calvin Hughes; how far was that located away from your wheelsman and your gyro? Was it close?

A. Well, let's see. It is right to the left from the front window.

I would say from the wheelsman it is about five to six feet.

Q. From your gyro?

A. Well, the gyro is between the wheelsman and -- once again, maybe it is five feet in that case.

Q. You said you overheard the conversation with the Fitzgerald where you said she lost some fence and vents.

What did you take "vents" to mean? What vents were you referring to?

A. The air vents.

Q. She said air vents?

A. Yes.
Q. What are air vents?

A. Air vents go -- on the Fitzgerald, I am not familiar with her, but I believe she had the same type we have.

When you are pumping in ballast or pumping out ballast, you have to have some place for the air to escape when you are pumping water into a ballast tank full of air.

These vents are opened up so the air can escape, otherwise you will break the tanks.

You are pushing water pressure against air pressure.

Q. I guess I am searching for the nomenclature a little bit. If she had lost the vents for ventilation into the living quarters or the engine room, what would they call that?

There are so many vents on the ship; how would you know one vent from the other?

A. That never entered my mind.

They spoke of air vents on the deck. There would be no problem with the ones on the boat deck, and once again, I don’t know what she had.

Q. Do you have any other air vents on deck on the Anderson?

A. We have vents to the tunnel but they are closed also, our tunnel going aft.

Q. What do you suppose the Fitzgerald would have said if those were the vents? Could those have been the vents they were talking about?
A. I don't know if she had them.

   My understanding of the vents was -- my first thought
was the air vents to the ballast tanks.

Q. But she never indicated what air vents? That's just
general nomenclature; that's what you would expect?

A. Yes.

Q. If the same thing had happened to you, to the Anderson,
for instance, and if the conversation was reversed and
you lost your, say, your tunnel vents, what would you have
said?

A. I would have said I lost my tunnel vents.

Q. When you are doing your navigation, and I see obviously
you make plots in there and there are a lot of things
going on in the bridge at the same time, but once you get
your beam bearing, do you plot it first and then log it,
or do you log it and then plot it?

A. I have to plot it to get my range, and then I enter it
into the log.

Q. So you make up your log from your plot; is that
correct?

A. I plot it from my divider or what I got off my radar.

Q. Now, when you make your plot, you check it.

   Do you check it a couple of times to get the right
distance off and so on, when you are making the plot, not
the log?
A. Most of my plots have been by radar, radar and range.

    Then I log it in the chart. I am looking at my radar, and I see I am abreast. Then I look at the clock, and then I make my entry.

    If I am at the distance where I am off, which you know in advance approximately what you will be off, you already figured the approximate course which you are going to steer as to what you are going to steer on your next course, then you go and log that in.

    You tell the helmsman the course to steer, and then you log it in. When that course is completed, he tells you he is on that course, and you get your magnetic readings.

Q. So you do take your entries for the log book off your plot from the chart?

    You make the plot on the chart first, or did I misunderstand you?

A. No. That is a tricky one.

Q. I don't mean it to be.

A. I am looking at radar. I can see the island, and I know from the chart the shape of what every island we are speaking of, and Caribou in this case, I know the shape of it.

    I have my variable range, and I know my distance off. I don't have to refer to the chart.
I go to my log and have to log it in. I am six miles off and I am going to steer such and such a course on my next change at this point.

Q. If I understand you correctly then, you determine in advance, you decide what you will make the beam or whatever. Then you go to the radar and watch the island in this case until you reach that 90 degree point.

Then you make your course change, and then you enter it in your log.

Is that the sequence you go through?

A. They are almost simultaneous. I go over to the log and I say that we're abreast, and I look at the clock. I say that we will come to such and such a course, and then I go and start my log.

Q. But you don't go back to the chart first before you do your log?

A. No, sir.

Q. Do you have a pretty good helmsman with you on your watch?

A. I have been there a month, and this fellow has been wheeling what I call these big boats for many years.

I feel he is very competent.

Q. So he has ability to hold the course pretty well?

A. Yes.

Q. I think you said this morning that you never plotted
the Fitzgerald.

You saw her in radar now and then during this watch?

A. Yes.

Q. And she was ahead of you.

Now, I think Capt. Zabinski asked if she ever got one point off the bow and you said no. She never got as far as one point? A half point?

A. Not to my knowledge.

Q. I realize you never looked. Would it have been maybe a half point?

A. I don't believe that much.

Q. A quarter point?

A. Now you are going into my arithmetic.

Q. Let's say a half point.

A. I would say less than a quarter point.

Q. I just picked points. Can you give me a degree?

A. This is again looking up ahead.

Q. Can you give me degrees off? She never got so many degrees off?

A. Two or three degrees.

Q. And the furthest away that she got from you was how far?

A. I was estimating 16 miles.

Q. It never got further than that away?

A. I don't think so.
Q. So during the time that you saw her, you did not go back periodically, but when you were on the early course, southeastern, she was generally within two degrees of your heading flasher and some place between 10 and 16 miles during that period of time?

Do you feel that your helmsman stayed within the two degrees of the course?

A. Yes, I do.

Q. After the call came in from the Fitzgerald, any time that you were on watch after that, did you have any trouble keeping up with her?

Did you indicate that she slowed down at any time or indicated that she was slowing?

A. No, I never had any indication of that.

CAPT. WILSON: That's all I have.

REAR ADMIRAL BARROW: Capt. Zabinski?

EXAMINATION

By Capt. Zabinski:

Q. By referring to the chart, we have an area marked Chummy Banks. Would you look at the chart and see what Chummy Banks is?

A. Yes, sir; I am familiar with it.

Q. Now, you also had the six fathom mark that you indicated was just about due north of Caribou Island; is that correct?
A. Yes, sir.

Q. That is the one that you have sort of penciled a circle around. That was the point you thought that the captain said to keep clear of; is that right?

A. We discussed all of the area. He was aware of the Chummy Banks also.

Q. He was?

A. Oh, yes.

Q. Just take your dividers.

What is the difference between Chummy Banks and the sixth fathom shoal?

A. Eight miles.

Q. Eight miles?

A. Yes, sir.

Q. Counselor mentioned, and I think you said, if you understood what he meant, you would agree that this was a wild sea.

What do you think a wild sea is? What does a wild sea mean to you?

A. Well, a wild sea -- I would define a wild sea to be a sea that is mixed up, no set direction. That was very strong, very heavy.

Q. From one direction or was it from all directions?

A. It was from one direction.

Q. Would you call seas that are coming from one
direction wild or would you describe those as wild?

A    Well, I suppose they could be defined as wild, but
      the sea was riding well.

Q    No. You indicated in your answer that you weren't
      sure what counsel meant by the word "wild," but you went
      ahead and answered the question anyway.
      Now, I want to know what you think wild means, or
      a wild sea.

A    I thought it was a wild sea, as I mentioned, a
      mixed up sea, no set direction; choppy.

Q    Would you say that the sea between your passing
      the west end of Michipicoten down to Caribou was from
      all directions?

A    No, sir.

Q    Which way did it prevail?

A    It prevailed from the northwest.

Q    What height were those seas?

A    25 feet, probably the maximum.

Q    For the seas to be built up that high, without wind,
      they would have to have been blowing for some time?

A    Yes, sir.

Q    Pretty strong winds?

A    Yes, sir.

Q    So would you still, in light of that, still call
      these as coming from all directions?
A. This sea, I would not call coming from all directions, no, sir.

Q. You indicated to counselor that the reason you were six miles off Caribou, based on the intended track line and where you ended up, was because of a southwesterly or a southerly set, is that right?

A. Yes, yes, sir.

Q. Where did that set come from? What caused that set?

A. The southwesterly set?

Q. Yes, sir.

You indicated on the chart that the intended track line was something less than seven miles out of Caribou; is that correct, and your fix was six miles off Caribou, the north tip of Caribou.

Look at the chart and see the intended track line and the fix that you got at 1652. There is a difference of about one mile, is there not?

A. Yes, sir.

Q. And in answer to counsel's question, as I understand it, you indicated that that was from a set, is that right?

A. Well, we should have set with the northwest sea.

We should have set.

Q. What kind of sea?

A. The northwest sea.

Q. You should have a set which way?
A. We should have set to the eastern.

Q. Well, now, I want you to take your time and you answered counsel and state that the set that you expect to be was seven miles off, is that correct, by your intended track line on the chart? Your actual fix off the north point of Caribou was six miles with wind conditions as they existed.

Why did you get closer to Caribou than you had anticipated? Was it because of a set or for some other reason?

A. The course, the distance that I was supposed to be off of Caribou was six miles.

Q. Based on what; based on what?

A. This was the captain's desire.

Q. I see. And when you had set off your course line from the west end of Michipicoten, you expected to pass six miles off?

A. Yes, sir.

Q. But the track line is plotted for seven miles off, is it not?

A. Yes, but once again, I don't remember whether I put that line on there or not.

Q. But your intention was to pass six miles off?

A. Six at the minimum.

Q. And you were six miles off?
A. Yes.

Q. In light of that, would you say that there was any kind of a set between the time you passed Michipicoten West End and the time that you were abeam of Caribou?
A. Not very noticeable; no, sir.
Q. And if there was a set, which way would it have been, based on the wind and sea conditions that existed?
A. Well, at that given time, coming from the northwest, probably to the eastern.
Q. Did you get any weather forecasts on your watch?
A. Yes, sir.
Q. What was the weather forecast?
A. What weather forecasts?
Q. What was the weather forecast and when did you receive it?
A. I always get the weather at 1202 and that's what they call the Major.
Q. Yes, sir; and what was that forecast?
A. That was a storm warning.
Q. Storm warning?
A. Yes. At 1204, I don't remember.
Q. What is the speed of wind or what is the estimated velocity of wind when they broadcast storm warnings?
A. A storm warning is 46.
Q. What would be the velocity of wind for storm, if you
Within the vicinity of 40 knots.

Q. Did the Fitzgerald send out any May Day?

A. Not to my knowledge.

Q. While you were on watch?

A. No, sir.

Q. Did the Fitzgerald send out any communication that you heard or that was heard on the Anderson, before you went off watch, that she was in any kind of distress?

A. No, sir.

Q. Did you, Mr. Anderson -- I ask you to think of this question very carefully. Did you have any idea when you left the bridge after relieving the mate for supper, did you have any idea that the Fitzgerald was going to sink and lose all hands?

A. No, sir.

Q. Did you have any inkling that such a thing was possible?

A. No, sir.

Q. That such a thing would happen?

A. No, sir.

CAPT. ZABINSKI: Thank you. That's all I have.

REAR ADMIRAL BARROW: Counselor?
EXAMINATION

By Mr. Murphy:

Q. In response to a few questions that were just put to you by Capt. Zabinski with respect to set, I think you did establish that your log shows that the winds had been out of the northeast for seven and a half hours.

Do you recall that?

A. Yes, sir.

Q. Now, I would like for you to look at your log and take a look at the shifts in wind from the time that she first went other than from the northeast, and the first entry is what?

A. South-southeast 30 at 1150.

Q. And the next entry?

A. South-southeast 30.

Q. And the next entry?

A. South-southwest 11.

Q. And the next entry?

A. Northwest by west 5.

Q. So in that period, the winds reduced from 30 to 5 knots; is that correct?

A. Yes, sir.

Q. Now, then, when did they -- what time did they first start blowing out of the northwest at any velocity -- northwest 5; would you agree that that is not a great
velocity?
A. 5, yes, I would agree with that; yes.
Q. The next time they started blowing with velocity then was at 1445 when they were 42 knots?
A. Yes, sir.
Q. Out of the north?
A. Yes.
Q. Is that correct?
A. Yes.
Q. All right, sir, and then you passed Michipicoten at what time?
A. 1520.
Q. And they were out of what direction, then?
A. Northwest.
Q. And then you passed the north tip of Caribou at 1652 and they were at what velocities? Northwest by west?
Taking that time period when the winds were out of the northwest at a velocity starting with 1445 to 1652, when you passed the north tip of Caribou, what is that time period?
A. Just a little over two hours.
Q. So the wind had been out of the northwest strong, a little over two hours, and the wind had been out of the north-east strong for about seven and a half hours, had it not?
A. Yes.
Q. Considering that information, does that give you any explanation as to why you had a set to be south and then to the east, as you approached Caribou?

REAR ADMIRAL BARROW: Southwest?

MR. MURPHY: Southwest, I beg your pardon.

A. I was going by my seas and how long -- that northwest increased rather quickly. I was really more concerned about that northwest, but there could possibly have been some effects from the other sea.

By Mr. Murphy:

Q. Can you give me any other explanation, your having steered 125 degrees, which would have taken you off of Caribou, I think you previously testified, 7.7 miles, if you had been on that course?

Can you give me any other explanation, while steering 125 degrees, that you ended off six miles off of Caribou, other than the fact that there was a set out from port to starboard?

A. Any other reason?

Q. Yes; can you give me any other explanation how you could have ended up closer to Caribou on a heading which was supposed to take you away from Caribou, other than a set?

A. Evidently there was a set there, yes.

Q. Thank you, sir.
EXAMINATION

By Capt. Zabinski:

Q. In response to my question, what course, what distance off Caribou did you intend to pass?
A. Six miles.

Q. What distance did you pass?
A. Six miles.

Q. What is the set; where is the set?
If you passed what you expected to pass, what set was there or am I missing something in your testimony?
A. Well, the way you phrase it, there was no set.

Q. That's what your testimony is. You wanted to pass six miles off. That's where you steered a course for and that's what you actually passed; is that correct?
A. Yes, sir; but the captain changed it, as I say, which I didn't log, about five minutes before the 125, but that factor in that distance could possibly have been a set, but I don't know.

I do know that we were six miles off of the north tip of Caribou because I got it off of the radar and I had a good fix and a good range, range and bearing.

Q. If you were on a course, you hauled a course five degrees to the left and then you stayed on that second course, that new course, for five minutes, how much difference is there between the original track line and
five minutes later on that new course, five degrees to the
left, if you can tell me?

A. Well, that's approximately -- it is a little less
than a mile running time. It's about .08 miles.

Q. .08? .08?

A. .08 hundred miles. This was about a mile.

Q. Thank you very much.

CAPT. ZABINSKI: That's all I have.

REAR ADMIRAL BARROW: Do you have a

question, Commander?

CDR. LOOSMORE: Yes, sir, two very short

questions.

EXAMINATION

By Cdr. Loosmore:

Q. I didn't understand when you were reading in the
log, when you had the northeast winds.

Could you tell me what time that was, please?

A. The northeast winds were from 3:00 o'clock in the
morning on the 10th.

Q. Were you on watch at that time?

A. Yes, sir, I am on the 12 to 4 watch.

Q. Without reference to the chart, roughly, where was
the Anderson at that time?

A. Without reference to the chart?

Q. Yes, just roughly, where were you?
A. I believe we were below Island Royale.
Q. You also said that there was possibly some effect from the sea. I believe you were referring to a sea created by a northeast wind.

Whatever you were referring to, when you were in the area between Michipicoten and Caribou, was there -- and you have testified that during that time when you were in that area the wind was just off of your starboard quarter, between that and the stern --
A. This was between Michipicoten and West End and Caribou?
Q. Yes.
A. On this course of 130?
Q. Whatever course you were on, and you have also testified, I believe, that the seas were large and of a regular direction.
A. Yes.
Q. Was there any other indication of any other sea system? Were there cross-swell or cross-waves or any other type of sea system present there?
A. No, not at that time, no. There was prior.
I have indicated in the log the change from northeast to northwest.
Q. I am thinking about the sea state, not about the wind. The winds are very clearly listed in the log, and that is
not what I am talking about.

    I am talking about the seaway. You are steaming along,
and you have testified that you were almost at full speed
and the seas were big, 25-foot seas, and they were coming
from dead astern and they were rolling over the decks,
and this whole picture.

    But what I am getting at is whether there were any
other sea systems coming from any other direction than that.

A. Not when you have northwest wind at 25 knots high.

    CDR. LOOSMORE: Thank you. That's it, sir.

    REAR ADmirAL BARROW: Thank you very much,
Mr. Anderson. We appreciate your testimony.

    I might ask before we finish, we have questioned
you at some length about your recollection of events
on the Anderson as they relate to the Fitzgerald,
and I will ask you now if there is anything that
you can recollect which you have not reported to the
Board, which might help us in achieving our purpose,
which is to find out what happened to the Fitzgerald.

    I will ask you that now, sir.

    THE WITNESS: If I know what happened
to the Fitzgerald?

    REAR ADmirAL BARROW: No, if there is anything
that you can recollect that you have not told us up
until this point, which might assist us in achieving our purposes of finding out what happened to it.

Is there anything that you can recall that you have not told us?

THE WITNESS: No, sir.

REAR ADMIRAL BARROW: Thank you very much. You are excused. You are cautioned not to discuss your testimony with anyone other than counsel until the conclusion of the investigation.

Thank you very much. (Witness excused.)

REAR ADMIRAL BARROW: We will recess for about eight minutes.

MR. KEENEN: Is he free to leave now?

REAR ADMIRAL BARROW: Yes, sir.

(Recess had.)
REAR ADMIRAL BARROW: Let the record show that we reconvened at 1645. Let the record also show that counsel for the parties are the same as before.

CDR. LOOSMORE: The Board calls Mr. Richard Feldtz to the stand.

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RICHARD A. FELDTZ was called as a witness and having been first duly sworn, was examined and testified as follows:

EXAMINATION

By Cdr. Loosmore:

Q. Would you please state your name, address and occupation, please?
A. My name is Richard A. Feldtz, 6179 Paisley Drive, North Olmsted, Ohio.
I am employed by the Oglebay-Norton Company in the Columbia Transportation Division, and I am a hull superintendent.

Q. I didn't hear the last part; what was your occupation?
A. I am classified as a hull superintendent for the Columbia Division.

Q. Mr. Feldtz, do you hold a Coast Guard license or document?
A. No, I don't, sir.
Q. How long have you been employed by Columbia as a hull superintendent?
Q. And how long prior to that had you been involved in work in this related area?
A. Since 1959.
Q. Was all of that work related to Great Lakes shipping?
A. Yes, sir; it was.
Q. What are your duties as hull superintendent? What do they involve?
A. Hull maintenance and repair of the hull structure, the deck machinery and the deck department and equipment.
Q. Do your duties as hull superintendent involve visits to the various ships that Columbia runs?
A. Yes, sir.
Q. Frequently?
A. Well, sir, in 1974 I was aboard the Fitzgerald on 16 different dates.
In 1975 I was aboard the Fitzgerald on 15 different dates.
On this one date, it may involve numerous visits; sometimes it is one, two or three a day, but these are different dates that I am referring to.
Q. When was the last time you were aboard the Fitzgerald?
A. The last time was on October 31, 1975.
Q. And what was that occasion?
A. To commence an annual survey.
Q. An annual survey? Is that something that the company does?
A. No. That is something that the company does in joint requirements with the Coast Guard and the American Bureau of Shipping.
Q. What was conducted on the 31st then?
A. On the 31st we had conducted a spar deck inspection which was the commencement of the annual.
Q. What were the results of that spar deck inspection?
A. The results of the spar deck inspection on the Fitzgerald, I believe there were four minor discrepancies that were disclosed.
Q. And what action was taken by you as a result of these in your role as hull superintendent, as a result of the finding of these discrepancies?
A. Well, after we found discrepancies, we looked at them and we discussed at the time, to prevent any further discussion, I explained how we would repair them in the future and if that was satisfactory to all those concerned. I was given a statement by the American Bureau of Shipping at the time that these would be completed before the '76 inspection, and the Coast Guard, he contacted his office and followed up and gave a requirement that these
discrepancies of a minor nature would be completed prior to 1 April 1976.

Q  What did you do as far as your relationship with the rest of the company?

A  Of course, I discussed all the finance with Capt. Jacobson, and I keep him abreast of what is happening. At a later time, I just don't recall when we discussed these.

Q  Did you write them down at all, Mr. Feldtz?

A  Yes, sir; I write everything down in my notebook.

Q  What do you do with the things that you write down in your notebook?

A  I follow them up, and when I do them, I check them and date them. I keep a separate book on discrepancies or items to be dealt with at a future time, and I record these in my book.

I have three books. My first book is a book that I have on all incoming phone calls, a book consisting of the pertinent conversations discussed.

My second book has all the outstanding jobs to be completed on vessels, and I write these in that book.

I also date them at the time that these repairs are completed. I do keep a record of the dates, the people in attendance of all spar decks, and if requirements were issued, I have that.
I have the status of the repairs, either outstanding or to be completed, prior to completion of the next special survey, which would be an upcoming drydock inspection.

What I do is categorize them and put them in time elements that I have to repair them.

In some cases such as the Fitzgerald, I undoubtedly would try to complete these repairs prior to layup for the easement of having to get shore power so I won't have to take the hatches off during the winter.

The majority of these are of a short time period where you can repair them while you are in port loading.

Q. Mr. Feldtz, we have a requirement here to prepare a verbatim recording of these proceedings.

That's what this reporter is doing here.

I am going to ask you to speak a little more slowly and a little more clearly and louder so he can get everything.

You said you had an individual ship file, but then I thought I understood you to say that you said that it had spar deck inspections.

Do you have an individual ship file that includes other kinds of inspections, or what kind of files did you keep?

A. Well, the file that I keep are the reports -- see, I get separate reports from American Bureau of Shipping.
In other words, I get a Xeroxed copy of the report to our office from the American Bureau of Shipping.

I keep that duplicate in a desk. If I get a telephone conversation, I can just reach in my drawer and pull out this file, and I don't have to go to our central file system.

Q. Do you have that file with you for the Fitzgerald?
A. No, I don't, sir.

Q. Does that file include everything that happened in hull maintenance to the Fitzgerald this year?
A. No, sir, it doesn't.

The hull maintenance of the Fitzgerald being in the nature of the Fitzgerald really wasn't -- there wasn't too much that was effected during the sailing season.

The last maintenance we had done during the season was during the layup of the '74-'75 winter.

Q. Tell me again what you did with this discrepancy that was prepared by the Coast Guard. It isn't clear to me yet what you did.
A. There was a spar deck inspection on the 31st of October, and there was a written discrepancy that was provided.

Q. I have Exhibit 34-A and I believe this is it. Is that your signature on the bottom?
A. That's correct, sir.

Q. All right. Did you get a copy of that?
A Yes, sir, I did.

Q And what did you do with that?

A I put it in my current ship files to be effected prior to April 1, 1976.

It was attached to a letter that was a follow-up which you have as an exhibit.

Q I have Exhibit 47. Is that the letter you are referring to?

A That's correct.

Q So you received that letter as well?

A Yes, sir.

Then to bring it further up to date, what I will do with that is I will attach it to the requirement and keep it in the file until the repairs are complete.

Then I mark it "Complete Report," date it, the repair contractor, and then put it in the completed requirement file.

In other words, I take it out of my ship's file and put it in a completed requirement file.

So if I put that file that I keep in my drawer, I open it up. I have a Coast Guard file which is not complete.

When I do complete it, I mark it such, and I put it in a completed requirement file.

Q Do you put this requirement, these requirements in this particular 835 on any work list?
A. No, not at this point.

I had discussed these with our repair contractor, and my instructions to him, at the convenience of the ship when she was in port, was to get going and to complete these requirements so they will be completed prior to this winter's layup.

Q. Who is your repair contractor?
A. Merce Boiler & Welding Company.

Q. Would Merce Boiler -- was it your intention that Merce Boiler would have done all of your work this year?
A. In that particular vessel, it was slated for layup in Toledo. Yes, they would have.

Q. But if I understand what you are saying, there was not any written record of this at all?
A. No, sir.

Q. Had you prepared a work list or a rough work list for what you had intended to have done on the Fitzgerald for that layup?
A. Yes, I did.

Q. Do you have a copy of that?
A. No. It is what we consider as our winter work schedule.

Q. Who makes that up?
A. For the hull end of it, I write it up.

Of course, the crew writes up what they feel is defec-

tive on the vessel.
I conduct an inspection on the vessel some time in the month of September.

Q. Did you do that?

A. Yes, I did. I take the repair list given to me by either the captain or the first mate, review it, make notations to it and look at the particular items.

Then I take a tour of the vessel myself.

I note anything in addition that I feel or would want to consider doing.

Q. So then would you be the sole judge of whether something which had been the captain's or engineer's request, that it be done; is that within your responsibility?

A. Yes, but I do discuss it with my superior.

Q. And who is that?

A. Capt. Jacobson.

Q. You said you don't have a copy of the winter work list. Do you know whether that's made up yet?

A. Yes, sir; that is.

Q. Is it extensive?

A. No, sir; it is not.

MR. MURPHY: For the record, I would like the record to show that this list has been delivered to Cdr. Loosmore several days ago at his request.

CDR. LOOSMORE: There were quite a few
things requested and not delivered.

That particular winter work list is not in
evidence and has not, as a matter of fact, been
marked yet.

If this witness is the person who made it up,
I think it is very pertinent to discuss it with
this particular witness.

MR. MURPHY: I agree with you 100
per cent, but the inference that he doesn't have it
with him is what I am concerned about.

CDR. LOOSMORE: There is no inference.
I asked him if he had it with him.

MR. MURPHY: I would like the record
to also show that all of the various matters and
additional exhibits that have been requested here,
that I have had them present and offered to deliver
them to you for at least four or five days or
several days and there just hasn't been the oppor-
tunity yet to get them into the record.

REAR ADMIRAL BARROW: Cdr. Loosmore, do we
have the piece of paper that constitutes a work list?
Do we have it here?

Off the record.

(Discussion off the record.)

REAR ADMIRAL BARROW: Back on the record.
CDR. LOOSMORE: No, sir; I will have to find that paper and get it in.

REAR ADMIRAL BARROW: Fine. All right.

By Cdr. Loosmore:

Q Mr. Feldtz, I have a two-page exhibit here which is unmarked and I would like to show you that and ask you if you can identify that.

A Yes, this is a winter work listing, subdivided by charge numbers, with the estimated cost and a brief description of the work detail, and that was prepared and typed on 10-20-75.

CDR. LOOSMORE: Sir, my notes indicate that the next item is Exhibit No. 56. I would request that this two-page exhibit be marked 56-A and B.

It is entitled "Columbia Transportation Division, Winter Work, 1975-76, Edmund Fitzgerald, Hull," and consists of nine work items and two pages.

This will be 56-A and B, sir.

REAR ADMIRAL BARROW: Mark it for identification.

(Exhibit 56-A and B marked for identification and made part of the record.)

By Cdr. Loosmore:
Q. I would like to discuss this with you for a few
moments, Mr. Feldtz.

Is this the work list which you said arose from your
inspection of the vessel?

A. Well, sir, one thing I probably should clarify is
the work list which we initiate, we start our inspection
at the 1st of September.

Now, inspection of spar deck don't usually start
until some time in October or early November, depending
on the ship's scheduling, my availability, and so on.

Now, the mate or the captain keeps a work list that
begins in the fitout or in the spring, of items of minor
nature, or repair items such as deck coverings, and
any discrepancies that he may find on the boat during
sailing season.

So come September, he is not picking from his memory.
So this really, this work list as such is not written,
but it starts at fitout.

I gather his information around September and start
to inspect the vessel, and as you see on my work list,
I have an open area with an estimated, what I could possibly
anticipate may involve the expenditure of moneys for an
annual spar deck examination and repairs as found necessary
by the United States Coast Guard and American Bureau of
Inspection.
This figure, at the time that I submit this for approval, is nothing more than an arbitrary figure, because at this point I don't know what spar deck repairs will have to be effected until we complete this survey; but the management wants these estimated costs in by the 1st of October and they also have another work list which has anticipated requirements issued by the United States Coast Guard and the American Bureau of Shipping inspectors.

Now, at the time that the vessel is laid up, we then continue with our annual survey by inspecting the peak tanks, the remainder of the deck areas, and once again the hatch coverings and combings with the covers closed, the ventilators, the air vents, your deck structures; and we also inspect the cargo holds.

If there are any discrepancies found that the Coast Guard or the American Bureau would require to be repaired, this is where those repairs are categorized, under this charge number, or any other additional repairs that I may feel that I want to keep up on to prevent a build-up of small discrepancies.

Q So then there would be more than just what is on that list.

Is that what you are telling me?

A There would be more as itemized under this charge number, yes. This charge number, as you can see it,
and I will explain it to you, is an open charge number, but during the winter months, what I will do when I do come up with it, I will make notations in pencil on here as to what costs are being spent and what they represent.

This $4800 for anticipated requirements is only an arbitrary figure. This figure could be under this or it could be over, depending on what they find during the course of our layup and spar deck inspection or vice versa, see.

Q. Did you go through this whole process between '74 and '75?

A. Oh, yes, this process is gone through every year.

Q. Would there be a detailed listing of what you did between '74 and '75 with something like this at the beginning of it?

A. I would have it with a handwritten notation in there, yes.

Q. Handwritten notations -- what I was getting at, was some kind of a record of what was done to the Fitzgerald during the '74 and '75 layup because you just indicated that this work would be done during layup.

A. Yes, sir. I have records of a handwritten nature that was done to the Fitzgerald during the '74 and '75 layup.

Q. Do you have those records with you?

A. No, I do not, sir. I personally don't have them.
Now, if they were submitted as exhibits, I don't know, but I personally do not have them in my personal possession right here.

MR. MURPHY: Commander, you had requested me to see if we could obtain those and produce those, and I do believe I have them here. They are a part of the file that I have been trying to gather and I will try to produce them as soon as I can, when I find out where they are.

If you would like to continue with your questioning, I will search my file here and hopefully come up with them.

By Cdr. Loosmore:

Q. Mr. Feldtz, you indicated that you were on board the Fitzgerald a total of 15 times in 1975.

Do you have any kind of record with you which would indicate the dates and the reasons that you were on board for each one of those times?

A. Yes, sir; I do.

Q. I would like to discuss with you anything for which you visited that had anything to do, really, with your job, during that whole 1974-1975 period, back to the drydocking which was, as I understand it, the last special survey.

Were you involved in the last special survey, by the way?
Q. Was the same sort of work list, the handwritten notation system that you have described here, was that done for the drydocking, too?

A. Yes, sir; it was.

Q. Was there anything else that was done in the drydocking?

A. No, other than putting the vessel to a special survey, no, sir.

There were repairs that were made to plates L-8 and L-9 and I believe there was K-9. Those were in the way of Frames 30 to 50, Breast Hatches 3 to 5, which is the first and second below sheer strake on the side, which were effected afloat at the American Ship Building Company in Lorain, Ohio, prior to entering drydocking for bottom inspection.

Q. In 1974?

A. Yes, correct, and the winter layup in '74.

MR. MURPHY: Commander, if I may interrupt, I have found a list that was given to me, if you would like to have it introduced now or whenever you would like.

(handing.)

By Cdr. Loosmore:

Q. Mr. Feldtz, do you recognize this two-page list that
Mr. Murphy just handed to me?

A. Yes, I do.

Q. Can you tell me what that is?

A. That is our winter work list. The reason -- this list here is a preliminary list that is typed up in book form and given to management for approval. Now, once management approves this list, we put it on a working form, which indicates just basically the same as you have here, a charge number, job description, and at this time there is no real need for it in this report; but we put the vendor so that we keep a record of who we had to do the work and the appropriation and then the final cost.

Now, this report is only in the preliminary stage yet. Management has approved it; however, the girls are in the process of typing it in this form.

Q. I see. But the information in the two forms is the same?

A. That is correct, sir, but additional space is available on the second form that you see.

Q. Okay.

CDR. LOOSMORE: Sir, I have another two-page form. This one is noted page 1 and page 2, with the repairs, Vessel Edmund Fitzgerald, No. 01, Department Hull, Season 1974-75.

I would request that this be marked for
identification as Exhibit 57, sir.

REAR ADMIRAL BARROW: 57-A and B or just 57?

CDR. LOOSMORE: Well, I suppose it should be A and B, sir.

REAR ADMIRAL BARROW: 57-A and B for identification will be marked so.

(Exhibit 57-A and B marked for identification and made a part of the record.)

By Cdr. Loosmore:

Q. Mr. Feldtz, I notice that the winter work numbers here are changed.

A. Depending on which category they are going to fall in, if you take a number, as you see there, 02, that is hull. Those are cargo hold numbers.

01 is a classification for deck items.

Q. What are the numbers following that, -5 and -6?

A. That is really set up for a computer. 01 is a hull. It has a categorized number.

If you go to the second page, you will see 02, and that is for cargo hold repairs. In our IBM setup system, an 02 number is classified for cargo hold repairs.

03 number is living quarters, and so on.

In other words, living quarters, I believe, is categorized as 03. 04 is deck coverings -- I'm sorry.
This is living quarters and these would be galley.  
04 is galley. 03 is quarters. Four is galley.
Q I see.
A Ten is electrical. 12 is miscellaneous, such things as life-saving equipment and other items under 12.
Then you can go on further. We have numbers in the 90's which would be an unappropriated number and so on.
Now, the number, as you see the second number, which is 07, 08, that is the numerical number that is presented and they follow in order.
Now, 6 is our hull designated number. We have a 6 and we have a 9. 6 indicates or goes under Hull Repair.
9 is an engineering repair.
Q And the following number?
A The year, 1975.
Let me clarify it. Now, this was submitted in 1974, but the appropriations and the write-off and the cost will be in '75, so it will be classified as '75. That's when all of the bills are going to be paid and that is when our costs will be working against the vessel.
Q I see. This represents what you intended to do on the vessel. This is just the information translated.
A No, you are misunderstanding this.
Q I thought I just asked you if the information was the same, and you said yes, it was.
They are two different years. That is '74-'75 and this one is '75-'76.

Q. And what does this represent?

A. That represents the work that was appropriated and the handwritten notes. See, the contract is over here. Then you have a price. This is what the job costs us. This job here, I cancelled because that was defective prior to winter layup.

Q. Referring to 01, of -5, -6?

A. Yes, and as you see here, I have it marked down, so I cancelled that charge. That charge number, I cancelled over the IBM.

Q. Does this represent everything that was done to the Fitzgerald during the winter layup, 1974 and 1975?

A. Can I read that for a minute, sir?

(N.B.: See next page.)
A. Yes, sir. The reason I hesitated, if we had any
   casualties on the bottom, we list them separate, because
   they are an insurance item and not appropriated.

   I would write insurance and casualty of such and such a
   date, and then also the contractor and the place.

   On this particular item, there are no items listed after
   my last winter appropriated items, so, therefore, there was
   no insurance or damage repair during that winter season.

   In other words, I review the whole damage, and if it
   comes under insurance, we list it separately. It is not
   really an appropriation.

Q. Whose handwriting is this?

A. That is mine.

Q. When a particular item of work is done, is it inspected
   by the ABS and the Coast Guard as well as you?

A. If it is a classification type of repair, in other words,
   if it is a repair to the structural portions of the vessel.

Q. So then it should be possible to take the ABS reports,
   for example, and this particular report and come up with a
   one-to-one match?

A. Well, they issue an annual inspection report when the
   annual inspection has been completed and fed out.

   Then they will submit a report to us listing all the
   repairs of their interest during the past winter.

   That may affect the certification or classification of the
vessel.

Naturally, they are not going to list deck covering repairs and so on.

Q. All right. When you have these repairs accomplished, do you prepare detailed specifications of the repairs?

A. I make it a point when I am making inspections at layup, the cargo holds or the tunnels or the decks and combings, I have, naturally, this winter work list with me. I have a repair contract with me.

Between the two regulatory bodies, the repair contractor, myself and that list, I specify the intents of repairs, what we are going to repair this winter, and I get an agreement from all concerned as to the nature of the repairs.

From there, it is up to the Coast Guard and the Bureau to visit the vessel and see that any of the repairs are being effected to their satisfaction, and then I give them a final inspection. They approve it, of course.

I don't have any joint inspections with them as such. They know what the repairs are, and they know the manner in which they are to be repaired. They automatically follow through in their time scheduling.

Q. How does the repair facility know what you want done?

A. They are present. That's what I just mentioned.

Q. Do they write a work order?

A. In most cases they take notes.
Say we are cropping a main deck plating that is buckled. We will mark that in chalk right there, the radius, and he will make notes and at a later date I write him out a requisition. Depending on how much detail there is, I will give him a description of what has to be done.

If he makes a note and I know he understands it, I sort of make it brief.

Q. Do you have a file of the requisitions which have been written on the Fitzgerald in the last couple of years?

A. I personally don't have a file, no. There is a file kept in our accounting department.

Q. You write the requisition, but you don't keep a copy of it?

A. No, not after the bills are paid.

I record all the costs in that sheet that you see there. I record the costs from the bills and then the bills with an attached copy or requisition are sent up to the accounting department for payment. I always have a record of the costs, so there is no need for me to keep it.

COMMANDER LOOSMORE: One of the items requested was a report of repairs on the vessel, the Fitzgerald. Do you have that, Mr. Murphy?

MR. MURPHY: Over what period of time?

COMMANDER LOOSMORE: I don't recall precisely what we said last week.

MR. MURPHY: I was under the impression
that I was asked for the repairs performed on the layup
of the '74 and '75 season and those that were the
repair lists for the 1975 and '76 season.

Now, I was not aware that there were any other
requests. If such a request was made, I will seek to
obtain it.

May I have the specific request?

COMMANDER LOOSMORE: There seems to be several
pieces of information which are on file at one place or
another that are developing in this line of questioning.

Why don't we go ahead, and I will try to recap them
all at one time.

MR. MURPHY: Fine.

By Commander Loosmore:

Q. Let's just work back in time.

I would like to discuss as briefly as possible, but in
as much detail as necessary to understand it, everything
that had to do with the whole structure of the Fitzgerald.

Apparently, that's 31 visits of which we have talked
about one.

A. Well, a lot of them are general visits. I go aboard
the vessel. I walk around and observe and see that the
hatch combings and maintenance items, I am involved with the
maintenance, the painting, the upkeep of the quarters, the
upkeep of the galley equipment, the deck machinery and cables.
I see that the cables have been maintained, dressed; that
there are painting programs, tank-cleaning programs; that
there are tank-cleaning programs that are being effected by
the crew and just generalities to see if I can detect
anything aboard the vessel and see how the maintenance is
going.

Q. We would like to know the intention of what the hull
structure was or what was received, since there was a hull
structural problem which caused the loss.

If you have that information, we would like to know the
dates of such visits.

A. Could we work chronologically one way or the other?

These are copies that I just took out. This next one is
1-27-75, Toledo, Ohio, which was a general visit.

General visits are explained as I categorized. I walk
around and see the maintenance, as to how it is going.

I see if there is anything the crew needs from me or
anything they need for me to do for them.

The next one is 1-28-75.

Q. Excuse me a minute, Mr. Feldtz.

You have described this general visit.

About how long would you spend during a visit of a
general visit such as on the 27th of this year?

A. That can vary from an hour to three hours.

Q. Do you write a report of that to yourself?
A. No. The only time I write a report is if pertinent repairs are required.

Q. All right, sir. Go ahead. When was the next one?

A. 1-28-75, Toledo, Ohio, which says, "General layup inspection."

This I have gone over, and I make a tour through the vessel with the first mate or most likely check housekeeping and the condition that the crew leaves the boat in at layup. In other words, I see that the rooms are cleaned out and that there is no combustible material laying around, paint lockers are secured and paint is put away. I discuss the mooring lines with him.

Q. Is there any report of that visit in writing?

A. No, there is not. You have to keep in mind that I may have made six of these visits in one day.

That would be to different vessels.

Q. Go ahead, sir.

A. The next is 2-3-75 that I was also visiting during the period of layup; 2-5-75, this is all in Toledo.

Q. What happened on the 3rd?

A. That was also a general layup visit.

Q. All right. Go ahead.

A. The next is 2-3-75, Toledo, Ohio, the general layup visit; 2-6-75, Toledo, Ohio, general layup visit; 2-19-75, Toledo, Ohio, an annual inspection was conducted with a cargo hold,
main deck tunnels for peak, engineroom stations were inspected
in the attendance of the Coast Guard and the American Bureau
Inspectors.

At that time the buckled main deck plating at the
forward end of the tunnel was discussed, which is indicated
on my winter work list.

Repairs were discussed, and an outline was made. The
repairs were turned over to a repair contractor.

Q Were any of these February reports, were any of these
February inspections subject to any reports on your part, sir?
A No, sir. They were just a general maintenance and a
winter work repair item.

I believe I have a winter work item for these repairs,
which entails 21 feet. I think that's indicated on the
winter work list that you have for '74 and '75. It would be
about the sixth item.

I believe on there they are specified as 15 feet.

Q There is an item 010365, repair buckle main deck plating
of tunnel at forward end?
A Yes, sir. That was something that occurred in the later
part of the operating season in '74.

In fact, it was detected on 6-18-74.

Q Did you determine what caused the buckled deck plating?
A Yes, sir. It is in an area that you normally expect
buckled deck plating.
Let me specify that it was minor buckled deck plating, in other words, wavy irregularity.

It is one of the areas that you normally look at or inspect for a possible irregularity in the plating. That is a general upkeep so to speak to keep reducing the heavy buildup of wear and tear.

You see, this particular vessel probably makes two docks a day.

I'm sorry, not two a day, a dock at the locks and at Toledo. Where we get this type of damage is making the Soo Locks.

It is not necessarily from one contact. It could be from numerous contacts, and each time the main deck plating becomes irregular. Before it gets to its point where it could be serious, we crop these out regularly.

This is a normal repair of this type of vessel.

Q. Is this stiffened plating?
A. Yes, it is, sir. It has deep deck beams on the underside, which is indicated on your midship section that you have as an exhibit.

Q. Are there any penetrations involved?
A. No, it is just a wavy irregularity.

Q. But there are no deck penetrations in the area then?
A. No, sir. The framings goes from a transverse framing to a longitudinal framing along above the deck.
Q. Are there any pipes?

A. There are pipes that go through the plating, not at that point. The pipes go through the forward and aft end or side of the ballast tanks. In that area there are no penetrations through the deck.

That is at the midlength of No. 1 side tank, that particular repair.

Q. That was on the 19th of February.

Go ahead.

A. That's correct, sir.

On the 25th of February, February 25, 1975, there was another visit made to the vessel. This was also a general visit for inspecting the winter repair work that was in hand or possibly going over -- I don't recall who I was aboard with at that time. It was probably a joint contractor.

We had some deck covering that was being done. On February 26th, it is the same, in Toledo, and then I go to 3-6-75, Toledo.

It was also a season inspection of winter work in progress.

The next is 3-18-75, Toledo, the same; 4-2-74, there was a general inspection in preparation for fit-out.

On 4-11 of '75 there was a general inspection.

Then I go to 7-3 of '75 in Cleveland, Ohio, which was also a general inspection.

Q. Excuse me just a moment.
Excuse me just a moment.

I try to make it a point to get aboard all vessels at least once a month if not more.

When did the vessel get underway last winter, do you know?

The exact date on that, I do not know.

I am going to say it is in the area of 4-2-75.

Do you try to make it a point to be there when they depart on the first trip?

No, sir; I don't.

Also in the Port of Toledo, we have other numerous vessels laid up. Of the majority laid up, the majority are self-unloaders.

Those are the vessels I try to be available for. The only time I stop during fit-out is when the lifeboat drills or the Coast Guard fit-out drills are being conducted.

There is a possibility they need an axe handle or a life buoy that I can get from our storage, or I see if our purchasing department can get it for us while the inspection is being completed.

This is so we can complete it before the inspector leaves. At that point, I am what you might call a liaison person, running and trying to bring our gear complement up to date.

Were any reports written at all during the remainder of the February inspections or visits or any other visits prior
to the time that the vessel got underway this spring?

A  In '75?

Q  Yes.

A  No, sir; there was not.

Q  What other visits do you have? You said you visited the vessel on the 3rd of July.

A  Now, we're down to the 3rd. 10-15-75.

Q  Tell me about the 3rd of July.

A  That was in Cleveland, Ohio, and it was a general visit.

Q  What was the purpose of that?

A  On the 3rd of July?

Q  Yes.

A  It was a general visit, and we talked to the Captain to see if he had anything, and we talked to the Mate and also to the Steward.

Q  Was there anything?

A  Probably I took a look at the passenger quarters to see that they were in suitable condition for guests, or to see if they were starting any cargo hold painting.

Q  Cargo hold painting? Is cargo hold painting conducted in the summertime?

A  Yes, sir, there is.

Q  How is that accomplished?

A  You stand on the cargo and paint the structures that we can reach in nice weather.
Q. I thought the vessel was pretty much underway continuously?

A. Yes, sir. It is.

Q. Can this kind of thing be done underway?

A. Yes, sir.

Q. How do you get into the cargo hold?

A. You remove a hatch on a nice calm day.

Q. And then what, do you climb down?

A. Yes, sir. They have ladders they put down.

Q. Does that regularly go on during the summer season?

A. Just in the periods of good weather.

Q. All right. What was the next visit?

A. 10-31-75.

Q. I thought you said there was one prior to 10-31?

A. There was a 10-15-75 visit.

Q. I missed that one. Excuse me. Go ahead. 10-15-75, what was the subject of that one?

A. That was a general inspection. 10-31-75 is when we effected our spar deck.

Q. What was the 10-15?

A. I believe I picked up winter work on that. I believe I was down there for winter work purposes.

COMMANDER LOOSMORE: Mr. Murphy, one of the other things that was on that list was a request for the Master or Chief Engineer and other voyage reports during
the operating season, which I believe we have discussed
would have included these winter work lists.

I think what Mr. Feldtz is referring to is this
winter work.

THE WITNESS: Do you mean prepared by
by the crew?

By Commander Loosmore:

Q. Yes.

A. Let me tell you this: They are prepared by the crew,
and they vary in all cases.

Some are handwritten on a notebook, and he will tear it off
and give it to me.

Others are typewritten. Sometimes they keep copies and
sometimes they don't.

Q. Well, do you keep a copy?

A. Yes, sir. I do. I do if they are handwritten copies.

Q. Even after you have made up this Exhibit 56-A, this
winter work list, then you go ahead and retain a copy of that?

A. Yes, sir.

Q. Do you recall in the case of the Fitzgerald whether
Captain McSorley and his engineer prepared formal requests,
or was it a handwritten note?

A. I believe Captain McSorley's was typed out, and there
were about three items on it. I am going by recollection.

COMMANDER LOOSMORE: Do you have a copy of
that?

MR. MURPHY: I don't. Perhaps the
witness does.

THE WITNESS: I don't have a copy.

COMMANDER LOOMIS: He does not have a copy.

Q All right. Then after the 15th, when was the next date?
A The 31st of October, 1975. That was at Toledo, Ohio.

Q Which we have discussed?
A And we have discussed that one. That was a spar deck
inspection, and in attendance was the U. S. Coast Guard and
the American Bureau of Shipping.

Q Do you have your records for 1974?
A Yes, sir, I do.

Q Could we discuss what you did in '74 as far as the
vessel was concerned, please?
A All right. On 1-21-74 I was at Lorain, Ohio. It was in
layup.

Q Layup? Do you mean the vessel operated into the
wintertime into January before it was laid up?
A Yes.

Q Was that true in the '74 and '75 season as well?
A Yes, sir. The vessel laid up the 28th of January, 1975,
according to my records.

That could vary one day or not. That's the day I went
aboard for layup.
That doesn't necessarily mean that they pulled into the port on the 28th of January.

Q. All right. What were your plans for this year?  
A. This year for the Fitzgerald do you mean, for '75?  
Q. For '75, yes.  
A. Unfortunately, she only had about two more trips.  
Q. When did you plan that it would lay up in '75?  
A. Probably the last weekend in November.  
Now, the layup procedure is not set by myself, but between Captain Jacobsen and our dispatching department.  
They don't give me the reports.  
Q. All right. It is the 21st of January in '74, and you -- 
you visited the Fitzgerald where?  
A. In Lorain, Ohio.  
Q. Okay. Go ahead.  
A. January 22, 1974, I visited the Fitzgerald in Lorain for a damage survey of the casualty of May 4, 1973, when she struck the McArthur Lock wall, the port side plates L-8, 9 and K-9, and I was in attendance of the United States Salvage Representative, an American Bureau Representative and a Coast Guard Representative.  
Q. Were requirements issued at that inspection?  
A. No, sir. That was a survey of a past casualty which had deferred requirements on it, which were surveyed May 5, 1973 at Toledo, Ohio.
Q. Okay. Go ahead.

A. The next one is 1-28-74, Lorain, Ohio, a general inspection during the period of the winter layup; February 5, ’74, Lorain, Ohio, general inspection of the winter layup.

Keep in mind during the winter layup you are going in and inspecting the vessel and looking at these repairs while they are in progress and seeing how the repairs are going, and you see how they are doing and if you are satisfied.

Periodically, if we do find a difficulty, which I don’t recall or have a record of in this case, but you may get together with the American Bureau Representative and Coast Guard people and go down and look at it.

Q. We left off at February 5?

A. Yes.

A. It goes to 2-15-74, the same, Lorain, a general inspection in layup.

Q. Did you write any reports of any of these visits?

A. No. I do not for a general inspection, not for a general inspection I don’t.

Q. Go ahead.

A. 2-15-74 was the same; 3-19-74 was the same; 3-16-74, we conducted or started, or I should say continued our special survey, which entailed innerbottom and tank inspections.

There I was in attendance with an American Bureau Inspector and two Coast Guard Inspectors.
Q: Go ahead.

A: On 3-30 of '74, Lorain, Ohio, we conducted a spar deck inspection.

Q: Were there any requirements issued there?

A: At that point there were no requirements issued. However, we did get into some repairs.

Q: Repairs? What repairs?

A: Well, there was some hairline cracks that were found in the weld at the top of the connections between the transverse hatch combings and the connection of the underdeck longitudinal girder.

Q: At what location?

A: They were found to be in numerous hatches, so we proceeded the process to alleviate the cracking and we radiused the small nip hole that it has in the corner of that hatch connection there to enlarge it, to cut out the crack and to alleviate the problem that was existing.

It is one thing to find a crack, but it is another thing to correct it so that it doesn't reoccur.

Q: Would that area that you are talking about appear on a midship section drawing?

A: Yes, sir, it would.

Q: I have here Exhibit 6-F, which is the midship section drawing, which is in evidence.

Would you point out where that area is, please?
It is right in this area (pointing). This fathom area that you see here is the bottom of this hatch combing and it comes down. This fathom line that you see here is at the end of the hatch combing, which is an extension of this combing down into the cargo hold area and this comes across and then there is a radius that starts here and goes over to the top of this upper deck longitudinal.

Q. As shown in this diagram?
A. As originally constructed, yes.
Q. Where were these fractures that you encountered?
A. These at the top weld connection, hairline cracks in the weld itself.

CAPTAIN ZABINSKI: Where? Can you describe it?

THE WITNESS: Yes, they were probably a half an inch in length and in some cases they went across the top surface of the weld through this thickness of the plate. She had a wrapped weld and it came across the top and down approximately half inch down the side.

By Commander Loosmore:
Q. Is that in the arch plate, what you have described as an arch plate?
A. No, it is in the hatch combing itself. This photo is by way of the arch.

Now, the arch is between hatches. This is the opening
The hatch combing is at the end of the opening, which runs transverse from port to starboard.

In fact, it is here. See here (indicating)? Now, this end, this is a view looking this way.

Q. Pointing to a section marked, a section, "Arch stiffeners," looking to port.

A. All right, go ahead.

Q. Where this terminates and it comes out on the decks.

A. Let's get me oriented.

Q. This vertical here, is that the horizontal spar deck?

A. Yes.

Q. And the vertical is what?

A. Those are the hatch combings.

Q. Those are the hatch combings? All right.

Is the spar deck stiffened by this five by three-eights flat part?

A. The longitudinal, yes, this is looking port to starboard.

Q. This little drawing is a transverse section. As a matter of fact, it is looking from starboard to port, but that is not really material.

Where was this fracture?

A. This terminates going to the side of the vessel at this longitudinal deck girder.

Q. All right.

A. And then now, it terminates up to this point, but above
the deck, it goes out to the end of the hatch combing where
it picks up the longitudinal combing.

Q. Right.

A. Do you follow me?

Q. Yes, I do.

A. That was the area.

So it had been incorporated with new construction and it
was found that these radius openings were too small and also
were too close to the deck plating themselves, so due to the
problems that we were having here and other problems
throughout the different types of vessels, where any member
passes through the openings, and they felt they were too small,
so through consultation with the American Bureau, American
Bureau Technical, they incorporated the new construction.
They had gone to a little larger opening to give it a little
different stress flow and also they took this, below the top
of this longitudinal, away from that deck plating and this
also would give you better inspection.

So the way this was achieved, was by burning out, dropping
this down approximately two inches, regrinding that surface,
inspecting it, and rewelding down the side in that new cut
section.

Q. What sort of radius did that cutout have?

REAR ADMIRAL BARROW: I think none of that

will be comprehensible for the record. I think probably
we will need a small sketch of the repair.

COMMANDER LOOMIS: Was a drawing of that prepared?

THE WITNESS: Yes, right here.

COMMANDER LOOMIS: You have one prepared?

THE WITNESS: May I ask for my original back and I will give you a copy?

COMMANDER LOOMIS: Why? Is there any difference?

THE WITNESS: No, no difference.

COMMANDER LOOMIS: I have a handwritten sketch, or hand sketch, which I believe would be Exhibit 58, and request to mark this sketch 58, which is the detail of this larger cutout.

REAR ADMIRAL BARROW: This is the detailed sketch of the repair that was performed, the modifications that were performed?

COMMANDER LOOMIS: Yes, sir, the modifications.

Is that correct

THE WITNESS: Yes.

REAR ADMIRAL BARROW: Mark it 58 for identification.

(Exhibit 58 was marked for identification and made a part of the record.)
By Commander Loosmore:

Q. Mr. Feldtz, will you sign and date this, please?

A. Sure.

(Witness does as requested.)

Q. Was this modification performed on all 21 hatches?

A. All 20 hatches. The twenty-first hatch, in that typical vessel, has a different arrangement. The arrangement was made in the field during construction.

Q. What other requirement came up during the 30th of March spar deck inspection, Mr. Feldtz, that you can recall?

A. That's all that I recall, sir.

I would like to make it clear, too, that these hairline cracks, which I consulted with the American Bureau on, to rectify measures which I wasn't really satisfied in the re-welding of them, which in time would not satisfy this, so he had -- I don't recall if he called his technical office or not, but during a short period that same day we then got back together and we discussed the possibilities of opening that small radius and by doing so, pretty well took out -- in fact, it did in all cases took out the crack, the minor crack that had existed and therefore we just rewelded the top cut portion and it did prove satisfactory.

If you look there at two spar decks after that, there was no reoccurrence of any hairline cracks.

REAR ADMIRAL BARROW: Excuse me, Commander
Loosmore.

When were these repairs that you are talking about to Hatches 1 through 20 accomplished?

THE WITNESS: They were accomplished 4/74, prior to going to spar deck.

REAR ADMIRAL BARROW: 4/74?

THE WITNESS: Yes, that is correct.

REAR ADMIRAL BARROW: But, you are talking about an inspection that took place on the 30th of March, which resulted in repairs during April.

THE WITNESS: Or the early part of April, yes. I don't just recall when, but these were detected at that date of 30th of March, 1974, 30 '74, April, and then we discussed them as to what was to be done and then they were taken care of the next week after that or a week to two weeks.

You must keep in mind what they had to do was to remove all hatch covers and stage in that area. The repair itself wasn't that extensive, but to get people to that area to make the repairs was extensive because of the stage and the scaffold involved.

By Commander Loosmore:

Where were these repairs conducted, Mr. Feldtz?

At Lorain, Ohio, at the American Shipbuilding Company.

And what was your next visit, Mr. Feldtz?
A. 4-11-74, which was a general inspection review. The hatch combings were repaired. In other words, I was there to see what they were doing, how it was progressing. 4-17-74, the same. 4-18-74, the same. 4-74, we conducted a double -- I mean an underwater inspection of the vessel while on drydock at the Lorain, Ohio, American Shipbuilding Company shipyard.

This was attended by one person from the American Bureau, an American Bureau Surveyor and two Coast Guard Surveyors.

On 4-20-74, in Lorain, Ohio, I visited the vessel for fit-out purposes.

On 6-12 of '74, I visited the vessel in Cleveland, Ohio, for general purposes.

6-18-74, I was aboard the vessel for general purposes, and this is when I detected the irregularity in the main deck plating, port side at the fore to mid length of No. 1 side tank, which was so indicated on the winter work list of '74 and '75 as being repaired.

Q. What was the date?
A. 6-18-74.

This was the date that the main deck irregularities of minor nature were detected and they appeared on that winter work list of '74-'75.

Q. Where was the vessel then?
A. Toledo, Ohio.
Q. What kind of a report was written at that time?
A. I don't recall of any report being written other than a notation in my notebook.
6-18-74 to 6-23-74, I made a trip aboard the Fitzgerald from Toledo, Ohio, Silver Bay, and returned to Toledo, Ohio. 8-20-74 was a general inspection and a pickup of winter work.
Q. Do you recall what form that winter work list was in?
A. Pardon me, sir?
Q. Do you recall what form that winter work list was in.
A. Yes. Captain McSorley was still aboard and, knowing Captain McSorley, I am sure it was typed out on the office literature.
Q. Do you keep a copy of that?
A. I don't recall, sir, if I go back that far or not, but I have to check the files.
I normally keep them until the following sailing season and then I dispose of them, providing that the notations that are in those are recorded on my work sheets.
Q. Okay. Go ahead.
A. 10-17-74, I visited the vessel at Cleveland, Ohio, for spar deck inspection in the attendance of an American Bureau Inspector and a United States Coast Guard Inspector. No requirements were issued.
Q. I'm sorry. I missed that date again.
1. A. 10-17 of '74 in Cleveland, Ohio.

2. Q. Yes, and what was accomplished then?

3. A. A spar deck inspection or the commencement of the annual survey, which was attended by one Coast Guard Inspector and one Representative of the American Bureau of Shipping.

4. Q. Were there any requirements written?

5. A. No requirements were written.

6. Q. That was a Cleveland spar deck inspection in 1974?

7. A. Correct, sir.

8. Q. And there were no requirements at all?

9. A. No requirements at all, no, sir. No work required. Now, don't forget, sir, this was a spar deck inspection, commencement of annual survey, for the commencement of an annual survey for certification for the season of 1975.

10. Q. That was the last time you were aboard that vessel until it laid up in January of 1975?

11. A. In 1974, sir -- no; yes, sir. I'm sorry. The last time I was aboard that vessel until 1-27 of 1975, correct.

12. Q. Mr. Feldtz, what can you tell us about the change in load line which occurred in 1973?

13. A. Well, modifications came out with the load line requirements of 1973, which varied the freeboard or reduced the freeboard for vessels that would qualify under those requirements, and I believe she was entitled to an increase of eight and a half inches in freeboard for midsummer drafts
and the remainder of them, I really don't have, sir.

I believe in the summer it was -- I don't recall, sir.

Q. All right. We have some of that in the record, a considerable amount of information on that.

A. Yes.

Q. But, our information indicates that there were some requirements which were imposed before the new freeboard could be effected.

Q. Do you have information on what they were and when they were accomplished?

A. I have mental information on when they were. They were specified -- our requirements for a vessel to qualify for this 1973 load line assignment are listed in the Federal Registry.

Q. Okay. What I am specifically interested in is when they were accomplished on the Fitzgerald, when and where?

A. They were accomplished in October of 1973, prior to issuance of a 1973 load line.

Q. Okay. Do you have a list of what they were and where they were done?

A. They were done in Toledo, Ohio. They entailed modification of the handrails or safety rails on the foresle task and the poop deck aft, the installation of horizontal one and a half inch by a quarter inch flat bar stiffeners on the all-weather steel decks, on the weather deck or spar deck, which was the deck which had doors on the forward side of
the aftercabins, the after side of the poop house, and the
fantail area, and on the after side of the forward deckhouse,
doors on the spar deck level, increasing of freeboard area
on the fantail area to 8.5, the raising of four ventilator
covers or vents, which are 8-inch extra heavy pipe at fore
and after end of the spar deck, which vent the main deck
tunnels.

This, sir, was the extent to the best of my recollection
that was required.

Naturally, the installing of the new load line.

Q. I didn't understand the statement about the stiffeners.

You said the installation of flat bar stiffeners in the
spar deck.

A. On the steel doors, the watertight doors leading to the
house.

Q. Okay. All right.

A. The panel span area was found to be of a minor question,
so it was rectified by the stiffeners.

Q. What was this about vents?

A. There were two vents on either side of the vessel, one
forward and one aft, on the spar deck or weather deck, which
ventilate the main deck tunnels.

The original height, I believe, going from memory, was
24 inches. The Federal Registry or requirements set down by
the American Bureau, representing the United States Coast Guard
in its behalf, required them to be 30 inches and they were so raised to 30 inches.

Q. How was that done?

A. The pipes were cut, approximately 6 inches above deck, with an extension or an insert put in them with full penetration and inspected by the American Bureau Inspectors.

Q. Full-penetration weld?

A. Pardon me, sir?

Q. Did you say you had full-penetration welding?

A. Yes, sir, that is correct, sir.

Q. With a backing ring?

A. Yes, sir.

Q. Do you know whether the Coast Guard Inspectors witnessed that?

A. No, sir, the Coast Guard Inspectors did not witness it. It was a requirement inspected by the American Bureau of Shipping.

COMMANDER LOOSMORE: Sir, do you have those ABS work lists?

REAR ADMIRAL BARROW: Yes.

(Handing.)

COMMANDER LOOSMORE: Thank you, sir.

By Commander Loosmore:

Q. Mr. Feldtz, I have Exhibit 3-H, which is an ABS work list, which has been provided by your company in answer to a request
of the Board.

This particular one is dated 19 April 1974 and it includes quite a long list of repair items, but it has one that is No. 13, and I will read it, "The hatch side girders were examined from above deck and all found in satisfactory condition upon completion of the following repairs: The hatch side girder in the way of forward side of No. 14 starboard hatch corner was fractured and the repairs were effected by removing three rivets from each side of the fracture in the spar deck connection."

A. Yes, I recall that now, now that you mention it.

What it was was a hairline fracture adjacent to this welding connection that I had mentioned to you, so the manner of repair that they had effected was the complete rewelding and what they had done to keep away from the spar deck area they radiused the top corner, fed back the flange, which removed three rivets on either side, and got a full penetrated weld, not using a back-up bar right behind it.

Q. Do you have a sketch of that?

A. No, I do not.

Q. Do you think you could take a moment and sketch that, or is it more complicated than that?

A. No, I could sketch it for you. This is of the same nature that they spliced these longitudinal deck supporters.

REAR ADMIRAL BARROW: Off the record while he
prepares that. We will take a five-minute recess.

(Recess had.)

REAR ADMIRAL BARROW: On the record. Let the record show we reconvened at 1828.

Counsel for parties in interest, the same as we started with this morning.

Continue, Commander Loosmore.

By Commander Loosmore:

Q. Would you describe this, please, this sketch?

A. Here is your spar deck plating. Here is your underdeck longitudinal girder, which is this one right here (indicating).

The crack occurred just forward the after combing in the hatch on the port side.

This crack extended down, a hairline crack, right in the way of the weld.

I analyzed it to be from undercutting, from the weld.

It was of a hairline nature, and I felt that we could go ahead and reweld it from both sides, not to get involved with the facing of the spar deck itself.

Q. You are referring to the inboard edge of the spar deck on the midship section drawing, Exhibit 6-F?

A. Yes. So we then radiused the top flange area and terminated the weld at this point (indicating).

This detail is also showing the butt connection drawings of this member for construction.
This is the general practiced way that you butt this member in construction.

I mean, you can't have one the continuous length of the vessel.

Q. Why were the rivets removed?

A. The rivet connection of this longitudinal girder to the spar deck plating was removed to alleviate any buildup from heat concentration.

Q. And how many rivets?

A. Three rivets on each side.

COMMANDER LOOSMORE: I would like to request that this exhibit be marked Exhibit 59 for identification.

It is entitled "No. 14 Hatch, Port Side, Edmund Fitzgerald."

It is signed by Mr. Feldtz, 11-24-75.

REAR ADMIRAL BARROW: It will be marked for identification as Exhibit 59.

(Exhibit 59 was marked for identification and made a part of the record.)

REAR ADMIRAL BARROW: May I ask one question?

The indications on the ABS report that the top flange to the girder itself had to be washed out.

Was this true?

THE WITNESS: Yes, sir.
What you have to do is taper the top flange back away from the opening.

CAPTAIN ZABINSKI: Which opening are you talking about?

THE WITNESS: Up at the top. Keep in mind at the top of that member you will have a flange that goes outboard.

I shaded it in to let you know there is a flange there.

That has to be veed back away from that slant.

REAR ADMIRAL BARROW: Was there a crack in the top flange?

THE WITNESS: No. The crack that was existing was on the welded connection down the web, and it did not proceed all the way through, but we didn't want to start and stop a weld in that member.

We wanted to make a continuous butt.

By Commander Loosmore:

Q Mr. Feldtz, this report goes on to say in the ABS report that you knew rivets were driven in the combing end?

A Yes. Well, actually, this is a little confusing to my way of terminology.

Where it was, and keep in mind this is at the end in the way of transverse hatch combing.

Now, outboard this hatch combing you have this angle
as indicated here. This is connected to the spar deck by rivets.

Q. Still referring to 6-F?
A. Yes. So one rivet on either side of the outboard side of this combing, or I should say -- wait a minute. Let me get oriented.

It would be the afterside of this combing, which was blown up. It only actually was one rivet. There was only one rivet on that side two inches past it and three up forward.

Q. Where on this sketch is the hatch combing?
A. Actually, the hatch combing would be in this area right here (indicating).

Q. Would you take this pencil and draw that in, please?
A. Sure. (Witness drawing.)

Do you want me to indicate that angle as well?

Q. Yes.
A. Okay. (Witness marking.)

Q. Would you mark that "hatch combing"?
A. Yes. (Witness marking.)

I think I would like to take this minute to get all clear with respect to the description, something that we have to keep in mind; that this connection down here is not actually a continuous connection, because you have that snipe.

REAR ADMIRAL BARROW: I don't think any of
that is clear on the record.

Would you see if you can refer to any individual parts of it, please?

THE WITNESS: Now, this will be a section taken through the snipe of the hatch combing in the way of the girder connection.

Q Which is Exhibit 58?

A Yes. Now, this view that I am giving you will be a view right through here, so this portion of the hatch combing will not exist on here.

Q Is it fair to say that Exhibit 58 and Exhibit 59 are at right angles to each other?

A That is correct.

Q All right. Mr. Feldtz, looking at Exhibits 58 and 59 together, is the hatch combing which is indicated in 59 or rather the hatch combing indicated in 58 and the hatch combing indicated in 59, are those the same hatch combings?

A No, sir. I made this typical for all hatch combings just to show the hatches dealt with at this time.

This was a for a general pictorial arrangement.

Q Well, 59 is Hatch 14 only?

A This was the only one that had the crack in it.

Q All right. The ABS work list goes on to say that all 84 hatch cornered combing radiuses were increased by another two inches by flame-cutting and combing extension in the way of
the hatch side girder and grinding them smooth.

Q. Is that shown on either one of these?

A. Well, sir, I don't agree with the 84. It is really 80, really. The 21 Hatch in that vessel has a different configuration than this. All those you are reading is typical for this one here (indicating).

Q. This one here being 58?

A. Yes. That's a typical modification that was made in all of 80 of the areas mentioned there, because the four are consisting of 21 Hatch. Wait a minute. I should correct that again. It is 82, because the after combing was the only one that was different, a different configuration.

You see, what they have done, Hatch 21 has this (indicating). It does not have this radius where this transverse combing comes directly to the underdeck longitudinal girder.

They put a flat bar into there, and I was not in attendance at the time of the construction.

COMMANDER LOOSMORE: Mr. Feldtz has provided another sketch, which gives specific detail for the 21 Hatch looking forward, which I believe if we offer it would be Exhibit 60, sir.

REAR ADMIRAL BARROW: Exhibit 60, yes.

It will be marked for identification.
(Exhibit 60 was marked for identification and made a part of the record.)

By Commander Loosmore:

Q. All right, Mr. Feldtz, you were discussing Exhibit 60.

COMMANDER LOOSMORE: Mr. Murphy, do you want to see this?

MR. MURPHY: I will just take a quick look at it.

(Pause.)

All right, fine.

By Commander Loosmore:

Q. Mr. Feldtz, you were discussing Exhibit 60.

A. Okay. Now, all the hatch transverse combings on the vessel all come at butt to and are secured with the radius corner to the longitudinal underdeck support.

However, with the after side of 21 Hatch, this arrangement does not follow suit.

What we have done there, which is a typical or a general practice for this type of connection on various different boats, is put a flat bar to make up the difference for fit during construction, so instead of having this connected directly to the girder, a flat bar is installed or lapped on to the combing so to speak. The flat bar is welded to the girder.
Q. Then what you denoted here is a bracket. Is that the flat bar bracket?
A. That's referred to as a bracket, yes.
Q. And this was only for --
A. The aft side of 21 Hatch.
Q. Port and starboard?
A. Port and starboard, correct.
Q. Mr. Feldtz, what can you tell me about the inflatable liferafts on this vessel?
A. There were two 25-person liferafts.
   One was located by the pilothouse, starboard aft, and the other one was located by the afterside of the poop deck or boat deck and after stern, astern of the vessel behind the hull structure.
Q. Would you have information which would indicate a, say a number or give other identification of which was where?
A. No, sir, I wouldn't have that.
   We don't locate them by serial numbers. They do come back from the inspection contractor, which is in this case Sampsel Rope, and they are placed forward and aft.
   There is really no designation for forward and aft.
Q. Who decides which one goes where?
A. Normally, the mate. They are both identical.
Q. What kind of launching mechanism do these rafts have?
A. The launching mechanisms are float-free stanchions, and
there is a regulation in the Federal Register or the Coast Guard requirement -- we did away with or replaced these float-free stanchions from the hydrostatically released devices, and this was approved by the U. S. Coast Guard at that time. From the raft is a painter. This painter is hooked to a weak link, which is shackled to a fixed object aboard the vessel, and in a lot of cases the foundation that the cradle sits in, which in turn is secured to the deck. Adjacent to it is a small bit.

Q. When were the liferafts put aboard, the inflatables?
A. Just prior to fit-out.

Q. When were they first installed on the vessel?
A. We put a 15-person liferaft aboard the vessel -- I am not familiar with the dates.

Q. Would you have that information?
A. Yes. I would have it in my office somewhere, but it was prior to them becoming required by the Coast Guard, and we followed up with two 25-persons forward and aft. I am only guessing in 1967, but I am not sure. I would have to check the records.

Q. Have they ever been moved, or were they in the original position that they were set up?
A. I didn't move them from the time that we installed the hydro vesseled. They were in the way of the radio antennas going from the
side deck to the spar.

I did feel there possibly could be some hangup on the automatic flotation of these rafts, so I moved them where I had a clear overhead. I tried to keep in mind that the vessel wouldn't sink on an even keel, and I tried to take in all the angles the vessel may sink.

Q  When did you do that?
A  1972.

Q  On what occasion?
A  At the time that we installed these free-flow stanchions.

Q  So they were essentially in the same position?
A  On the same deck, just a matter of a few feet away from where they were originally.

Q  And they were not moved after that?
A  No, they were not.

Q  Were you familiar with the lifejackets aboard the vessel?
A  Sir, to the extent I know she had beyond her capacity.

Q  Do you know what kind?
A  Well, we had three kinds.

We had the harness type. I'm sorry, I meant the horseshoe type, I believe you would call it, and we had the jacket type itself, the kapoks, and we had some cork, which we used also as working jackets.

Q  You have been aboard this vessel quite a bit.

Would you know whether any particular type of lifejacket
was stowed in any particular place?

A. Yes. I am quite familiar with the vessel. In the pilothouse, the lifejackets were installed over it. There were two lifejackets, I believe, over each of the companion doors, port and starboard and in overhead racks.

Q. What kind?

A. They are the collar type. Then in each of the corridors they do have liferacks for lifejackets over their beds.

Q. What type are those?

A. Those were the jacket type, the stress type and, of course, I guess in the corridors in closets there were also jackets, but they were the collar type.

Q. Do you know where else they were stowed?

A. I have thought and thought on that. I believe there were some stowed in a container, which was adjacent alongside the deckhouse on that particular vessel in the general area of the lifeboats.

Now, this is a galvanized box so to speak with an enclosure on it, and there are holes in the bottom so the water can accumulate to drain out.

There was also a compartment in the bow in a closed bow directly under the steering pole. I don't know if there were one or two jackets in there.

Q. Do you know what type those were in either one of those
locations?
A. They were the stress type with two straps. They were the jacket type.
Q. Kapoks type?
A. Yes, sir.
Q. You said there was some cork type.
   Where were those?
A. Those, I believe, were in the working areas of the deckhands, in the locker, probably in the windlass room area, and I am not positive whether those were the type in the lifeboats.
   Other than being in the windlass room, I am not sure where they were.
Q. Is there a requirement that they be in the boats?
A. Yes. There is a requirement. I cannot specify which requirement it is, but there is a requirement for the life-jackets to be in the boat. But how many, I would have to review my Coast Guard book.
   I leave the inspection gear up to the mate aboard the boat at fit-out. I don't get involved with the inspection of outfitting gear.
   That is done by the crew and with the Coast Guard.
   All I do is that I have a mate that works for me in the winter looking after the painting and maintenance crew, and he may attend with the Coast Guard stamping the jackets prior
to their arrival in a designated room which we use for stowing of gear.

At that time the Coast Guard has the cards telling him how many jackets are to be aboard and so on.

They stamp them. If we come up to complement or if there are jackets with faults, or some are discarded or torn, then we replace those.

When a crew shows up, the jackets we do have aboard are stamped and approved by the Coast Guard, the date and the port, and I believe they are also initialed. I am not certain of that.

Q Do you keep track of how many jackets have to be replaced?
A No, sir; I don't.

Q Is that in this work item?
A No, sir. It is not. It is a fit-out item. It is ordered as fit-out equipment.

My only concern is that the vessel is up to her requirements.

I don't keep track of how much inspection gear we have to buy.

I just make sure that prior to the vessels' outfitting that they have the complement of equipment aboard.

Q And you leave that up to the crew then?
A I leave it up to the crew and the certification of the
Coast Guard, yes.

However, I will get the equipment for them if they need it.

Q. Do you keep maintenance records of the lifeboats?
A. On the lifeboats?

Q. Yes.
A. No, sir; I don't.

Q. Do you know who does?
A. The mates do list it in their mate's book that they keep or in back of the log book as to when the lifeboats were disassembled, painted, weight-tested, and when the air tanks -- of course, at fit-out the inspector will check them at fit-out and put a pressure test on the air tanks.

I have witnessed some inspections of our vessels where they look around the keel, and any suspected areas they may tap with the little hammer that they carry along, or they may take a jackknife to see what a bubble is, if they can put a hole through it. They check the keels.

Q. You said the little book that they keep, it is the mate's book?
A. They have somewhat of a handwritten book. It extends to being -- it is of a small nature on some and big on others.

Any maintenance that they do, they normally log them in the back of the lifeboats. This is with regard to lifeboats, which is done in back of the log book, particularly when the
lifeboat was tested last, because they alternate years with the testing.

Q. Do you mean the ship's log?
A. Yes. It is in back of there that we keep records of our anchor, anchor chains, and say we have to replace an anchor, then we have this data, including when the wires were changed and data of this nature. It is data that can be passed down from mate to mate.
Q. What becomes of those deck logs at the end of the operating season?

A. They keep two years aboard the vessel.

Q. Then what?

A. Then, I don't recall if they come into the office or not. Maybe they do. I'm not sure.

In fact, some boats, they have been up to four years aboard the vessel.

Q. Is that two years a company requirement?

A. No, sir; I don't believe it is. I am not really sure, though. I am not really sure if it is a company requirement or not, sir.

I really don't get involved in that aspect of it.

Some boats, they keep it in a separate notebook.

I like for them to keep it in a log book myself, but I suggest that they do this, due to the fact that it can be passed from mate to mate.

If you transfer a mate and he comes aboard, he doesn't have to look around at the mate's desk for the book, because it's right there.

Q. Do you know if it was done on the Fitzgerald?

A. I don't recall if it was done or not, sir, because there is no continuity, sir. Some boats do and some don't. It is not a company requirement. It is just a suggestion on my part to help keep records.
Q. Is there a company instruction on the kind of records that should be kept on a vessel? Is there a company manual?

A. Yes, we have a company operator's manual.

Q. Does it include information on what records should be kept?

A. I am not certain, sir. It is quite an extensive manual and I am not really that familiar with the operating instructions of it; no, sir.

Q. What generally does the company operating manual contain?

A. Well, as I said, I am not really that familiar with it. It is particularly for the operation of the vessel and I am involved with maintenance and repair.

MR. MURPHY: Commander, pursuant to your prior request, I have acquired the manual and have it with me, if you would like it now, or at whatever time you feel it appropriate.

CDR. LOOSMORE: Good, good. We will pick it up.

Q. Mr. Feldtz, you have quite a lot of experience with ore boats and processed ore boats and so forth. What would you describe as the general level of maintenance on a vessel such as this? A general condition, I guess, is what I am getting at really.

A. Let me say this, sir; this was the best boat that
we have in our fleet, or had in our fleet.

Q. How do you check a hatch? How do you tell whether a hatch fits right or not?

A. Well, I let the hatch sit without the hatch clamps and see if I have any irregularities. If she sits flush on the combings, I figure, well, by the time you put the dogs on her, she will be fairly tight.

The American Bureau does go around with a feeler gauge and periodically they will see if they can run it through the combings in the gasket with the hatch dog down.

Q. Have you ever done that?

A. I myself don't do it, no, sir.

Q. What would you say the biggest single maintenance item that you have on ships of this type and particularly on the Fitzgerald, what do you think it would be?

A. Well, trying to arrest any building conditions on main deck buckling. Getting into, as of this year, indentations in the side slope cargo hold, side slope plating, and the minor dents, bumps, that you may incur in the way of transverse -- well, the transverse hatch combings, and you look for mechanical damage created by unloading buckets going in and out of the cargo holds during unloading.

That is about the extent that I have on the Fitzgerald.

Q. Do you have stability information on the Fitzgerald on your records?
A. We have a loading manual and we have a stability letter from the Coast Guard, which was presented as evidence.

Q. Do you have any additional information on the stability of the vessel?

A. No, sir; I do not. I could not locate whether an inclined experiment was made or not at the time of construction.

CDR. LOOSMORE: Sir, that's what I have at this time.

REAR ADMIRAL BARROW: Capt. Wilson?

CAPT. WILSON: Yes, sir.

EXAMINATION

By Capt. Wilson:

Q. Mr. Feldtz, your function as hull superintendent, then, is purely the repair of the vessel?

A. Repair and maintenance; yes, sir.

Q. Repair and maintenance?

A. We don't get involved that much other than assisting the operation. That is a function of the marine superintendent.

Q. Do you have any people working for you?

A. No, sir; I do not. During the sailing season, I do not. I do look after the shipkeepers and I do have a repair and maintenance gang, who is limited in a housekeeping nature of items such as painting crews' quarters, and I have a
mate that sails with us during the sailing season and
looks after them, and he reports to me, but other than
that, no, sir; I have no one other than that working for me.
Q. How many boats do you have?
A. 19 now, sir.
Q. 19?
A. Yes.
Q. When you make your tour of the vessel during the year,
actually any time during the year, do you check the logs
or anything to get an indication of any problems you might
have?
A. Yes, sir. I check the logs for occasional information
that should be put in the logs and information that should be
coming back to the office such as cargo tonnages, drafts,
and items like that that help our office evaluate ships,
turnarounds, drafts, tonnages, drafts, and things of this
nature, and I do like them to indicate if there is any
possibility to try to assess these and see if they have
any difficulty that they incur, an abnormal roll, so
to speak, if they were coming down the river, or if they
are involved with a particular roll or something, and,
"Log this in your book, call me, and make a record of it.
Let me investigate it."
I will try to investigate this.
Q. Do you have many investigations of that nature on the
A  No, I haven't, sir. They have been very minor, very few investigations.

    In fact, I can't recall one that I have ever had other than a major casualty.

Q  Do you perform all of the damage surveys?

A  I do, sir.

Q  Do you on your rounds of the ship between drydockings, do you crawl or go through the ballast tanks?

A  Periodically I do, sir, and particularly tanks that are known to have possible problems.

Q  Since you are apparently or probably the man most familiar with the Fitzgerald at this point, there are a few things that I would like to find out from you, if I could.

    The tunnels in the Fitzgerald, how are they drained?

A  How are they drained?

Q  Yes.

A  They have an open valve with a handle and they have a well, and an open valve, and they turn these handles and they let the water drain through and close them again.

    They are always kept closed.

Q  They are always kept closed?

A  Yes, sir.

Q  Do they drain into the side tanks?

A  Yes, sir; that is correct, sir.

Q  And they drain the valves from in the tunnel, not on
the deck?
A. That is correct, sir; that is the way the arrangement is.
Q. Now, I believe it was mentioned that the vents that were raised as a result of the deeper load line, were the tunnel vents.
A. That is correct.
Q. And they were raised from --
A. From 24-- I believe it was 24 to 30 inches.
On the 24, I am going on recollection. On the 30, I am positive of.
Q. This was done by an extension piece, a full penetration weld?
A. That is correct, sir.
Q. Can these be closed, these vents?
A. Yes.
Q. Can they be secured?
A. Yes, definitely. They have a mushroom type closure, the same as the vents that lead to the ballast tanks. They are of the same identical nature or design, identically the same cover.
Q. And the closure is from the top?
A. Yes, that is correct, sir.
Q. Is it gasketed?
A. No, I don't believe they are gasketed, sir.
Q. But the valve is on the upper end of the vent extension?
A. Correct, sir.
Q. Now, in the tunnels, do the doors open inward or outward into the tunnel, or how do they open?
A. I believe, sir, if you were going to go down the tunnel from the forward end, they open outward.

If you were going to go into the tunnel from the below deck spaces at the forward end, you will pull them toward you and enter into the tunnel and then dog them, and the same with the after end.

She has companion ways leading from the spar deck down and then you open a door to you and then enter into the tunnel and I am going from recollection.

Q. In these tunnels, the electrical leads to the forward end go through the tunnels?
A. Correct, sir.
Q. Can you remember whether they go through the forward or starboard, or are they split?
A. No, sir; I am sorry. I cannot remember whether it is port or starboard. I'm sorry. I can't remember.
Q. The steering for the vessel, is that electro-hydraulic?
A. Yes, sir.
Q. When was the last time you were through, roughly, all of the cargo tanks -- I mean, the ballast tanks?
A. I went through three ballast tanks on the trip between 6-18-74 to 6-23-74.

Those tanks were 1, 7 and 8, port and starboard.

Q. Well, --

CAPT. ZABINSKI: What tanks?

THE WITNESS: 1, 7 and 8.

CAPT. ZABINSKI: What was that; port and starboard?

THE WITNESS: Correct, sir.

By Capt. Wilson:

Q. Did you find much mud or were they clean?

A. No. 1 tank, I found very little mud. No. 7 tank was building up, so this is why I decided to go into No. 8 tank.

That is the reason I went into the tanks. I just went for a general inspection of the cores, keelsons and transverse floors.

Q. You mentioned that you had some main deck repair, I believe 21 foot of it, that was on that list for repair.

A. Correct, sir.

Q. That was toward the end of the tunnel?

A. That's toward the forward end of the tunnel.

Q. Toward the forward end of the tunnel?

A. Yes; correct, sir.

Q. You said it was buckled?
A Yes, sir.

Q This is from the --

A Making docks.

Q Was it buckled in a forward and after transverse?

A It was in a transverse. In other words, she was buckled inward in sort of a wavy portion.

Q Were you out on the Fitzgerald when she tipped ship in Toledo?

A No, I was not, sir.

Q You were not there at any time during that?

A No, I was not there, sir.

Q Have you been there when they have tipped ship this year?

A Have I been there? No, sir.

Q Were you aboard the Fitzgerald at any time when they were making the conversion from coal to oil?

A Yes, sir, but I was only there with regard to the repair items pertaining to hull items. I do not handle machines.

Q That was my next question.

Was there some hull items that were being handled?

A Plating of the coal bunker hatches on the poop deck. She had a coal bunker on the poop hatches and those hatches were, of course, removed and the plating inserted and the fabrication of the fuel tanks, the foundations.
Q. Were there any other repairs, routine plate renewal, or damage repairs going on at the same time?

A. No, sir; I don't recall of any. No, sir.

That was at Fraser Shipyard up in Superior.

Q. On the work list it also mentions "Check all hatch covers and combings and straighten as found necessary."

Is that a particular problem?

A. Yes, that is a general item that I like to leave open.

You never can tell; maybe in the last trip they may have kept the hatches or the hatch clamps on and tried to lift the cover and bent them. I mean, there is that type of damage that could occur prior to my inspection of the vessel for winter work purposes in September and layup in December or January.

Q. So this is just a general item that you put down.

A. That is right, sir.

I may find a hatch in my inspection at the time that may have a minor buckle to it; in other words, a wavy spot. However, to the extent that it could be drawn down, I may not. This sometimes is included in my winter work list, too.

I believe there is one indicated there and there also may be additional ones that may be picked up between then.

Q. I see. They were done in the '74-'75 season?
A. I inspected these hatches with the clamps off to see about irregularities. You put the clamps on and they get dogged down.

    Well, the minor ones, you never will find.

CAPT. WILSON: That's all I have.

REAR ADMIRAL BARROW: Capt. Zabinski?

CAPT. ZABINSKI: Yes.

EXAMINATION

By Capt. Zabinski:

Q. Mr. Feldtz, do you have any Coast Guard license or document, sir?

A. No, sir; I do not.

Q. What is your background, Mr. Feldtz? How old are you?

A. 36 years old, sir.

Q. What have you worked at or what is your background as far as education?

A. Well, I started with the American Ship Building Company in December, 1960, in the hull engineering department, and at the same time I was attending Fenn College School of Engineering for a course of study in civil engineering.

    I worked in the engineering department at American Ship Building Company, I believe, six years. I then went from the engineering department to estimating contracts.

    I was a contract administrator for the AO Conversion contract
along in the winter months and correlating the repair work in the Great Lakes vessels that were at the Lorain shipyard, American Ship Building Company, in 1967.

In September -- no, wait a minute -- yeah, September: I left there and went to the Cleveland office of the United States Salvage Association as a marine inspector and worked there until May, 1971, where I started my employment at Oglebay-Norton Company.

(N.B.: See next page.)
Q. Do you have a degree?
A. No, I do not, sir.
Q. What is the study that you pursued? Was it civil engineering? Is that correct?
A. That is correct, yes, sir, 12 years at night school.
Q. What did you do at American Ship as far as vessels themselves? Vessel repair? Did you do anything with them?
A. Yes, sir. I got together with the owners, surveyed damages, negotiated prices with the owners, write up what you would call a work stringer sheet with a work number against it, periodically visit the vessels, record man-hours, material expenditures, and tabulate the cost and then submit it to the owners for building.
Q. How about -- do you have any trade as far as welding or ship repair itself? Are you qualified in any of these respects?
A. No, sir, I am not.
Q. What you do know about ships, you have picked up in a practical way working as an estimator or overseeing repairs in the shipyard, is that right?
A. Well, sir, probably the most knowledge was obtained in the hull engineering department, which I had worked in. I made probably as high as 85 percent of all of the structural drawings for the AGS-26. I worked up the body plan for the AGS-26. I have worked in the Engineering
Department in the repowering of the vessel WW Hallaway, which entailed the structural drawings of machinery foundations.

Q Would you consider yourself a naval architect?
A By no means, no, sir.

Q Can you do any stress calculations on a vessel?
A I do get involved in minor details of stress calculations, or I did when I was at American Shipbuilding Company, yes, sir.

Q On members, bulkheads, that type of thing?
A Yes, sir, in accordance with the Rules set out by American Bureau of Shipping for construction of steel merchant vessels.

Q You have quite a bit of drafting experience from what you have indicated, is that right?
A That is right, sir.

Q Who would lay out what the problem was? Would you do that, or would you leave a naval architect lay it out first?
A In the early stage, in the first few years of my employment, I would be given a sketch. From this sketch, I would work up the details of any calculations that would be needed. I would work them up and submit them to the chief hull draftsman. He then would review the drawings or sketches or calculations and then return them to me, mark it in red, and I would then correct his modifications or marks, resubmit them to him and he would turn them in to the naval
architect.

Q. Do you have anything to do with the operation of the
vessel itself?

A. No, sir.

Q. Is there a separate department that takes care of the
operations of the vessel?

A. In our company, sir?

Q. Yes.

A. Captain Jacobsen takes care of all of the operations
for the deck department and oversees that the operation of
the machinery department is taken care of.

Q. Does Oglebay-Norton Company have any kind of directives
to the ship's personnel about maintenance procedures?

I am talking about what they expect a crew to do, what
the crew is responsible for doing during the operating
season.

A. Well, I handle that, sir.

Q. I am asking you if there are any instructions to the
vessel.

A. No, sir, there are not.

Q. How does a crew know whether they are supposed to take
care of the hatch covers, or how does that work out?

A. What I have is an inspection form that I have devised,
and what I do is list all these items in detail, spar deck,
side shell, hatches, hatch combings, underdeck spaces, and
it is pretty detailed, about eight pages, and what I do is
make the inspection either on port or ride the vessel with
one of the mates, preferably the first mate, list the
conditions that I have found, and then make a recommendation
of what I would like the mate to do.

Q. Do you have one of these sheets with you, one of these
check-off sheets with you?
A. No, sir, I don't.

Q. Would you provide us or would you provide one to the
Board, please?
A. Yes, sir, I could.

Of course, I don't have a returned one. I don't believe
I have a returned one from the Fitzgerald. I have a blank one.

Q. If you have one for the Fitzgerald, we would like to
have that, but if not, I would like to have a blank one so
we could check it.
A. I will look, yes, sir.

Q. How does a crew know what to do. You just take this
check list and you run down with them, or do they pick out
some and do you pick out some, or how does that work out?
A. This is particularly for crew maintenance only. This is
anything that requires any outside repairs.

Say you have a bulkhead hatch combing or cover, as an
example, or a bent lifeboat davit or something, something
that a crew cannot handle. Then, I would go and see that a
repair contractor was brought in and it was fixed.

In a case of Captain McSorley knowing what the workload is, some of the minor items he would take care of himself. He would call the contractor and bring in, say, "I need you to fix my grocery hoist because it is bent," or something or his lifeboat may have a kink in it or something.

Q. He has the authority to contract for repairs without consulting?

A. Of a minor nature, yes. Of a minor nature, yes.

Q. How about any repairs to hatch combings, would you consider that within his authority?

A. No, sir, he would most likely contact myself and then I would see that the hatch combings were repaired, unless it was an emergency type item and he couldn't get a hold of me.

He would then act.

Q. Are there any repairs, or how can the Board determine what repairs were done under Captain McSorley's supervision or that he had contracted for? Do you have a list of those?

A. I do not have a list of those, sir, but I would have to review my file in our accounting department, which would keep a copy of all requisitions.

CAPTAIN ZABINSKI: I would like the records, Mr. Chairman, the records to be searched and to see what repairs Captain McSorley contracted during the 1975 season.
Q. How about the chief engineer, does he have this authority to contract for his own repairs and so forth?

A. Yes, sir, but it is a company policy that they operate fairly in the same manner. If there is a major item of repair, of course, he would then contact our fleet engineer or assistant fleet engineer, and if it is of a minor nature, he will take care of it.

Q. That brings me to this point. You take care -- you are the hull superintendent?

A. Correct, sir.

Q. Who is the boiler or machinery superintendent?

A. We have a fleet engineer and we have an assistant fleet engineer.

Q. And who are they, sir?

A. Our Fleet Engineer is Mr. Spinner, and our Assistant Fleet Engineer is Mr. Stager.

Q. Where are they located, Mr. Feldtz?

A. Mr. Spinner is located in our Cleveland office and Mr. Stager operates out of our Toledo office.

Q. Any questions we might have on engineering would be within their field of supervision, sir, is that correct?

A. That is correct, sir.

Q. How about ballast systems, is that under the hull or how does that work out?

A. We have a cutoff point.
Q. You do? Where is that cutoff point?
A. Bulkhead engineer room.
Q. The forward bulkhead?
A. The forward bulkhead engineer room.
Q. All right.

CAPTAIN ZABINSKI: That sounds like typical shipboard procedures to me, Admiral.

REAR ADJUTANT BARROW: Yes, indeed.

By Captain Zabinski:
Q. What maintenance is required or what would be your responsibilities with regard to the — the primary one would be the piping, wouldn't it?
A. That is correct. We do have a good relationship. We do work together on items such as that. If there is a ballasting piping found to be repaired, and we may get together and we will say, "How does your appropriations look?" And he may pick it up as his item and we jointly see that it is repaired.
Q. Do you recall if in the past couple of years you have done any repairs to the ballast piping aboard the Fitzgerald?
A. No, sir, there has been no repairs to my knowledge that was done aboard the Fitzgerald.
Q. Do you know where those suction for the various tanks are located?
A. They are on the after end of the tank.
Q. They are on the after end of each tank?
A. Yes, sir. They are 20-inch pipes.

Q. And what size piping was that?

A. 12-inch, sir. It is a 113-square-inch surface.

Q. What specifically -- lifesaving equipment probably, but what other items would the deck's crew or the ship's force be expected as far as home maintenance was concerned? You have mentioned painting.

Would this be within their area of responsibility?

A. Yes, sir.

Q. What else?

A. Well, they see that the Kessner hatch clamps aboard a vessel are greased, oiled, greased, and they do take care to see that the ballast covers are operable, that they are greased, oiled, see that the cables have been replaced or don't have frays in them.

Q. Would these repairs be done by the deck crew or the engineers or both?

A. Deck crews, sir.

Q. The deck crew?

A. Yes.

Q. How about the upkeep of lifesaving equipment?

A. Deck crew.

Q. Deck crew?

A. Yes.

Q. Do you recall what details of the cargo hatch bilge
system --

A. Cargo hatch bilge?

Q. Yes, the cargo hatch bilge system, was there any cargo hatch bilge system on the Fitzgerald?

A. Are you referring to the vents or the rose box?

Q. The rose box, I guess.

A. The rose box on the after end, port to starboard, are the last cargo holds. This is the third cargo hold.

My extent of responsibility on those is to see that the screens are there, that they are open and that there are always covers provided.

Q. What kind of covers?

A. Steel bolted covers.

Q. Do they have holes in them?

A. Yes, correct, sir. They are a plate with numerous holes.

Q. Can taconite fall through any of these holes?

A. They have to be sized where taconite will not go through. sometimes they do get in occasionally, and occasionally taconite gets lodged in these holes and they are cleared out by a reverse action.

Others, instead of sucking the water out, they give a shoot of water in there to wash out an blow the pellets out of all of these holes.

Periodically, this is done.

Q. Is this part of the hull responsibility, or is it the
engineer's responsibility, or is it both?

A. Well, I think it is a combination of both, sir.

When they become clogged, the deck department may mention it to the engineers, and in turn, they will see that they are blown out.

Q. Do you know when the last time was that these were cleaned?

A. No, sir. I do not know.

Q. Do you know whether they require cleaning at any time?

A. I have no recollection of that.

Q. Is this part of your inspection procedure?

A. I look at them when I do cargo inspection, sir, yes.

Q. Do you know if they were looked at at the time of the spar deck inspection on the 31st of October?

A. No. They were not, sir. In fact, sir, at the time of the spar deck inspection, they were covered with cargo.

Q. But the cargo was discharged during that period?

A. Approximately about three hours later, sir.

Q. How big a discharge line is there in the cargo hold?

A. I'm sorry, I can't recollect.

Do you mean the actual size of the opening itself or the size of the pipe?

Q. The size of the pipe.

A. I would have to look on the drawing.

Q. Do you know anything about which pump they use for
discharging the cargo hold?

A. No, sir; I don't.

Q. What reports does the company, as far as your part of
it is concerned, does the Oglebay-Norton Company require
from the ship?

You did mention during your testimony various items,
cargo loading and draft and this type of thing.

A. This comes in on the office log.

They are supposed to send the office log in to the
office, the office deck log.

They fill out and mail them to the office.

Any time they ever occur, any minor damage or any
damage whatsoever, we have forms we fill out and send in to
the office.

Q. Would these be the same forms for damage required by
the Coast Guard if there is seaworthiness affected, or are
these special reports?

A. Those are special reports. We have reports to be
filled out, and I believe they are -- I don't recall the
number. There are Coast Guard damage reports or casualty
reports, and they have American Bureau reports. I'm sorry,
they are Great Lakes protective reports and U. S. salvage
reports.

Q. The Great Lakes what?

A. The Great Lakes protective reports.
Q. And what was the other?
A. These were basically all.
Q. What was the fourth one?
A. There was no fourth one, just the three.
Q. What are these Great Lakes protective reports?
A. They are a report that may list the date of the casualty.
They are for underwriters and for insurance purposes.
They list the date of the casualty, the drafts, the
weather conditions at the time of the casualty and a
description of the casualty.
Q. And who are these filed with?
A. They are sent to our office, they type them and mail
them to the Great Lakes Protective Office in Cleveland.
Q. You keep a copy in your office?
A. Yes.

CAPTAIN ZABINSKI: Mr. Chairman, I would
like to have a copy for the '75 operating season and
also the damage reports which are received by Oglebay-
Norton for the 1975 operating season.

By Captain Zabinski:
Q. How about copies of the reports made to the Coast Guard?
Do you keep a copy of those?
A. I keep a copy -- number one, if there is a casualty of
such and the Coast Guard form is required, I will meet the
vessel at the next port and would be in attendance with the
Coast Guard Inspector when these reports are picked up,
survey the damage indicated on that report or the reason why
they are there, which is that they are there for the
casualty, and I will take a copy of the casualty report and
put it normally, if it is a casualty, it has a requirement
with it. If it does not require immediate attention, I will
take the requirement for deferral and put this with my report
and the copy of the Great Lakes protective report and I
will staple it together so I have a complete outstanding
repair casualty that has to be dealt with, and that's what
my composite consists of.

Q. We are trying to reconstruct the cargo loaded aboard the
Fitzgerald on the last voyage.

Are there any records that come to the company to your
knowledge?

A. As to where the cargo was placed in the vessel?

Q. Yes, sir.

A. No, sir.

Q. What information concerning cargo is forwarded?

A. A bill of lading, total tonnage.

Q. Total tonnage?

A. Yes.

Q. Is there any way to reconstruct how the Fitzgerald was
loaded, in fact?

A. No, sir. There is not to my knowledge.
Q. Does the company, Oglebay-Norton, periodically spot-check to see how the cargo is being loaded?
A. Yes, sir. I do.
Q. Does that come under you?
A. I do it as a point of doing it, yes, sir.
Q. Do you know when the last time you may have made such an evaluation on the Fitzgerald was?
A. Yes, sir. That was one of my reasons for riding the vessel on 6-18 of '74, which was to witness and also discuss the loading manual with the Captain.

It was also to witness that he was loading in principal in accordance with the loading manual.

Q. What was the nature of the discussion?
A. I asked him if he had -- when I first put the loading manual aboard, I asked him to review it. I asked him to try to adhere to it and if he had any dissatisfaction or anything that he had disagreed with in regard to the loading manual to come back to us, and I asked him to review it and he read it.

As you saw, it was lengthy. I wrote him, but I didn't hear from him. He said that he was familiar with the loading manual on the way up, and we tried different ballasting conditions.

I did not make notes, unfortunately, on the cargo that was loaded. I did review the mate's book.

I was aboard the vessel and made that comparison with the
conditions as specified in the manual and was quite
surprised that we were very close. I mean in tonnage here
and there.

Q. Did you make a record of that?

A. No, I didn't, because I was satisfied that they were
adhering to the manual, so I didn't see any need to make
records at that point.

Q. Do you think, given the information that was in the
loading manual, that the people aboard could properly load
the vessel in proper sequence?

A. Yes, sir, in essence, I think the conditions in the
loading manual were conditions followed for years with
minor alterations.

The peculiarities of a Great Lakes vessel, of course,
it has to be loaded to keep the vessel on an even keel.

You have your buoyancy forward and aft with no
displacement, so you stack the ends of your cargo to bring
your vessel to an even keel with weight distribution.

This is as set forth in the manual, and this is fairly close
in the principle that they have been loading the boats in
the past history.

Q. Did Captain McSorley or the Mate, and this was in 1974,
I realize, but from that time on, had you ever received any
correspondence concerning the loading manual?

A. No, sir; I haven't.
Q. From the Fitzgerald?
A. No; I haven't.

When I go aboard on these vessels periodically, as one of the items I do possibly ask the Mate or the Captain over tea or coffee or what have you, and I ask them if they are following the manual. It is one of our general discussions. It is one of the points of interest, and I ask them how they are doing with boatloads or ballasting.

I ask, "Are you having any difficulties aboard the vessel that I should be looking into?"

I also ask, "How is she riding," and possibly I will ask about vibrations and what have you.

Q. Do you think, given that loading manual on the Fitzgerald, that you could have loaded that vessel?

Do you have that much knowledge about loading the vessel?
A. If I was given that loading manual aboard the vessel, I would say I could load the vessel.

Q. You are confident you could do it, never having done it before?
A. Yes, sir. In guidance with the manual, yes, sir.

Q. How about drills, lifeboat drills, does the company have any instructions on that?
A. The Coast Guard has instructions, sir, and I believe they say they should be conducted once a week and logged in the log book.
1  Q. Does the company have any special instructions
2     pertaining to drills?
3  A. I don't recall, sir, if that's in the guide manual or
4     not.
5  Q. Would that be in the operating manual?
6  A. I'm sorry, I was referring to the operating manual.
7  Q. The operating manual?
8  A. Yes.
9  Q. From your knowledge, you don't know whether there is
10     anything in there about drills?
11  A. No, sir.
12  Q. Or a fire drill?
13  A. No, sir, but what they do, it is in accordance with the
14     Coast Guard fire and boat drill.
15  Q. What do the Coast Guard Regulations say about fire drills?
16  A. I don't know about that, but I do know it specifies a
17     boat drill once a week.
18  Q. And do you know what provisions are made for crew
19     training?
20     Is there any special crew training provided by
21     Oglebay-Norton?
22  A. I believe this possibly could be in the operating manual,
23     but since I have been affiliated with Oglebay-Norton, I know
24     they have been stressed both by the people from the office
25     and our personnel department as to when a new recruit so to
26     speak comes aboard. He has to be instructed on lifeboat
operations, on the safety gear.

He is to be familiarized as to where the CO₂ extinguishers are and the other fire extinguishers and how they operate and where the firehose stations are.

They are instructed to indoctrinate this new recruit member into the fire safety equipment aboard the vessel.

Q. This training is done?
A. Yes. It is brought to our attention at our spring meetings, and any new recruits that come aboard, they are supposed to train, and this is handled by our personnel department.

Q. This is on your winter repairs, the season of '74 and '75, page 1, and it is Exhibit 57-B?
A. Excuse me. Which item is that?
Q. 57-B. This is an item that says here, "Check all hatch covers and combings and strength as found necessary."
A. That was Item No. 1.
Q. I will show it to you to refresh your memory.
A. That's all right. I am familiar with it, sir.
Q. I notice the item there is in the amount of $3,774; is that correct, Mr. Feldtz?
A. Yes.
Q. And just looking at it, just briefly and quickly, I notice that that's the item that took the most expenditure of money of all the items you had on the repair list; is that
correct?

A Yes, sir, it is.

Q Why would that be?

A What happened on that particular item, sir, the crew attempted to raise the hatch combing on one of her latter trips with the 4 corner dogs on, and it cracked and busted all the underhatch supports.

So this entailed just about completely renewing all the underhatch supports that broke loose.

Q What hatch was that that broke loose?

A I don't remember, but I guess around Hatch No. 6.

Q I would be very interested in what hatch that was. Could you dig it out of the records for me, please?

A I don't know if I really could find out, but I will try to find out.

On that case, what I would do in that time, I would review it with the repair contractor.

I would mark up in chalk what he wanted done, and also there were a couple of combings that required to be looked at. They were done by an unloading rig and bowed outward.

You could still close the hatches, but to bring back a fair alignment, what they do is heat it, release the deck brackets and jack it inboard. I could possibly find a description of that.

This particular contractor was a little lax in sending me
the complete work detail of what he did, but I did mark it in chalk form.

Q. Do you know when this incident with the crew trying to raise this hatch cover with the clamps or dogs, do you know when that occurred? Do you know what date that was on?

A. No, I would say, sir, it was in the port, entering the Port of Toledo while they were getting prepared to open their cargo for unloading.

Q. Do you have any idea what month of the year that may have been?

A. It was probably the last trip on the way in to Toledo to load or unload.

It was one of the latter trips.

Q. Could you search and find out what trip that was?

I would be very interested in knowing that.

A. I believe so.

Q. From what I gather, since it is the most costly item, these hatches, in your experience is it a certain type of unloading arrangement that is more difficult on a vessel, or can we have your opinion on that?

A. Yes, sir, particularly if you are going to a dock such as Great Lakes Steel in Detroit or Inland Steel in Indiana.

Q. Where?

A. Great Lakes Steel in Detroit or if we go to Indiana harbor.
What we have there, in lieu of what they have in Toledo, are Hewitts, which are controlled armed buckets.

These are buckets suspended by cables which swing readily.

Extra care does have to be taken. That's if you have an inexperienced operator. At one time last summer when I was in Detroit, I observed one of the operators who bumped both combings on the way down, and on the way down he slammed into the side tank and smacked both coming out.

You have to be careful with that, and we discussed this with the dock foreman in that the operator should be a little more careful with this. These are the problems we have in this regard.

Q. Do you send a complaint or a register of protest to the company when this damage occurs?

A. What we do is fill out an unloading damage report, and we have the foreman sign this.

It is not in all cases done, but we will come back and bill the steel mill or the unloading dock for the repairs. However, when they do become more expensive, we will start sending them bills on this, but if it is a minor type thing, we won't.

But the foreman, the mate fills out these damage reports, the machinery loading damage gear reports, the foreman fills them out, and they are sent into the office.

Q. Could you search your files, and if you have any for the
1975 season, would you please submit them to the board?

A. All right. Are you writing this down, Mr. Murphy?

MR. MURPHY: Yes. I am making a note.

Q. On this one hatch repair, you say that the braces were pulled up.

A. Are you talking about the brackets that hold the combing?

Q. No, sir. The underdeck angles that support the steel-plated hatch cover itself.

A. I am not sure I understand the detail of that.

Q. On these Lake boats, they have -- it is here (indicating).

A. It is all one plate.

MR. MURPHY: We have a photograph, sir, that might show that.

CAPTAIN ZABINSKI: Is that the one we had trouble with before? Is it the same photograph we had trouble with before?

MR. MURPHY: I don't know if we had trouble with it, but there are photographs.

CAPTAIN ZABINSKI: All right. We'll get that photograph and show it to him.

THE WITNESS: These are really what you call hatch cover stiffeners.

By Captain Zabinski:

Q. Is it the angle that that hatch cover sits on?

A. Is that it?
A. No. It is all part of the hatch cover itself. It is not the angle it sits on. It is all part of it.

COMMANDER LOOSMORE: Is this the photograph?

THE WITNESS: They are walking on it, and it possibly shows it, but this hatch cover --

Q. Between the two hatches?

A. This is the cover laying between the two hatches. Here is your longitudinal butt of the two plates.

Under this plate, it is supported by angle stiffeners that are welded to this plate itself.

Q. What are the angle stiffeners connected to on the bottom side?

A. Yes. They are inverted angles connected by welding. They have the transverse as well as numerous fore and aft members also.

Q. And what are these angles for?

A. Basically for stiffening and creating the strength of the cover itself.

Q. In other words, you have a plate that really forms the hatch cover itself, correct, sir, and these are stiffening members so that plate does not deflect?

A. Yes. The same as stiffeners on a bulkhead.

COMMANDER LOOSMORE: Let the record show the witness had been referring to Exhibit 26.

Q. How about tank tops? Do you get much damage on those
in a vessel?

A We do get periodic damage.

However, the Fitzgerald has been mainly operating to Toledo. The tonnage on her is what I would consider normal wear and tear of a vessel of that vintage.

There are indents between stiffeners, particularly in the way of the hatch openings.

It is in the middle of the hatch, down on the side slope, particularly in this area.

Now, you do get damage --

COMMANDER LOOMIS: Referring to Exhibit 5-F midslop section.

A (Continuing) You do get mechanical damage where the buckets or the Hewlitts are scraping.

Q You are indicating a corner between the side slope?

A From this area and this point there is very little damage.

Q Indicating the bottom half of the side slope plate?

A Correct.

Q These are ballast tanks on either side?

A Yes.

Q And they fill up these ballast tanks, I guess, some of them, if not all of them?

A Yes.

Q How do we know that these slope plates and the tank tops
are actually tight and not leaking water into the cargo hold?
A. By visual inspection.
Q. When do they do that?
A. I realize they don't fill all of them up, but they fill up the tanks until the vents overflow. The crew periodically does this, and it takes a visual inspection.
Q. Somebody goes into the cargo hatch and looks at it?
A. Yes. You look from the spar deck into the cargo hold.
Q. Is this a routine thing?
A. It is not specified as a routine thing, but it is followed on the boats.
To a degree it varies on different boats.
I personally do this to most of the self-unloaders at layup.
Q. On one of the exhibits we had about liferafts, I think it indicated that No. 1 was Samuel and No. 7 was Fitzgerald, a notation like that; do you recall?
That was on liferafts. Excuse me. It was Samsel. The numeral 1 was Samsel, and No. 7 was marked Fitzgerald.
What would that mean? It was on the repair list.
COMMANDER LOOMHORE: That would be Exhibit 57.
A. Yes, sir. This is the cost, and I have No. 1 here circled. This is the cost of $307.05 and $312.85.
Now, this is Samsel's cost to us to service the rack.
The Fitzgerald item is $201 to shipping costs incurred
by the vessel to ship and receive the rafts for inspection.
Q  I see. Do you put the same rafts, do you service the
rafts and put them back on the Fitzgerald? Is that the way
it works out? You do do that, do you?
A  Yes. Their names are stenciled on the cannisters.
Q  You indicated that vessels have in a normal operating
season, they have numerous contracts, damages, minor damages
with docks and so forth.
A  I wouldn't say numerous, sir. They do have some. I
go aboard periodically.
I think in the last five years I have repaired the spar
deck plating twice on the Fitzgerald.
One was indicated as a casualty, which involved a plate
L-8 and L-9 and K-10, I believe, which also was from dock
damage.
The other one I repaired the main deck plating, which
was only of a minor nature, that the plating was set in --
I couldn't even detect that it was a half inch or a quarter
inch, but it did disrupt the regularity of the deck of the
boat.
Q  On this inspection or the visit that you had to the vessel
on 6-18-74 where that main deck plating, I believe that was
in Toledo that you found that; is that correct?
Q  Excuse me. 6-18?
Q  6-18-74?
A: Yes, sir.

Q: You did not report this or notify the American Bureau or Coast Guard on this particular --

A: No, sir. That was because it was of such a minor nature that I did not feel it was necessary, sir.

Q: Did you consider the vessel seaworthy?

A: There was no question about it. She was seaworthy.

Q: It would be safe to operate?

A: Yes, sir.

Q: Did the Captain feel it was safe to operate? Did he know about this deficiency?

A: Yes. We both went down and looked at it together. In fact, I went down and asked him about it, and we went down and looked at it.

Q: Could you describe for me the vents for the ballast tanks?

A: There are two 8-inch vents on either end of the tank. They are of 8-inch extra heavy pipe leading down to approximately three feet below the main deck plating, referring to the midship section down to this area, which is here, and there is one vent at either end with a mushroom screw-down cover and a locking device.

Q: What do you mean by locking device?

A: So they can't be screwed off. They have an angle with a bolt, and they can only be screwed so far without taking these bolts off the bottom.
Q. Do these vents require any kind of maintenance?
A. Yes, sir. Once a year I recommend, and I do know the crew has it fit out, taking off these locking devices and put locking graphite grease around this and screwed it back down.

CAPTAIN ZABINSKI: We have in evidence, Commander Loosmore, that detail? Let's look at it, and we'll see if that device is evident on that plan, please.

COMMANDER LOOMIS: This is Exhibit 6-I.

A. What we have here is you have the pipe, the extra heavy pipe. Onto this pipe is a ring with teeth on it.

By Captain Zabinski:

Q. Teeth or threads?
A. Threads, I'm sorry. This is locked on to there with a set bolt.

This mushroom cover has a combination stop and indicator angle, which is bolted to the underside of this cover.

Q. So to remove the cover, you have to take that indicator off; is that what your testimony is?
A. This is correct, sir.

Q. Otherwise, you just screw the ventilator cover to its maximum or vertical open position, and it comes again -- it stops against the ring; is that what you are saying?
A. Correct, sir.
Q. Thank you. Once a year is when they maintain this thing.
A. Yes, sure. It is one of our procedures for inspecting a vessel at fit-out.
Sometimes we do it at the spar deck inspection.
Then we also double-check it at fit-out. Sometimes it is an item that the crew can take care of.
Other vessels such as self-unloaders, where we have a high degree of fit-out work that has to be done by the crew, I check it at layup, because they more than likely have to bring an outside contractor in, because they have to get these in A-1 condition.
Q. Can you turn these by hand, or do you need some special tools for these vent covers?
A. You can turn them by hand.
Q. And what are the procedures about operating the vessel? Do you have any company procedures about when these are opened or closed?
A. No, it is up to the captain's discretion.
Q. Would the same thing be true about the tunnel vents that you mentioned previously, the same type of a cap-and-screw thread and so forth?
A. Correct, sir.
Q. How high are the ballast vents off the deck would you say?
A. I am only guessing at 18 inches, but I believe it tells you on the plan.
Q. Would you indicate on the plan?

A. I'm sorry, sir. The clear height opening is 14 inches, sir, and the top of the screw -- it is not on here, but actually the top area where water could go over the inner pipe is 14 inches.

COMMANDER LOOMIS: Referring to Exhibit 6-I.

Q. You indicated that the forward liferaft was relocated because of antennas and some other difficulty.

You wanted to insure that it was able to float free is the way you described it?

A. That's correct.

Q. Do you know where it was located from and where it was located to?

A. Directly behind the pilothouse. I moved it off center to starboard.

Q. Behind the house or closer to the rail?

A. It was closer to the rail, sir.

Q. Closer to the rail?

A. Yes.

Q. And you felt in this position it could float free without any obstruction; is that your testimony?

A. Yes, sir. That is correct.

Q. How about radios? Whose responsibility is it for the radios?

A. Well, the direct responsibility is Captain Jacobsen's.
All of our radios are leased through Lorain Electronics who we have a contract with and a service contract.

Q. Do you know what electronics equipment was on the Fitzgerals?

A. Well, she had five radios, two emergency battery-powered, and she had all the AM-FMs.

She had two radars, one a Mark 16 and one a Mark 3 with two separate complete scanning systems.

She had, naturally, two or rather a gyro with two repeaters.

She had a directional finder and, of course, she had her magnetic compasses.

Q. We have testimony, and I believe you have been in the room when the people have been testifying --

A. That's correct, sir.

Q. There is some indication from the vessels that the Fitzgerald reported having, as I understand the testimony, one radar out, and the other one, they were having problems with it.

Could you tell me the last time that the radar aboard the Fitzgerald was serviced?

A. No, sir. I cannot. I was in a good portion of the meetings, but I don't recall anyone mentioning they were having difficulty with the radar.

I evidently must not have been in at that time.
Q. Do you know if the radars on the Fitzgerald were operating on the day of the casualty?

A. As far as I know, yes, sir, because if they had difficulty at any previous time, they would have indicated that they needed radar servicing in their morning reports, which their reports did not indicate as such.

So the only thing I could assume, if he was having radar difficulty, and that is the first you mentioned and the first I heard, he would have to have it during that voyage.

Q. The morning report didn't indicate on the 10th that she was having problems?

A. No. If they need any service, they put it on the report "Radar, gyro," or "phone." It is put on the morning report.

Q. But there was none on the morning report on the 10th of November; is that what your testimony is?

A. Yes, sir. That is correct, sir.

Q. Do we have the morning report in evidence? Do we have the morning report for the 10th?

MR. MURPHY: Yes. It is in evidence, Captain.

By Captain Zabinski:

Q. You mentioned in response to Captain Wilson's question or answered some questions that he asked about the vessel being tipped in Toledo, I believe it was.

Who would supervise such a procedure?

A. That was done in conjunction with the Mate and Assistant
Chief Engineer.

That would be Mr. Stager. Of course, he would not designate to the Mate how to ballast the vessel or tip the vessel.

Now, this was a Mate's decision. He would only inform the mate that we have to tip the boat, or the Captain.

I am sure they notify the Captain as to this downbound voyage is to having to effect wheel repairs, blade repairs, and then the Captain undoubtedly refers it to the Mate.

I am assuming that would be a practice as to how they were going to tip the boat, and we have instructions in our loading manual for tipping the vessel, and that was, I am sure, predetermined to arrival in Toledo, and the Mate is responsible for this.

Does the mate have special guidelines for tipping a vessel, to your knowledge?

Yes. He has a section in the loading manual for wheel-out, I believe they indicated. I am just going by memory.

There are two ways they can do it, either by putting water in the No. 1 tank as well as in the forward peak or the holding cargo in No. 1, which gives you the same distribution or flooding the forward peak.

In this case, I am sure they had held cargo in No. 1 and they held water in the forward peak.

This is a normal procedure at our unloading port.
Q. Do you think Mr. Stager would know what procedures were used during and aft?
A. Yes, he would.
Q. You made reference in your testimony to some notes that you have before you. You have some notes before you; is that correct?
A. Yes. They are handwritten notes taken from my daily diary.

CAPTAIN ZABINSKI: Commander Loosmore, would you have a look at the notes?

COMMANDER LOOSMORE: Yes, sir.

REAR ADMIRAL BARROW: Off the record.

(Discussion had off the record.)

By Captain Zabinski:

Q. Mr. Feldtz, the notes you produced, have you read all these entries into the record, for the '74 and '75 operating season?
A. Would you have indicated all of these?
A. Can I verify that? I am quite certain I have.

REAR ADMIRAL BARROW: Off the record.

(Discussion had off the record.)

A. The only notes I did not read to you, which you had questioned me on in part—no, I'm sorry, you didn't question me on this at all, with respect to the spar deck inspection which was disclosed on 10-31. You have those.
Q. Right.
A. Right.

CAPTAIN ZABINSKI: That's all I have.

REAR ADMIRAL BARROW: Thank you very much,

Mr. Feldtz.

Would you be seated, please.

EXAMINATION

By Rear Admiral Barrow:

Q. Captain Zabinski asked you about some repairs on 6-18-74, some repairs where you indicated that the ABS or Coast Guard was called.

What was that in connection with?

A. The main deck plating? That was on 6-18-74 where there was an irregularity of the main deck plating repaired during the winter of '74 and '75.

Q. Where was that accomplished?
A. In Toledo, Ohio by Hanson Welding.

Q. That, according to my notes, is the same time where you rode the Fitzgerald and discussed loading procedures and checked out their compliance with the loading manual; is that correct?

A. Yes; that's correct.

I took in -- I went to Toledo for a general inspection.

The Captain indicated to me that the passengers that were scheduled had canceled out.
The next thing, I called Captain Jacobsen, and I said that they had canceled out, and there was an opportunity for me to ride the vessel. I told him that I was free and that my workload was such and such.

"Okay." He confirmed, and that's when I made a decision to ride the vessel. You see, I had been wanting to ride the vessel.

Q. Where did you go on that trip?
A. We went right from Toledo to Silver Bay and loaded at Silver Bay and returned to Toledo where we discharged that vessel.

I boarded the vessel in a light condition.

Q. I would like to talk just for a few minutes about the spar deck examination carried out on the 31st of October, 1975.

Could you describe very briefly your recollection of what those consisted of, the forward defects or deficiencies noted on that inspection?

A. Yes, sir. Can I refer to my notes?

Q. Yes.

A. On here, which was not at this point been made part of the record, but it is on my sheet here, there is a damage in the No. 2 combing, fore and aft combing on the center line of a minor nature, which the Bureau and the Coast Guard did view. They were not interested, but however, due to trying to
maintain the upkeep of the vessels, I listed in my notebook
to further look at this this winter and possibly repair it.

What it was was a small indent at the bottom part of the
combining on the center line in this area here, so I tried to
get a buildup of these, because somewhere along the way you
would have to renew the whole thing.

"No. 13 Hatch, port side stringer plate, dent," and I
have here "/grind." That's the manner of repair we had
discussed for repair.

What it was was a dent referring to this exhibit.

COMMANDER LOOSHORE: Exhibit 6-F, the
midship section.

A. It is a dent in this plating, which is an inch and three-
eighths.

COMMANDER LOOSHORE: Referring to the spar
deck plating of the combining.

A. Right at the top section it is an indent of a maximum
of an eighth inch.

The normal procedure for repairing that is taking a
grinding wheel and smoothening out the ends and sort of
squaring up the corners, in other words, putting the
continuity back and distributing it a little bit.

Q. You are describing it as about an eighth of an inch?
A. That's correct.
Q. Go ahead.
"The 15 hatch port side gouge in the face plate, either grind or fill by welding."

Now, it had taken a small bump by an unloading rig in the face of this spar deck plating.

Q. By what?

A. An unloading rig, and this dent again was to be ground out or filled by weld and dressed out. It was not determined at this point which way it had to go.

I was hesitant in giving consideration to this during a winter repair in cold weather.

Q. What size defect was that now?

A. I would say the defect was probably in the area of a sixteenth to an eighth inch deep. It was more of a scrape.

Q. Was this with sharp edges?

A. No, there were no sharp edges.

Q. The last two you mentioned were in the stringer plate?

A. Correct.

Q. What was your judgment in either of them as far as the seriousness of them?

A. I was not concerned about them, but the reason I repair them is I don't like to get into a position of a buildup of these indents.

I like to keep them under control and fix them as they occur.

Q. Are these types of defects a fairly common occurrence or
common at all?

A. Yes, sir. They are very common.

Q. And you attribute them to unloading apparatus?

A. Definitely, sir. In fact, I have witnessed some being done.

Q. Go ahead.

A. The next item that I have listed -- wait a minute. I missed one. "Port side, side end girder dent and crack 5-inch max." That's what I have in there.

This indent is in way of the port side of No. 16 hatch. In the underdeck longitudinal girder, which is a riveted section to the spar deck plating, this indent is adjacent to the forward side of the mid hatch breath bracket that leads to the longitudinal bulkhead.

This indent I put to the maximum of one to two inches. However, here I note I have a maximum of 6 inches. I'm sorry, a maximum of 5.

Q. That's the length of the --

A. The length of the overall crack. I notice when I drew this and gave further consideration to it, actually, it is not straight, this crack, it is somewhat irregular.

It is a tear type from the crack. It follows the indent hooks at the top.

The way I gauged this, I didn't measure it. I looked
at it, and I used it in accordance with the proportion. I
didn't measure the depth of the beam.

I went a few hatches forward and looked at the deck plan,
not having any immediate recollection which was behind this,
which I couldn't see from the deck.

So a few hatches forward you have a companionway that
takes you down onto a platform. You can look up, and, in
fact, you can measure it. So I measured this member, and I
measured the distance between this member, which is the
longitudinal underdeck support girder to the side longitudinal
bulkhead, which was three feet.

Giving consideration that this member was a riveted
connection, I did not feel in any way that it enhanced it,
so I elected and agreed with the regulatory bodies that
these repairs be effected during this winter layup.

Q: None of the four --

A: I'm sorry. There is one more, and that's No. 21 hatch.

MR. MURPHY: Pardon me, Mr. Chairman,

before he continues to the next one, may we have the
sketch to which is referring marked so it will be
clear in the record?

Q: Which one is that? Has that been identified?

COMMANDER LOOSMORE: That is a new one.

REAR ADMIRAL BARROW: That will be No. 61

for identification.
1 (Exhibit 61 was marked for
2 identification and made a part
3 of the record.)

4 I entitled it "Hatch Opening No. 16, Hatch Opening
5 Port Side, Edmund Fitzgerald."

6 Q You indicated, I think, that you have --

7 REAR ADMLR BARROW: That is 61 for

8 identification?

9 COMMANDER LOOSMORE: Yes.

10 By Rear Admiral Barrow:

11 Q You indicated one additional deficiency that you noted.

12 A That's in the way of the No. 21 Hatch starboard side,

13 and I believe I have given you a sketch with that bracket
14 on it.

15 I don't know if you entered that as an exhibit or not.

16 REAR ADMLR BARROW: Off the record for a

17 few minutes.

18 (Discussion had off the record.)

19 REAR ADMLR BARROW: Back on the record.

20 Q Would you describe the last item mentioned?

21 A This particular hatch, as I described earlier, has the

22 bracket-type connection, which is different from all others.

23 The hairline crack was at the top within the filled weld

24 itself, stemming from the top of this down to a maximum of a

25 half inch.
Now, how this was going to be arrested, I was confused at the point because I couldn't put a radius here (indicating). I wanted to get this top plate connection down away from the spar deck stringer plate, but I hadn't established how I was going to do it yet.

Q. It is your judgment, I believe you stated, that none of these were serious types of deficiencies?

A. No, definitely, or we wouldn't let the vessel sail.

Q. In hull repair, such as replacements of the deck plating that you talked about, what part do you play in the actual replacement of it? Do you check the fitup on the plate?

A. Definitely. And I also inspect the welding as it is being done.

Q. Give us the process which you go through.

A. What I will do in this particular case, I was there with the repair contractor, and I try to make it a point to have the repair contractor present when we make our annual surveys as such, and also try to point out items that I know the regulatory bodies will be interested in for classification-type items; in other words, shell operating or water plating or anything involving the structure of the vessel.

I have the repair contractor there also, so he can witness and get firsthand knowledge what we have discussed, how we want the repairs to be made and the manner and the extent of the repairs.
In this particular case, they asked me what I was going to do.

The Coast Guard really, and the Bureau, in this particular case, didn't care to identify anything. It was that minor in nature.

However, I did bring it out to them what I was going to do.

He drew it in chalk. The fitter had to come back out and he had to put his punch lines on as to where they were going to cut it in radius to the shell.

They were satisfied, and the order was given to the repair contractor. In the process of my general activities, I would walk through there and see how they were doing it, and I would go down in the tank and see how they were welding the main brackets, which are these members, and seeing that the welding was done to the top and the bottom of the plate.

COMMANDER LOUSMORE: Referring to the midship section of Drawing 6-F.

And also the connection of the beams.

In this particular case, I am sure that the interested regulatory bodies were shown the fact that I did crop out the top of the side tank.

I am quite certain.

I can't recall the dates, but I do remember having water in the tunnel area so they hose-tested this area.
Q. I think my question to you was: do you in all major repairs check the fitup of new steel that is going in?
A. That's correct, sir.
Q. And welding?
A. Yes, sir.
Q. And the hose testing following this, do you do that?
A. That's correct.
Q. How about the grade of steel that goes in there?
A. All I do is check to see what the contractor has bought, and it is under bill of purchase "American Approved Grade A Steel."
Q. Is this the kind of steel that went into the structure originally?
A. That's correct, sir.
Q. Do you recall being involved in some modifications to the keelsons on the Fitzgerald?
A. I know of them. I was not involved with the original inspection, the concept of remedy or the installation of them. I have inspected them at numerous times since my employment began on May 3, 1971.
Q. Have you noticed any recurrence of the problem?
A. No, sir, I haven't.
I felt in my mind that was a very suitable improvement or corrective measure taken for the difficulties they were having.
Q. One of the exhibits that we have, I believe, indicates that there was an installation of an illumination of life-boats and inflatable rafts accomplished in February of 1974. Are you familiar with that?

A. Yes. That was at the time the requirement which came out by the Coast Guard for the illumination of liferafts. This had entailed installing a fixed light for illumination in the way of the raft aft. I'm sorry.

Excuse me. What we did back here on the overhang is that we had to rewire an existing light fixture to tie it into the emergency lighting.

Out forward, we installed a fixed light that could be located to shine on the raft as well as in the water, and we put one on both port and starboard.

Q. How about the inflatable liferaft aft? Was there an emergency light there?

A. The boats themselves had boating ladders or big floodlights in the area of the lifeboats, which were on the emergency system that showed over the side and would illuminate the boat.

Q. Was there, in fact, on the emergency power a light at each embarkation, a space for both inflatables and the boats?

A. Yes. That generator was on the poop deck for the starboard side for within the deckhouse, the first deck above the starboard deck.
Q. Can you tell me what type of particular holding-down apparatus there was to hold the lifeboats in their chocks?
A. She had a release on the other side, which was like a strap that came down with a handle that you would release something when she came down, and you would release it.
These would release the grabs on the boat.
Q. Where were the grabs?
A. They were over the gunnels.
Q. And what were they attached to?
A. They were attached to a pad on the deck with a shackle.
Q. And what type?
A. A turnbuckle.
Q. A turnbuckle?
A. Yes, sir.
Q. Were they wires or lines?
A. They were wires.
Q. They were wires? How many along the side? Would you know?
A. Two.
Q. Two on each side?
A. Yes, sir.
Q. You have been asked, I think we have asked that a copy of the manual, the operations manual, be furnished and I think you have it for us and we will have to take a look at that, but I would ask again that if there are any standing
orders or operational procedures which were sent out by
Oglebay-Norton Company, instructions to the fleet, that we
would like to have those also.

Q. We will review our files.

Q. And specifically interested in anything that would have
to do with maintenance, hatches or vents and perhaps I can
ask you a question.

Is there any instructions that are sent out to the fleet
which would have required inspections of hatches and in the
area within the hatch combings itself after unloading?

A. No, sir, there is no written instructions out after
each trip of unloading, sir.

Q. After unloading?

A. After unloading, no, sir.

We do have a mate -- maybe I better put this in the
record.

We do have a mate that is on the watch that witnesses
the loading. He is on deck. He is working with the
unloading foreman and he is continuously walking up and down
the deck, and if there is any damage or a large noise, where
he would have damage, the unloading regulations or something
is observed by him, yes.

Q. We touched on training and I would like to ask you if
you are aware of any occasion during which any of the ships
in the fleet of the company itself actually went through a
training exercise and opened up an inflatable raft for any
of the crews to see? Are you aware of anything of that sort?
A. No, sir. I am not aware of any.
However, there are movies out that I know that are
available, and I don't recall when the last time was that we
had showed these movies. I believe that they were shown at
one point, I have heard. I don't have verification of this,
but I think they were showed at our spring meeting one year.
Q. The office logs we have heard mention of several times
here.
The extracts from the official logs or the logs are
carried on board the boats themselves, is that correct?
A. It is not a direct extraction from it, sir. It has
stipulations in it that the office is interested in,
particularly in the materials department, as to times of
departures and so on, and these are forwarded to the office.
Q. Who reviews them?
A. I myself do not personally review them unless they are
handed to me for an item maybe in my field.
Q. Who takes those out? Who extracts them, actually?
A. Either the captain or the mate.
Q. This is done actually on the vessel itself?
A. That is correct, sir.
Q. And does he have any instructions on what to insert or
is he to insert each of them that is on the office log for
which there is an entry on the vessel itself?

A He is supposed to, yes, sir, insert all information
that is on that and this is periodic.

Captain Jacobsen will mention to me, "When you go aboard,
mention to the Captain, let's be more thorough with our
office log."

Evidently they were getting lax in some areas.

He does mention this to me periodically, so when I go
aboard the boat periodically for a general inspection, I
will mention this to the captain.

Q You have indicated you had 19 boats to look after.

A That is correct, sir.

Q That is a pretty substantial burden, I would say.

A Well, it is an enjoyable burden.

Q That keeps you hopping, does it?

A It does, very much so, sir.

Q I think the question was asked you before, but I am not
sure I understand what the answer is, and that dealt with
the last servicing on the radars.

Do you have any idea when that would have been
accomplished?

A No, sir. I have no knowledge of any servicing on the
radars this year.

However, the servicing of the radar gear, the gyro
equipment and so forth, is picked up from our morning logs.
The dispatcher does take care of contacting Sperry in regard to the radars or the electronics or in regards to the phone.

REAR ADMIRAL BARROW: Mr. Murphy, might I ask that Oglebay-Norton furnish any servicing records for the radar gear, electronics gear as a whole. I am talking about the VHF radios or radars.

MR. MURPHY: Let's make a note.

THE WITNESS: We have that in our maintenance contracts.

REAR ADMIRAL BARROW: That would be '75 operating season, Mr. Murphy.

MR. MURPHY: Fine.

THE WITNESS: All of that equipment that we have is under a maintenance contract.

By Rear Admiral Barrow:

I want to touch on one other point very briefly, and that is, you talk about the items which are the responsibility of the deck crew for maintenance of hatches and vents and this sort of thing.

This ship had how many people in the deck crew?

A: I would have to get down and look at this, sir. It has a total of 29 aboard.

Q: Just the deck crew.

A: The deck crew -- she had a captain, a mate, three mates, she had three wheelsmen, three deck watches or three watchmen,
three deckhands. What does that give us?

Q: Fine. I think that is far enough. That will be enough information for my purposes.

I want to specifically find out if, for instance, a wheelsman carries out the maintenance work that you were talking about with regard to hatches and vents.

A: I am not really sure. Maintenance work is carried out by the boatswain and the deckhands and the watchmen.

Q: And a watchman?

A: Yes, we have three watchmen, sir.

The wheelsman don't get involved unless it is on a voluntary basis for deck repairs.

Q: Well, with the exception of the wheelsman, then, the remainder of the unlicensed crew would actually work on these kind of things.

A: Yes.

Q: The only exclusions would be for the three wheelsmen?

A: And possibly the watchmen. The watchman, they may work him on a daily watch while they are out to sea, in your open lake. They may work the watchman, the daily watchman.

Q: What does the watchman do besides -- except during the daytime what does he do?

A: He stands his watches.

Q: What does this involve?

A: In the rivers, he will be possibly out on the bow or
he will be standing his watches down below the deck areas.
Now, you are getting into the operation end of it,
which I am not that familiar with.

Q. Basically, as I understand it, and I am not trying to
push you on it, the maintenance of hatches and vents on
boats would be nonwatch standard type of work, is that right?

A. Supervised by a duty mate, who is on watch.

REAR ADMIRAL BARROW: Counselor?

MR. MURPHY: Just one thing,

Mr. Chairman.

In view of the questions that have just been put
to this witness with respect to standing orders, with
respect to reporting damages, I have mentioned
previously that this manual is available and you have
indicated at an appropriate time that the Board would
like to look through it, but I would just like to call
the witness's attention to one section in it, if I may,
and this is Section 601 pertaining to reports of damages,
the questions which you have referred to him, and the
document is not in evidence yet. It is available to be
put in evidence, but in the sense of saving time, may I
have him read it or call the witness's attention to it?

REAR ADMIRAL BARROW: Why don't we identify it
for the record at this time?

MR. MURPHY: Certainly.
This is a company manual and doesn't have a particular designation of document. It is a notebook. It is a notebook and the introduction is stated, "To Masters and Chief Engineers, this manual outlines company policies," and then it goes on with the rest of that.

That is the identifying document. It consists of --

COMMANDER LOOHSORE: Are the pages numbered consecutively?

MR. MURPHY: I don't think the pages are numbered consecutively. It goes up to a total of 100 and -- the last page number is 114 and there are still four or five additional pages beyond that and some of the intervening pages don't all have additional page numbers on it.

I think we will have to count them to determine exactly how many pages there are, but I will be happy to turn this manual over to the Board at this time.

I would like to identify this as an exhibit.

I would just like the witness to make a notation of the one section particularly pertaining to the questions that you have been asking.

REAR ADMIRAL BARROW: I think that after having identified it, the witness can then refer to it.

I think before we introduce it into evidence, we
ought to look at it so that we don't have, perhaps, all
of it introduced and add to the mass of material that we
have already, so with that identification perhaps the
witness can then look at it.

EXAMINATION

By Mr. Murphy:

Q. Referring to the manual I have just handed to you, just
read the first -- the one paragraph, the first paragraph
under Section 601 entitled, "Damage by Dock Machinery."

Just read that paragraph if you would, please, sir.

A. "Prior to leaving any port, it is absolutely necessary
that you inspect your vessel for any damage sustained by
loading or unloading the equipment. In the past, we have had
to repair damages which were obviously caused by docks, but
have not been reported. It is very difficult to obtain an
admission of liability for damage from a dock unless we have
the report which has been signed by the representative of the
dock."

MR. MURPHY: That's fine. Thank

you, Mr. Feldtz.

I have no further questions at this time.

I just wanted to bring this to the attention of the board,
and this manual will be available in its entirety at
whatever time the Board would like it introduced.

REAR ADmirAL BARROW: We can assign an
identification number to it.

Off the record just a minute.

(Discussion off the record.)

REAR ADMIRAL BARROW: Back on the record.

Would you identify this, please.

COMMANDER LOOMHORE: If there is a serious question about the count, Mr. Murphy?

MR. MURPHY: No, off the record.

(Discussion off the record.)

REAR ADMIRAL BARROW: On the record.

CAPTAIN ZABINSKI: How many pages did you count?

COMMANDER LOOMHORE: I count 103 pages, sir.
The last page is 114 and there are four additional pages.

REAR ADMIRAL BARROW: Mark it for identification.

(Exhibit No. 62 was marked for identification and made a part of the record.)

REAR ADMIRAL BARROW: We will examine the manual and determine which portions of it will be appropriate for this and then mark those pages individually, but I see no reason to at this point introduce each page until we have had a chance to look at it.
MR. MURPHY: Perfectly agreeable.

REAR ADMIRAL BARROW: Do you have any further questions?

MR. MURPHY: No further questions.

REAR ADMIRAL BARROW: Captain Zabinski?

EXAMINATION

By Captain Zabinski:

Q Mr. Feldtz, just a quick question on the number of times during an operating season that you get an opportunity to go aboard, and from those dates that you were on board that you indicated to us, the majority seems to be during layup season.

Is that a fair statement?

A The majority of it, yes, sir.

Q And it looks like if you make one or two trips during two or three visits during an operating season, that is quite --

A No, sir. I try to get aboard every vessel once a month.

Q But, as I recollect, on the Fitzgerald in the '75 season, you did not go aboard in May or June, is that correct? May or June?

A No. That is correct.

I did go aboard.

Q And you didn't also go aboard during August and September.

A No, sir, that is correct. Twice in October. I went aboard four times after fit-out.
Q. Yes, that is correct. So you don't get a chance to go every month, it looks like.
A. I'm sorry, sir. There were five times after fit-out.
Q. But, you do not get a chance to go every month or anywhere nears that much indicated.
A. I missed June, May and August.
Q. And September?
A. And September, yes, sir.

Sir, I would like to clarify this, too. The majority of the time is spent on our older and self-unloading vessels.
A boat of this nature normally -- unless the captain calls you your only visits are general.
Q. Well, Mr. Feldtz, we have the Fitzgerald. The reports that we have or the testimony before this Board indicates that Captain McSorley or the vessel was lost, and he indicated that he had lost some vents, that the fence was either laid over or damaged and he was developing a list and he was -- he had his pumps on.

Given those facts, what could have caused the list in your estimation?
A. I question very much that they came from the vents, sir. They are eight-inch vents and if they say two of them were missing, I would have to assume that they were two adjacent vents, which is a vent from, say, the after end of one hold and the forward end of the other. I can't see, if he is going
to lose 20 vents, that he would lose one within two feet of
the other and lose the other one on the other end of the tank
in the same manner.

So I would assume, from what I have heard in past
testimony, that he would lose two vents, one in each tank.
It is hard to believe that those eight-inch vents, which have
a surface area of 50 square inches, would not be able to be
handled with a suction of four pumps, each rated at 7000
gallons per hour, and with 12 inches, which is a 113 area,
could not handle it without any problems whatsoever, without
even creating a list.

I really can't visualize in my mind, and I have spent a
lot of sleepless nights trying to visualize this, and I can't
come up with that. I keep getting in discussions with myself
and contradicting myself.

Q What do you think could have gone wrong?

A Well, I'll tell you, sir. It is my opinion and in the
evaluation of the different items that have been presented,
going through the process of elimination of events and what
have you, it does appear to me in my opinion that the vessel
had struck an object. I don't know if it hit the bottom or
something close to the bottom. It had to be something fixed
causing damage to the lower part of the bilge, which is
indicated on the drawing as a riveted connection, and it
could have possibly opened up the tank or two tanks, and it
was in the way of a division bulkhead. This has happened, ripping -- unfortunately I haven't gotten into talking with anyone who knew or knows and I do not actually know what the bottom configuration is in that area of a possible shoal that hasn't been spoken of, and it could have gone through there like a surge and ripped a hole. The tanks would have definitely flooded and would create the list that we are speaking of and would have naturally lost its buoyancy in that side tank or, say, two side tanks or possibly even more, which would then really take away from his upriding buoyancy or his upriding moment and put him in a listed condition, which would create a slow response in a roll.

This is the thing that has been going through my mind in trying to visualize this. So taking that into consideration and the possibility of the vessel rolling, when it got into a roll and in that area, of course, from what I have gathered the rolls of the seas become closer, and it could have been hit with another sea while he was in his roll and was responding to a slow response of slow upringing movement, due to his lack of upriding stability.

So then, of course, his period of roll would then increase, and then he turned, split possibly due to the height. The tension area that was put on there from compression, now tension, into this hole or ripped or severed area, which caused him to roll, which I can satisfy in my mind why the
crew never made it at least off of the vessel. There were no bodies found, no lifejackets. The pilothouse had to be pretty well struck by water. The sounding buoy that was located on the aft part of the pilothouse was screwed to the marine bulkhead. The two screws, as you saw yesterday, were in this sounding board. This board was located on the after side of the pilothouse. So I do feel strongly that in my mind, on trying to evaluate this, and I am sure, I as well as our company, wants to know more than anyone, as much as the Board here, as to what just did happen, and this is what I would come up with.

The vessel rolled, at which time this area had begun to open up to an extent that caused her to sink or to begin to roll and not respond to her upriding stability or her lack of upriding stability with a starboard roll, assuming that that was the way she was listing, and then went over, possibly sideways or upside down, and then with the high shift of cargo, which would then put this area, which as we all realize was a very critical area, and that is why it is riveted --

Q. The bilge area?

A. The bilge area, the low bilge area, and with the transfer from the metric center of the buoyancy, it was a transfer of the center weight of the cargo to the top of the vessel, increasing the high stressed area in this area here, which
would cause it to fracture or open up.

COMMANDER LOOSMORE: I though you said some-
thing about transfer of the metric center.

THE WITNESS: The metric center of
gravity. That is my own personal opinion.

By Captain Zabinski:

Q Do you think she capsized?

A I do feel, yes, she capsized. This is my personal
opinion of trying to evaluate it.

Like I say, as was brought out, I am responsible for the
structure of a vessel, and I do want to try to find out what
possibly could have happened to the best vessel we had.
In fact, up to a number of years, I would have considered it
the best vessel on the Lakes. I have always said she was
the last of the best-built boats, but this is what I think
happened.

It has been indicated, and I was aboard the vessel at
the sonar investigation, and it appears that there were two
objects that were found in two pieces. "Can we assume she
is in two pieces?" indicates my point. Is she broken? Did
she break while in the roll while she was sinking? I really
don't know, sir.

Q Do you think that the hull girder could have failed?

Is that a possibility?

A Are you referring to the overall hull girder?
Q: Yes.
A: Yes, sir, when you put this area, and I believe you start in this area and start to go up the side, but of course at this point, once you get your neutral axis, it is already a point of no return and you just continue.
Q: Do you have any recommendation how we could possibly avoid this sort of a situation?
A: You mean the failure of the overall structure of the girder vessel, due to possible flooding?
Q: Flooding is what we are indicating.
A: Well, unfortunately, sir, if this is the way she had went down, which I have in my mind at this point, unless something else can be disclosed, I don't feel there is much you can do because we do have watertight divisions. It is not necessarily the putting of water tank divisions in the cargo holds because I don't feel that was the problem, or watertight divisions in the main deck tunnel.
We have already had watertight divisions in the side tanks and double bottoms. Would it be feasible?
The other possibility I can think of, which some of the newer vessels are coming out with, which in these type vessels would be somewhat impractical because these areas and this area is figured into their ballast, but on the newer vessels, which you have beamier vessels, where you can accommodate all of the ballast in this area and come up with
your longitudinal side keelsons, which would then create --

Q. The witness is indicating an extension from the break
in the slope plate down to the bottom plate.

A. Correct, but, sir, that is off the beat with this type
of carrier because I don't feel that that would even happen
either.

For this particular failure that I have evaluated in my
mind, there aren't really any structural corrections that
could be taken into account for this.

The only other thing would be how small you want to make
your water tank divisions. Now, you can make them three foot,
two foot, or you can go to the other extreme. This boat was
very well divided. She has nine watertight divisions on her
side. She has a watertight division trim tank in the way
of machinery space. She has another one under the engineroom.
She has after peaks. She had four peaks. I don't know what
other type of division of tanks you could have.

Q. Do you know if the vessel -- what effect the flooding
of one off-center ballast tank would have on the vessel in a
loaded condition?

A. Not working the figures up, sir, I would have to guess
on approximately a five-degree list, and I don't think
flooding of one single tank is a critical part. I think the
critical part is the working of the vessel in the sea had
reduced her upriding movement.
CAPTAIN ZABINSKI: Nothing further.

REAR ADMIRAL BARROW: I don't have anything further.

Commander Loosmore?

COMMANDER LOOSMOR: Just a couple of questions.

EXAMINATION

By Commander Loosmore:

Q Mr. Feldtz, did you say there was an emergency generator in the forward house?

A That is correct, sir, on the boat deck and on the poop deck level. She has structurally indicated on the drawings, "poop deck," but I call it the boat deck. That's where the boat decks are at. It's on the forward starboard side adjacent to the fan space.

She has an entrance from a side door in the bulkhead and a door heading from the grated area, which is --

REAR ADMIRAL BARROW: Commander Loosmore, you didn't ask about the forward house, did you?

THE WITNESS: The after side of the forward house.

REAR ADMIRAL BARROW: I don't think the witness understood you.

COMMANDER LOOSMORE: Read back the last question.
(Record read.)

THE WITNESS: I'm sorry. The forward
side of the after poop deck house, on the poop deck level.
By Commander Loosmore:

Q Is there an emergency generator in the forward house?
A No, sir, there is not. To my recollection, in fact, I
am quite certain there isn't.

Q I have Exhibit No. 59, which you sketched for us here,
showing a snipe in the longitudinal girder, a cutout in the
longitudinal girder.
A That is correct.

Q A hatch and combing girder in Exhibit No. 61, which you
have also sketched for us, showing a dent and crack in the
longitudinal girder.
A That is correct, sir.

Q Can you tell me how far the dent and crack was from the
closest one as shown on Exhibit 61, from the closest of the
rewelds and cutouts as shown on Exhibit 59?
A Well, this is in Hatch 14 and this is in Hatch 16.

Q Does this only exist in Hatch 14?
I am looking at Exhibit 59.
A This repair only exists -- I have to look at the -- do
you, by chance, have the spar deck steel plan? She may be
indicated on the spar deck steel plan.

MR. MURPHY: You didn't finish your
THE WITNESS: No, I don't have any recollection. This is the only repair put on this longitudinal or underdeck girder.

By Commander Loosmore:

Q. Did the detail as exhibited on Exhibit 59, exist anywhere other than on Hatch 14?

A. Yes, I am sure it does, sir. This is a matter of original construction, how they joined these two pieces during original construction. Where this is, I have no idea.

Q. Mr. Feldtz, do you recall who the contractor was on the repair to the Hatch comings and Hatch No. 8 that you discussed with Captain Zabinski?

A. Hatch No. 8?

Q. In the '74-'75 layup, there was a $3700 repair.

A. Yes, Hans Hansen Welding Company of Toledo, Ohio.

On that work list, it is indicated whom the repair contractor was right here (pointing).

Q. Okay, thank you. Mr. Feldtz, do you know what springing is?

A. Springing?

Q. Yes.

A. Yes, sir. You mean the springing of the vessel itself?

Q. Yes, could you explain that to us?

A. Well, the spring of the vessel itself is the return of a
vessel, the spring of a vessel in a working condition.

Q. How long does a spar deck examination take?

A. Oh, it varies. On this particular vessel, I would say that it took probably an hour and a half.

Just keep in mind that there are different degrees of spar deck inspection.

I make my spar deck inspection, where I do just the upper decks only and during my annual inspection, I do the tunnels, which also includes the underside of the spar deck.

This was only the top deck area.

Q. This? Which? You say "This was only the top deck area."

What are you speaking of?

A. Well, the upper open deck area.

Q. "This" meaning a particular inspection?

A. Yes.

Q. Which one?

A. This was on October 31st. This was only the commencement of the annual survey. This survey really wasn't completed and it was due to be completed at certification and fit-out.

Q. Did you walk the whole length of both sides of the deck?

A. I did, sir.

Q. Did you do anything else during this time? Did you look anywhere else?

A. Yes, we looked or walked up the deck. I viewed. I don't know what the other people looked at, whether or not
eyes were traveling, but I looked at the open deck area. I tried two of the ventilators to see if they were operational. I inspected the hatch combings, the spar deck area within the hatch, hatch girder, transverse arch, I mean hatch combings, the gunnel, gunnel bar, scupper, scupper openings, and also the covers for the sounding wells.

Q   Did you walk in between the hatch openings?
A   Yes. In some cases I did walk in between hatch openings. However, you are walking on top of hatch covers.

Q   All of the hatches were open during the spar deck examination?
A   Yes, sir.

Q   Did you complete one of these forms that you mentioned to Captain Zabinski?
A   Did I what?

Q   You said you had made out an inspection form.
A   That is a maintenance form. I do not use the form for spar deck inspections.

Q   What do you use that form for?
A   General maintenance inspection.

Q   The kind like your general visits that you were talking about?
A   That is right.

Q   Did you fill that out most of the times that you visited the vessel?
A. Only approximately once a year.

Q. Did you do this every year?

A. This is something that I just indoctrinated this year. We are in the process of an interim period.

Q. Did you ever do one on the Fitzgerald?

A. I can't recall whether I did or not, sir. I don't suspect I did, hoping that I would never have any inspection problems on the Fitzgerald.

Q. When did you start this form?

A. I started this form approximately May of this year. The Fitzgerald has never been a maintenance-problem vessel. The Fitzgerald has the most senior captain, the most senior mate, both very maintenance conscious.

COMMANDER LOOSMORE: Sir, there were several items which in the course of the questioning have come up with respect to the witness providing them later on. I have a list.

REAR ADmirAL barrow: I think I would like for you at this time to summarize what is to be furnished.

COMMANDER LOOSMORE: I do have one more question.

By Commander Loosmore:

Q. You said in the beginning of your discussion, yours and mine, a discussion right at the beginning, that you had a
statement by ABS concerning the deficiencies.

Was that a written statement about the deficiencies in
the spar deck examination on the 31st of October?

A. They sent us a report. Yes, they sent us a report.

Q. You used the past tense. You said, "We had a written
statement."

A. Yes, well -- I'm sorry, excuse me. I will correct
that then. We have a report from them. It is a typed
written report. It is a typed report.

COMMANDER LOOSMORE: Do you have that?

MR. MURPHY: You asked me to produce
it and I have it.

REAR ADMIRAL BARRON: This was the additional
report that I asked when we got the ABS reports
initially, because it was not on the list.

THE WITNESS: They don't put anything
in writing.

By Commander Loosmore:

Q. So the statement that you have from the ABS --

A. Written? No.

Q. Who was the ABS inspector, then?

A. Wilford Jeanquart, J-e-a-n-q-u-a-r-t.

Q. The items that I have listed as far as those to be
furnished later, if available, were the individual ship file
for the Fitzgerald that you discussed individually, repair
requisitions for the '74-'75 season, if available, a list
of the winter work list from the ship, and you described that
you picked those up for the '75 season on the 15th of October.
Also on the list is information as to when the liferafts
were installed, the inflatable liferafts.

A. I am sorry. I don't remember that. I did look that
information up and unfortunately I wasn't able to recall it.

Q. We discussed the deck logs and you said that you thought
the deck logs were retained on board for two years and then
sent to the office.

Could you check and see if there are log books available
for the operation of the Fitzgerald?

A. I could.

Q. We asked that question earlier and apparently we were
told that the only thing available was the office log.
Obviously, the deck log would contain the additional
information.

A. I am not sure. Some boats, I am sure, do go back a
number of years.

Q. I'm sorry. I didn't hear your answer.

A. Some boats do go back a number of years and they keep
them right on the boat. I really don't know.

Like I say, I don't really get involved in the operation
and the logs, other than reviewing them on the vessels to see
that they are being kept.
Q. You do look at them, though?
A. Yes, but I don't know what they do with them, whether they send them to the office or what.
Q. You said you would provide us with one of those inspection forms for these vessels.
A. If I have one for this vessel, I will give it to you, and if I don't, I will give you a blank one. I don't know if I have one for this vessel or not. Like I say, I only indoctrinated this system this spring.
Q. You also said you would provide us with a listing -- you would search the records and provide us with a listing of what repairs were contracted for by the Master without recourse through your organization.
I don't believe that it was mentioned, but I think you said that this sort of thing was, at times, also done by the Chief Engineer.
A. Yes.
Q. And information on repairs by either the Master or the Chief Engineer would be of interest, if any.
You said you would provide us copies of the accident reports. You called them the Great Lakes Protective Reports, and the Damage Reports for the Oglebay-Norton Company, and I think you said you would put down the Coast Guard reports for those.
A. They are the only two that I am certain of that we have.
Q. Mr. Feldtz, did I describe those reports correctly?

A. The Great Lakes Protection and the U. S. Salvage Reports, and the Coast Guard Reports. Is that what you are referring to?

Q. Are there U. S. Salvage Reports?

A. U. S. Salvage Reports of Casualty.

Q. Are they reports that you made to U. S. Salvage or that U. S. Salvage has made to you?

A. Reports that are made to U. S. Salvage.

Q. Do you have copies of U. S. Salvage Reports that are made by you as salvage surveyors?

A. Yes.

Q. I would like to see those very much, and I would like to see those backup to the drydocking of the boat for the '74 and '75 season.

In 1974, in the '74-'75 layup, there were $3700 worth of hatch repairs, and you said that was Hatch No. 6 and you said you would check and let us know.

A. I also then specified that there were a number of other hatch combings that were jacked, and their brackets were released and faired.

Q. Well, let's put it this way. Could you provide us with information as to what hatches and a very brief summary of what kind of work was done?

A. I will search my record and see if I have those, yes, sir.
In fact, just for a point of interest, this was one of the bills that I had sent back to this particular repair contractor because I thought his price was in excess of what he had done.

Q. Would you also check and see if possible what month the damage to the hatch combings occurred? If you have the records?

A. Yes.

Q. And you were asked whether or not you had a damage report on an unloading type of damage and you said you would look for those for 1975, and, if so, supply them.

A. Yes, sir.

COMMANDER LOOSMORE: Mr. Murphy, do I understand that this black book, which has been marked as Exhibit No. 62, should contain all standing orders and operational procedures for maintenance on hatches, or is there possibly something else?

MR. MURPHY: I am not prepared to answer that because I don't have knowledge to answer that question, sir.

We were asked to produce the operating manual. This is the operating manual.

COMMANDER LOOSMORE: The Admiral asked if there were any standing orders or operational procedures particularly relating to the hatches and/or vents.
MR. MURPHY: And Mr. Feldtz said he didn't know of any, but he would see.

COMMANDER LOOSMORE: He didn't know of any, but he would check and, if so, they will be provided.

THE WITNESS: There was no damage that I recognized at the spar deck inspection.

COMMANDER LOOSMORE: The question was also mentioned --

REAR ADMIRAL BARRON: Excuse me, Mr. Murphy. I think my question was a little more broad than that, as far as standing orders.

This would be standing orders or operational procedures, inspection of the vessel and inspection and maintenance of hatch covers. I am looking for a standard operational type instruction which went out to the fleet.

COMMANDER LOOSMORE: Yes, sir.

There was a question raised on instructions, and again, written instructions on extracting from a deck log in order to provide information for the office log.

MR. MURPHY: He testified that he was given verbal instruction to advise these people aboard the vessels to put more information on his log.

COMMANDER LOOSMORE: I thought he also testified that he didn't know of any instructions as to
what was to go inside the deck log and what was not, but that he would check and see.

MR. MURPHY: He said he would check and see.

I believe that would include instructions as to what would be included in the office log and what was not. Is that what you meant to say?

COMMANDER LOOSMORE: What was meant to be extracted from the deck log and provided for in the office log.

MR. MURPHY: All right.

COMMANDER LOOSMORE: You have been asked to provide information on the servicing of the radar and all other electronic equipment for the 1974-75 season, radar equipment to include all radar equipment, radios, radio direction finder, all electronic equipment.

That is the list, sir.

REAR ADMIRAL BARROW: Now, I would like, before we conclude, to have you give me a listing of the exhibits which we have in for identification, which should be admitted. I think each exhibit has been marked for identification with the exception of one, and that would be 62, as I recall. Is that correct?

COMMANDER LOOSMORE: Yes, sir.

There's 56-A and -B, 57-A and -B, 58, 59, 60 and 61.
Those are right here.

REAR ADMIRAL BARROW: Those exhibits enumerated there, without objection, are admitted into evidence.

MR. MURPHY: No objections.

REAR ADMIRAL BARROW: I believe there was one of the sketches that this witness has drawn, that, while it passed me, did not have his signature and date on it.

COMMANDER LOOMIS: Would you sign this one, please?

(Witness does as instructed.)

REAR ADMIRAL BARROW: Mr. Murphy, do you have any further questions?

MR. MURPHY: None, no, sir.

COMMANDER LOOMIS: And 62 is the manual, and I believe we are not going to do it at this time.

REAR ADMIRAL BARROW: 62 is still for identification.

Mr. Feldtz, before we conclude here, I would ask you if there is anything which we have not asked you, anything which you have in your recollection which might assist us in our purposes of determining the cause of this casualty, I would like for you to tell us now.

THE WITNESS: No, sir, I feel I have well covered anything I could possibly tell you.

REAR ADMIRAL BARROW: Thank you very much.
You are cautioned not to discuss your testimony with anyone other than counsel until the conclusion of this investigation.

THE WITNESS: Yes, sir. Thank you.

REAR ADMIRAL BARROW: Thank you very much, you are excused.

(Witness excused.)

REAR ADMIRAL BARROW: We will adjourn now at 24 past the hour of 9:00 p.m. and reconvene at 1000 tomorrow morning.

(Whereupon, at 9:24 p.m., the hearing in the above-entitled matter was adjourned, to reconvene at 10:00 o'clock a.m., Tuesday, November 25, 1975.)

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DEPARTMENT OF TRANSPORTATION

UNITED STATES COAST GUARD

In the Matter of:

Marine Board of Investigation
Sinking of the SS Edmund Fitzgerald on Lake Superior 10 November 1975

31st Floor
Federal Office Building
1240 East Ninth Street
Cleveland, Ohio

Tuesday, November 25, 1975

The above-entitled matter came on for further hearing, pursuant to adjournment, at 10:00 a.m.

BEFORE:

Marine Board of Investigation:

Rear Admiral Winford W. Barrow, Chairman
Capt. Adam S. Zabinski, Member
Capt. James A. Wilson, Member
Cdr. C. S. Loosmore, Recorder
APPEARANCES:

On behalf of The Oglebay-Norton Co.:

Jaeger & Murphy, by
John T. Jaeger
Thomas O. Murphy
Richard C. Binzley
2700 Terminal Tower
Cleveland, Ohio 44113

and

Arter & Hadden, by
Robert G. McCready, Jr.
1144 Union Commerce Building
Cleveland, Ohio 44115

and

Bradley, Eaton, Jackman & McGovern, by
Warren A. Jackman
135 South LaSalle Street
Chicago, Illinois 60603

On behalf of the Toledo Trust Company:

John J. Schuchmann
700 Security Building
Toledo, Ohio 43604

On behalf of Cargo Aboard the SS Edmund Fitzgerald:

Bigham, Englar, Jones & Houston, by
Donald M. Waesche
99 John Street
New York, New York 10038
APPEARANCES (Continued):

On behalf of Seafarers' International Union,
James Pratt and John Poviach:

    Ned L. Mann
    Victor G. Hanson
    Rodney Coleman

On behalf of Marine Engineers Beneficial Association:

    Gerald Lackey
    Merritt Green II

On behalf of United Steelworkers of America,
Local 5000:

    Samuel Gaines
    James J. Courtney
REAR ADMIRAL BARRON: Let the record show we reconvened at 10:26 a.m.

Counsel for Oglebay-Norton are present.

Gdr. Loosmore?

CDR. LOOSMORE: The Board calls Lt. Walter, please.

---

CHESTER WALTER

was called as a witness and, being first duly sworn, was examined and testified as follows:

EXAMINATION

By Cdr. Loosmore:

Q. Would you please state your name, rank, service number and duty station?

A. Chester Walter, Lieutenant, United States Coast Guard, and my service number is 8922.

I am stationed at the Marine Safety Office, Toledo, Ohio.

Q. How long have you been stationed in Toledo?

A. Since July of 1973, sir.

Q. And what are your duties there?

A. Presently I am in the Captain of the Port Section.

Prior to that I was a marine inspector, hull.
Q. How long were you a marine inspector in the Toledo office?
A. Well, since July of 1973, sir.
Q. Until when?
A. I am still involved in those duties to some extent, but my primary job emphasis was shifted approximately two and a half months ago to the Captain of the Port.
Q. Have you had any prior assignments in marine inspection?
A. No, sir.
Q. Have you had any training as far as marine inspection is concerned, formal training?
A. Yes, sir.
Q. What was that?
A. I went to our Merchant Marine Safety School.
Q. Anything else, Lieutenant?
A. Well, I hold a Second Assistant Engineer's license for steamer and motor vessels, any horse power.

REAR ADMIRAL BARROW: Excuse me just a minute. We will see if we can get the noise stopped outside there, please.

CAPT. ZABINSKI: What license was that?
THE WITNESS: Second Assistant Engineer's, steamer and motor vessels of any horse-power, sir.
By Cdr. Loosmore:

Q. Do you have that license with you?
A. No, I don't, sir.

Q. Do you know where it was issued?
A. It was issued in Toledo, Ohio, sir.

Q. When?
A. The 15th of November, 1974, sir.

Q. What is your educational background, Lieutenant?
A. I am a graduate of the Coast Guard Academy and I also have some graduate credits from the University of Toledo, sir.

Q. As you know, this investigation is concerned with the loss of the Steamer Edmund Fitzgerald.

In your duties as marine inspector, were you ever aboard the Fitzgerald?
A. Yes, I was, sir.

Q. Could you describe the last time you were aboard the Fitzgerald and for what purpose?
A. The last time I was on board the Fitzgerald was, I believe, on the 19th of March of this year and that was to conduct part of the annual inspection for certification.

Q. You have Exhibit 45-A through D. Do you recognize it?
A. Yes, I do.

Q. Can you tell me what that is?
A. This is the hull inspection book for the Edmund
Fitzgerald for the inspection that was completed at Toledo, Ohio this past year.
Q. And did you make any entries in that book?
A. Yes, I did, sir.
Q. Would you describe in particular what part of the inspection for certification you conducted during the winter layup on the Fitzgerald this last year, and you may refer to that book if you need to.
Q. I inspected the life jackets on the vessel, the ring buoys and the water lights for the green buoys, the fire axes and all the flares and the very pistols.
Q. Did you inspect anything else on the vessel?
A. I looked at the two boxes back on the boat deck used to store the life jackets that were kept back there, and that is all.
Q. Do you recall how many life jackets were required to be on board the vessel?
A. Yes.
Q. How many?
A. 83.
Q. Do you recall how many were on board?
A. Yes, sir.
Q. And how many was that?
A. There were a total of 95 when I went on board.
Q. And of those 95, were any rejected in the course of
your inspection?

A. Yes, sir; I rejected six life jackets.

Q. Do you recall whether these jackets were of one type or more than one type?

A. I can't recall exactly, sir.

I think that some of them were kapok-filled life jackets, and some were the old cork type, but I am not sure.

Q. Realizing that you may not be able to recall just exactly what types there were, can you possibly picture or do you have any note in there that indicates where a particular type of jacket, if there had been different types, would have been stored in the ship?

A. I don't know, Commander. All of the life jackets, when I examined them, were all kept for winter storage in one of the AB rooms, so none of the jackets were actually on station in their normal operating storage place.

Q. Is that a common kind of thing?

A. Yes, sir.

Q. Do you recall how many ring buoys there were?

A. Yes, sir.

Q. How many?

A. There were 24. There were 24 ring buoys, sir.

Q. And of those 24, how many had water lights attached?

A. There were at least 12. I can't recall if there were
more than 12.

Q. Were all of the water lights the same type?
A. No, sir.

Q. What types were they?
A. Well, there was the old carbide type. Then the newer
ones with the electric lights.

Q. How many of each, if you recall?
A. I don't recall, sir.

Q. Do you recall any life jackets in the lifeboats or
did you see any jackets in the boats at all?
A. I did not check the boats, sir.

Q. Did you inspect the electric water lights?
A. Yes, sir.

Q. Did you examine them?
A. Yes.

Q. What do you look for when you examine those?
A. I pay particular attention to the seals on both ends
of the lights, particularly with the newer type that many
of the companies are going to, and I find that many of
these will have defective seals or they will not seal
properly and they will get a lot of moisture in them.

I also check their operation to see if they will work
and check the lanyard between the ring buoy and the
light.

Q. How was that attached to the light?
A. There is on the bottom end of the ring buoy, or the
water light rather, there is a small ring to which the
lanyard is attached.
Q. And what is this ring attached to?
A. It is attached to the cap on the water light.
Q. And how in turn is the cap attached to the light?
A. The cap is screwed into the body of the light.
Q. Do you check that connection?
A. Yes, sir.
Q. Do you check the lights for operation?
A. Yes, sir.
Q. How do you do that?
A. By inverting the light and seeing how it comes on.
Q. Could you describe these boxes?
You said there were boxes for life jackets back on
the boat deck. Could you describe that?
A. Yes. These are sheet metal boxes that are supported
off the deck.
They have a cover and a latch to keep the cover
closed, and they have drain holes in the bottom of the box.
In most cases, it allows the moisture to leave the boxes.
Q. Did you see any jackets stowed in there?
A. No, there were no jackets stowed in there.
Q. Where was this box located?
A. There are two of them, one on each side of the boat
deck very close to the lifeboat davits.

Q. Did you do any inspection on the lifeboats themselves?
A. No, sir.

Q. Do you recall what condition they were in when you were there? Were they stowed or swung out, or what was the condition?
A. The port boat was stowed in its cradle. I can't recall on the starboard boat.

Q. Did you have anything to do with the inflatable life raft?
A. No, sir.

Q. Mr. Walter, I have here what has been entered as Exhibit 46-T.

Can you tell me what that is?
A. Yes, sir. That's a certificate of inspection.

Q. And what do the red markings on there indicate?
A. This appears to be a corrected copy or work copy for the -- I would suppose for a certificate of inspection issued to the Fitzgerald this year.

Q. Have you ever seen that before?
A. I don't recall seeing this.

Q. Do you have any idea who made those corrections on there?
A. The handwriting here, where it says "Three deck maintenance man, non-watch standing."
Is that handwriting familiar to you?

Yes, sir.

Whose is that?

That appears to be the handwriting of Cdr. Ralph Lawrence.

Who is he?

He is the Senior Inspector - Materiel at my office.

All right. Do you recognize any of the other writing on that?

No, I don't, sir.

Okay, thank you.

That's what I have, sir.

Capt. Wilson?

EXAMINATION

By Capt. Wilson:

Lt. Walter, prior to coming to Toledo, what was your experience, not marine inspection necessarily, but previous Coast Guard experience or education?

Well, I served on board three Coast Guard cutters, sir.

On what duty?

Engineering duties.

During that period, were there any special schools that you attended?

Yes, sir.
I attended Damage Control System School at the Navy Base in Philadelphia.

Q. Any other special schools?
A. I attended a one-day school in plastic pipe hatchings.

Q. During your time in Toledo, I understood you to say that you picked up some graduate degrees or courses?
A. Yes, sir.

Q. In what field?
A. Public administration.

Q. During your prior background experience have you had any courses with regard to strength of materials?
A. No, sir.

Q. Any naval architectural courses at all, either undergraduate or graduate?
A. No, sir.

Q. Do you have any knowledge as to where the cork jackets would normally be stowed? Can you tell when you are inspecting them whether they had been stowed in any special locations?
A. No, I can't, sir.

Q. Do you have any knowledge as to the stowage location of the rafts, whether there were any external markings other than the vessel's name on the container, any numbers?
A. I did not see any numbers on that vessel, Captain.
CAPT. WILSON: That's all I have.
REAR ADMIRAL BARROW: Capt. Zabinski?
CAPT. ZABINSKI: Yes.

EXAMINATION

By Capt. Zabinski:

Q. Lt. Walter, you indicated in your report that six
were rejected, is that correct?
A. Yes, sir.

Q. Do you know why they were rejected?
A. I can't recall, Captain. A couple of the jackets had
been torn severely where the fabric is worn over the wearer's
shoulder.

Q. Do you recall whether these were cork or kapok or
what type of jackets they may have been?
A. These were cork jackets, I believe, Captain.

Q. The box that you indicated -- there were two boxes
that you indicated up on the boat deck where there were
life jackets stowed in.

Could you describe the top of the box for me? What
kind of a lid did it have on it?
A. Captain, first I didn't see any jackets in the boxes.
That's what they were used for.

The top of the box if sheet metal and it has a lip
running all the way around it, so it will fit over the
top of the container to prevent access of water.
Q. In the event the vessel sank or that box became submerged, would that lid float free? What was the arrangement?

A. If that lid were properly latched, I would doubt very much if it would, Captain.

Q. The lid was made of sheet metal, is that your testimony?

A. Yes.

Q. It would not float free then; is that a fair statement?

A. I don't believe it would, sir.

Q. Was there any marking on the box to indicate that it was for life preserver stowage, if you recall?

A. I believe there was, sir.

Q. Do you recall what lettering may have been on there, the size?

A. The size of the lettering, as I recall, was approximately two to two and a half inches, Captain.

Q. What did it say?

A. There was a number and the words "Life Jacket."

Q. A number indicating what?

A. Indicating how many life jackets were stowed in the box.

Q. Do you recall if there were any of the horse collar type of jackets aboard?
A. I don't recall, Captain.
Q. Did you stamp each life jacket personally, or how was that done?
A. I inspected each life jacket, and each one that I indicated to be passed was stamped by a worker from the company.
Q. Who accompanied you? Was there someone who accompanied you on your inspection?
A. Yes, sir.
Q. Do you know who that person may have been?
A. I don't know the name of the individual that stamped the jackets.
   I do know the name of the representative from the company who was accompanying me on the inspection.
Q. And who was that?
A. Mr. Delmar Webster.
Q. Do you know what his position is?
A. I understand that he is sailing as a master on one of the Columbia vessels now, Captain.
   At that time he was in charge, I believe, of the winter work on the vessels in Toledo.
Q. Was he assisting you with the life jackets as you recall, this Mr. Webster, that is?
A. Yes, sir.
Q. He was?
A. Yes, sir.

Q. Was he the one who was stamping them?

A. No, sir.

Q. Who was stamping them?

A. I don't know, sir.

Q. Some workman?

A. Yes, sir.

Q. Can you identify that individual for us further?

A. No; I can't, Captain.

Q. Was he an employee of Columbia or of Columbia

Transportation, or an employee of the shipyard if that

were the case, if you know?

A. I don't know, sir. I would believe that he would be

an employee of Columbia.

Q. You indicated that vessel was fitted with some carbide

lights.

Do you recall how many carbide lights were attached

to the life rings?

A. No, sir.

Q. What kind of an inspection did you perform on the

carbide water lights?

A. On the carbide water lights, I examined all the

seams to see if there was any obvious discrepancies,

and I would look at the pin on both ends of the water

light; and I also would shake the water light to see if
the carbide gave any indication that water had entered the
light.
Q. How can you tell by shaking it that water had or had
not entered the water light?
A. If the light gave off a dull sound when shaked,
like there were a large number of semi-soft objects in it,
that would indicate to me that water had entered the
light.
Q. And what would be the indication if the light was in
good condition?
A. Well, it would sound like there were a great number
of particles, hard particles in the light, and they give
a much more distinct sound when shaken.
Q. Do you recall testing the water lights on the
Fitzgerald?
A. Yes, sir.
Q. Do you recall performing this test that you indicated
by shaking the water lights?
A. Yes, sir.
Q. Did you find them good by that test, as you remember?
A. I don't recall, sir.
Q. If they were not good, what would have been your
procedure?
A. I would have the lights -- if they were carbide water
lights, have them destroyed and removed from the vessel.
Q. What would you do; would you substitute or put a new one on?
A. Yes, sir.
Q. Did you write a requirement, or you can refer to your book and see if you required any change in the water lights aboard the Fitzgerald.
A. I did not write a requirement, but I indicated in the book that the vessel needed two more water lights, Captain.
Q. Why did it need two; was it two short, or did you condemn two?
A. As I recall, there were two water lights or more which were condemned.
Q. Do you know which kind you condemned?
A. No, I don't, Captain.
Q. Would they have been carbide or would they have been electric lights, if you recall?
A. I don't recall, Captain.
Q. Do you recall how many you condemned total?
A. No, I don't, sir.
Q. Two or more?
A. Yes, sir.
Q. At least two or just two?
A. At least two, sir.
Q. Would there have been more condemned?
A. Yes, sir; there could have been.
Q. But your notes indicate that only two needed replacement, is that right?
A. I indicated that the vessel needed two more water lights, Captain.
Q. There seems to be a difference, if you condemned more than two, and then indicate in your notes that only two were required.

What circumstances would bring that about?
A. It could be that the vessel had more water lights than they were required to carry, Captain.
Q. And the number you would require would be how many?
A. Twelve water lights, Captain.

CAPT. ZABINSKI: I would like to look at this exhibit for just a second, please, Commander.

CDR. LOOSMORE: This one (handing to Capt. Zabinski)?

By Capt. Zabinski:
Q. What else did you look at on the Fitzgerald on that day? Will you look through your book and see if you made any other entries?

(Handing to witness.)
A. I also checked all of the fire axes on the vessel.
Q. And anything else?
A. And I checked the very pistols and the flares for the lifeboats.
Q. What does your entry read for that inspection visit; would you read that into the record, please, your narrative?

A. "Toledo, 12 March 1975. Boarded vessel to continue inspection. Stamped 89 life jackets, rejected six. Vessel needs two more ring buoy water lights and two ring buoys with line.

"All fire axes and flares and very pistols for boats are okay.

"Inspection to continue," and then I signed my name.

Q. Your narrative indicates that you also required replacement of some ring buoys.

Is that the way it reads?

A. What I indicated there, Captain, was that the lines for two of the ring buoys needed replacement.

Q. What lines are you talking about?

A. These are the 15 fathom lines that are required on two of the ring buoys for the vessel, sir.

Q. The ring buoys themselves did not need replacement; it was this 15 fathom line that required replacement; is that your testimony?

A. As I recall; yes, sir.

Q. Did you have any other inspection visits aboard the Fitzgerald, or did you go aboard it during this annual inspection period?
A. No, sir.

Q. Did you have occasion to visit the Fitzgerald at any other time during the 1975 operating season for any reason?

A. No, I did not, Captain.

Q. How long have you been in the Toledo office?

A. Since July of 1973, sir.

Q. Do you recall if you had any other inspection visits aboard the -- prior to the '75 operating season that dealt with the Fitzgerald?

A. Yes, I did.

Q. Can you recall what those inspection visits may have been?

A. I had a damage survey on the Fitzgerald, I believe, the 19th of June, 1974, sir.

Q. Would you describe that for us?

What was the nature of the damage, and what was done?

A. As I recall, the damage was on the port side of the vessel all the way forward in the port tunnel, and even with the main deck.

It consisted of the deck being set in a very minor amount through approximately 12 to 18 inches.

There was also some minor distortion of web and a couple of frames as I recall, Captain.

Q. Minor distortion of what?
A. One web and a couple of frames, Captain.
Q. In that same area?
A. Yes, sir.
Q. Do you recall the frame numbers that may have been involved?
A. I believe they were the first three frames in the port tunnel, but I am not sure, sir.
Q. Were the repairs accomplished at that time, or what was the outcome of your inspection?
A. It was determined that this damage did not affect the seaworthiness of the vessel and no requirements were issued. No repairs were made at that time, Captain.
Q. Was there any company representative or officers aboard the vessel that accompanied you on this inspection as you recall?
A. I don't remember, sir.
Q. Was an American Bureau man along with you then?
A. I believe there was; yes, sir.
Q. And he examined the same area that you have just made reference to?
A. Yes, sir.
Q. Did he require any repairs to be required at that time?
A. I believe he did not, sir.
Q. How long were you aboard the vessel during that visit?
A. I don't recall, sir.

Q. And you had been aboard during the last annual inspection, a damage survey, in June of 1974, June 19th, and have you ever been aboard the Fitzgerald at any other time?

A. To the best of my knowledge I have not, Captain.

Q. Do you have an inspection report relative to this June 19, 1974 visit with you?

A. No, I don't, sir.

Q. Did any other inspector from the Toledo office accompany you on this inspection, if you recall?

A. No, they did not, sir.

Q. They did not?

A. No, sir.

Q. No one did?

A. No, sir.

Q. Going back to your annual inspection visit, you indicated that you looked at flares and very pistols and lifeboats and so forth.

Did you go through each boat to look at the flares, or were they all assembled in one place for you?

A. They were all with the life jackets in one of the AB rooms.

Q. Was all the equipment assembled in one place?

A. Yes.

Q. How about the flares on the bridge?
Were any flares required to be carried on the bridge for this class of vessel?

A. Yes, sir.

Q. Did you examine those?

A. No, sir; I did not.

Q. Who examined those, if you know?

A. I don't know, sir.

Q. Do you know if, in fact, the water lights were repaired before the vessel was certificated?

A. No, sir; I don't.

Q. Is there any entry in the book to indicate that there were?

A. Yes, sir. There is, sir.

Q. Who signed off that?

A. The initials are those of Lt. William Paul.

Q. Do you know if the two lines, the 15 fathom lines which you previously mentioned, do you know whether they were replaced prior to the time the vessel sailed and were certificated?

A. I don't know that, sir.

Q. Is there any record in the inspection book to indicate that that item was complete?

A. Yes, sir, there is.

Q. There is?

A. Yes, sir.
Q. How is that entry made?
A. Again, that is marked as "OK" by Lt. Paul's initials.
CAPT. ZABINSKI: I have nothing further.

EXAMINATION

By Rear. Admiral Barrow

Q. Can you indicate for the Board the method of
inspection for the life jackets that you are talking about
having inspected?
A. Yes, sir. I basically examined all the securing
devices on the life jackets, and I examined the external
fabric for tears or for any fabric that was rotten.

If it is a cork jacket, I will feel the cork insert
to see if it is reasonably intact.

If it is a kapok jacket, I will squeeze it or feel it
to see if I can tell if it were waterlogged or any other
discrepancies with the kapok inserts.

Q. As long as the cork is intact, then, that indicates
that the cork piece is still in good shape? As long as
the piece of cork is intact, this is indicative of its
being in good condition?
A. As far as I am concerned, yes, sir.
Q. How did the carbide lights work; could you tell us that,
please?
How do they function? How would they function in an
emergency?
The one end of the carbide light has to be attached to the vessel's structure so when the ring buoy is thrown over the side, the pin will be pulled out, exposing the carbide to the water.

This is how I understand it to operate. I have never seen it done myself, sir.

Q. The pin actually comes out and admits water into the interior of the cylinder, is that correct?
A. Yes, sir; I believe so.

Q. How does the electric light work? How do the electric water lights work?
A. Most electric lights are stowed with the light pointing down and when the water light and the ring buoy is tossed in the water, it is ballasted in such a manner as to bring it upright and usually there is a mercury switch or some device like that that will energize the lights.

Q. How are the lights attached to the ship itself?
A. Is there a bracket of some sort?
Q. Yes, sir. There is a clip that holds it to the vessel.
A. Where are the ring buoys located, Mr. Walter?
A. Generally they are located about the forward and after house on both sides of the vessel, sir.
Q. Is there any particular place that the ones with the lights would be located as opposed to the ones without the
lights?
A. Not that I know of, sir.
Q. You have some of each kind on both the after as well as the forward house?
A. Generally, yes, sir.
Q. What kind of ring buoys were they?
A. You mean the make, sir?
Q. Yes, sir.
A. I don't know.
Q. What kind of construction would they have been?
Would they have been a plastic kind or any other kind?
A. I don't recall. Most of them would have been the plastic or foam type, I guess you would say, sir.
Q. Do you recall any of the details? I recognize you didn't inspect the lifeboats, but the method of holding down the lifeboats in the chocks, do you recall how they held down in position?
A. I don't recall on this vessel, sir; on this vessel, sir.
Q. All right.
REAR ADMIRAL BARROW: Counselor?
MR. MURPHY: Thank you, Admiral.
EXAMINATION
By Mr. Murphy:
Q. Mr. Walter, I just have a question or two.
My name is Murphy and I am representing Oglebay-Norton Company, so that you know who I am.

You were asked as to whether or not the deficiencies, the replacement of the line and of the water lights, were shown in that book; but I don't believe you were asked as to whether or not the six life jackets were replaced.

Do you know whether they were replaced?

A. I don't know, sir.

Q. Is there anything to indicate that in the inspection book, whether they were replaced?

A. No, there isn't, sir.

Q. Is there an approval of the number of life jackets shown anywhere in the inspection book?

A. Do you mean is there a place showing how many jackets were required to be on the vessel?

Q. Yes, is there that?

A. Yes.

Q. And how does that entry read?

A. This is on the vessel's list of equipment and it indicates, "Life preservers required, adults: 83, children: zero," and off to the side it has an accounting of how the figure of 83 was arrived at.

Q. Is that shown to have been approved as having the required number of life jackets aboard?
A. I am not sure I know what you mean, sir.

Q. With respect to these other items that were noted, that you noted were replaced, you testified that that book shows that that work was accomplished; is that correct?

A. Yes.

Q. Now, what I would like to know is if that book shows that the required number of life jackets were aboard.

A. Yes, it does, sir.

Q. And as I believe, your prior testimony was that initially there were 12 more than the required number. So even if those six weren't replaced, there were still six more than required aboard the vessel; is that correct?

A. That is correct, sir.

Q. Who would know whether those jackets were replaced within the Coast Guard, if anyone?

A. I don't know.

Q. You don't have any knowledge of that?

A. No.

Q. Referring now to the location of the jackets when you examined them, I believe you said that they were in the quarters some place aboard the vessel, and do you know why they were in the location where they were?

A. I would imagine it would be to prevent theft while the vessel was laid up and there is nobody on board.

Q. Could it also be to protect them from the winter
weather during the winter layup season?

A    Yes, sir; that could be, too.

Q    I think you said in response to a question by

Cdr. Loosmore that it was common to find the life jackets
in such a storage area at that time of the winter, is
that correct?

A    Yes, sir; that is common, to my knowledge.

Q    Had the commencement of the fitout of the vessel
begun yet? Had the fitout commenced yet while you were on
board, do you know?

A    It had not commenced. There was no one else on
board except for myself and Mr. Webster and the workers.

Q    With respect to the stamping of the life jackets,
did you mention that someone else did the stamping?
Was that done under your supervision?

A    Yes, sir.

Q    So that you personally determined that they were
stamped as you had requested; is that correct?

A    Yes, sir.

Q    Is there anything in the inspection report that
indicates that the life jackets were placed in their proper
stations prior to the sailing of the vessel?

A    No, sir.

Q    Would that be a normal part of the Coast Guard
final inspection before the certificate of inspection was
issued?
A Yes, sir.
Q In other words, before the vessel would be permitted
to sail with a certificate of inspection, whoever the
investigating officer was, he would determine that those
jackets were in their proper locations; is that correct?
A Yes, sir.
Q And as I understand from your prior testimony,
the certificate of inspection was issued before the
vessel commenced its season?
A I have no personal knowledge of that, sir.
Q Didn't Cdr. Loosmore present you with an exhibit
that was a certificate of inspection, and you had
indicated that some of the items on that inspection --
I'm sorry. Excuse me. I withdraw that.
Do you know who did issue the final certificate of
inspection?
A No, I don't, sir.
Q With respect to these boxes that you have described,
do you recall what their locations were?
A They were both, as I recall, inboard lifeboats,
and they were in the same vicinity of the lifeboats.
Q One in the vicinity of each lifeboat; is that correct?
A Yes, sir.
Q Based on your knowledge and experience as a Coast
Guard inspector, is it necessary for a vessel to be, in all respects, seaworthy, properly outfitted and ready for sea before the inspection certificate is issued?

A. That is correct, sir.

MR. MURPHY: I have no further questions.

REAR ADMIRAL BARROW: Anything further by the Board?

EXAMINATION

By Cdr. Loosmore:

Q. Lt. Walter, did you prepare any kind of a report of the June 19, 1974 damage survey?

A. Yes, sir.

Q. Would you see if you could provide a copy of that report to the Board, please?

A. Yes, sir; I will.

REARADMIRAL BARROW: Capt. Wilson?

EXAMINATION

By Capt. Wilson:

Q. Mr. Walter, your course at the Coast Guard Academy, what track did you follow?

A. Management.

Q. When you removed the electric water lights from their brackets, first did you remove them from the brackets in checking the lights?
A. No, I did not.

Q. They were already set out for you some place on the vessel?

A. Yes, sir.

CAPT. WILSON: That's all.

REAR ADMIRAL BARROW: Capt. Zabinski?

CAPT. ZABINSKI: I have nothing.

EXAMINATION

By Rear Admiral Barrow:

Q. Mr. Walter, is there anything you can now tell us in your knowledge resulting from your inspections that has not been brought out up until this point, that would assist the Board in arriving at a cause for this particular casualty?

A. No, there is not, Admiral.

REAR ADMIRAL BARROW: Thank you very much.

You are excused. You are cautioned not to discuss your testimony with anyone other than counsel before the conclusion of this investigation.

(Witness excused.)

REAR ADMIRAL BARROW: Cdr. Loosmore, call your next witness.

CDR. LOOSMORE: The Board calls Lt. Gordon.
JAMES J. GORDON

was called as a witness and, having been first duly sworn,
was examined and testified as follows:

EXAMINATION

By Cdr. Loosmore:

Q. Would you please state your name, rank, service number
and duty station?

A. James Joseph Gordon, Ensign, United States Coast Guard
Reserve, 53132, and I am stationed at the Marine Safety
Office in Toledo, Ohio.

Q. How long have you been stationed in Toledo?

A. Since July 8, 1974, sir.

Q. What are your duties at MSO, Toledo?

A. I am a marine hull inspector, sir, with concurrent
duties in investigation and licensing.

Q. How long have you been in the Coast Guard, Mr. Gordon?

A. Since July 3, 1974, sir.

Q. Where else have you been assigned other than Toledo?

A. Nowhere, sir.

Q. What training have you had in marine inspection,
Mr. Gordon?

A. From the Coast Guard, it has been the Merchant Marine
Safety School in Yorktown, Virginia.

Q. When was that?

A. September 1974 through November, I believe.
Q. What is your educational background, Mr. Gorion?
A. I am a graduate of the United States Merchant Marine Academy, and I am currently working on a Master's degree at the University of Toledo.
Q. What field?
A. Business administration.
Q. In connection with your marine inspection duties, were you ever aboard the Edmund Fitzgerald?
A. Yes, sir.
Q. Do you know how many times?
A. I believe once, sir.
Q. Do you recall when?
A. The 19th of February, 1974.
Q. I have Exhibit 45, a hull inspection book. Do you recognize that?
A. Yes.
Q. Did you make any entries in that?
A. Yes, sir.
Q. Were those in connection with this January 19 -- excuse me -- February 19th visit?
A. Yes, sir.
Q. Would you describe what you did on that February 19th visit?
A. On the 19th of February I boarded the Fitzgerald to commence the annual inspection for certification,
and my duties were to inspect the hull structure.

Q. And what did you do that day?
A. That day, along with an ABS surveyor, Mr. Will Jeanquart, and I believe Mr. Richard Feldtz from Columbia, we inspected both side tunnels, all cargo holds, fore peak and after peak tanks, and some shell structure through the engine room.

Q. As a result of this inspection, did you find any discrepancies?
A. No, sir.

Q. Do you know whether any work items were prepared as a result of this inspection?
A. Minor work items might have been pointed out to Mr. Feldtz, but I have no recollection of it.

Q. Did you point out any at all?
A. Not that I recall, sir.

Q. Did you do anything topside on the vessel at all?
A. Other than from the spar deck looking over at the outboard side of the shell plating.

Q. Did you inspect the spar deck as well?
A. No.

Q. How about the hatch combings?
A. No, sir.

Q. What entry did you make in that inspection book?
A. Other than listing the vessel's particulars
in the front cover and the vessel information page, I made the entry for the hull structure inspection, but I had not signed off in the block.

I made an entry, Entry No. 14, on page 19.

Q. Would you repeat your answer? I didn't hear the second part.

A. In the book, the last section for signing off of the hull structure, that doesn't have my initials in it.

Q. Whose initials does it have?

A. Lt. William Paul.

Q. What is the significance of the initialing?

A. Well, generally it signifies that the entire hull structure inspection is completed or has been completed by the officer who does sign that book.

Q. Was there any other hull structural inspection that was conducted, other than yours in February that you are aware of?

A. Not that I am aware of, sir.

Q. Did you expect that there would be?

A. No, sir.

Q. Was there any reason why you didn't initial the block?

A. No, sir. It was just an oversight on my part, I believe.

CAPT. ZABINSKI: What was that answer?

THE WITNESS: It was an oversight on
my part. I should have initialed the block.

By Cdr. Loosmore:

Q. Do you recall talking to Lt. Paul about it?

A. No, sir; I don't.

Q. Did you have any other contact with the Fitzgerald at all between the time you reported on the 8th of July and today?

A. Not that I recall, sir; no.

Q. Did you write any other report of this inspection that you conducted in February other than what is in that book?

A. No, sir.

Q. Do you know whether the inflatable life rafts were aboard at that time?

A. I can't say that, sir.

CDR. LOOSMORE: That's all.

REAR ADMIRAL BARRON: Capt. Wilson?

CAPT. WILSON: Yes.

EXAMINATION

By Capt. Wilson:

Q. You said that you did the hull structure on the Edmund Fitzgerald.

Just how do you go about doing this; what is the procedure?

A. The general procedure is to, when you first board the
vessel -- the inspection normally is done in concurrence with the ABS inspection.

You meet with the ABS inspector and the company representative and then the procedure from there on, on this particular day, I believe, we entered the after peak tank first, checking the strength members in the after peak, came up from there, worked up probably the port side, side tunnel, to the fore peak tank and inspected the fore peak tank and related areas there; worked back to the starboard side, side tunnel, and then up the deck through the hatch openings down into each cargo hold.

Q: What would you be looking for in, say, the after peak tank?

A: Looking for excessive wastage of any of the strength members or mechanical damage to those strength members which impair the seaworthiness of the vessel.

Q: Do you have any staging rig? Do you use any ladders or how is it done?

A: No, sir. The fore peak tank is entered from a manhole just -- I believe, just forward of the steering gear, and on this vessel the ladders are welded to the forward bulkhead of the after peak tank.

There are usually three or four, as the tank is small, located all the way aft.

Q: And you could see the structure adequately without
using any other assistance?

A. Well, you climb in the tank and you have flashlights
and you examine the structure that way.

Q. How large is the after peak?

A. I don't really recall, sir.

Q. What are you generally looking for in the tunnels
during the inspection?

A. Generally the tunnels in this case, since they were
sealed off from the cargo holds, you are looking for
mechanical damage incurred, which might have occurred through
collision or slamming a deck or something.

Q. You found no mechanical damage to the tunnels?

A. No, sir.

Q. Do you check the underdeck longitudinals?

A. From inside the cargo holds with a flashlight looking
up.

Q. In the cargo holds -- excuse me. In the fore peak tank,
what do you look for?

A. Wastage again, and mechanical damage to the strength
members.

Q. In the cargo holds, how do you go about that inspec-
tion? Are the hatches open or closed?

A. I can't recall if the hatches were open or closed
in this case. Cargo hold lights generally are provided.
They are turned on, and if the hatches are not open, we
examine them with flashlights, entering each cargo hold.

Q. You examine the side slopes at that time?

A. Yes, sir, but the side slopes are generally not considered strength members, and we are basically concerned with strength members in this examination and tank tops are of the primary importance in that case.

Q. So your primary consideration, did you say, was --

A. Tank tops.

Q. You examined the underdeck longitudinals and arches?

A. From the tank tops, sir, looking up, yes.

CAPT. WILSON: That's all I have.

REAR ADMIRAL BARROW: Capt. Zabinski?

EXAMINATION

By Capt. Zabinski:

Q. Mr. Gordon, do you have any Coast Guard licenses or documents?

A. I hold a Third Mate's License, any gross tons, any oceans, and a Merchant Marine document.

Q. Where was that issued?

A. The Port of New York.

Q. And you say you are a graduate of the Academy of King's Point?


Q. And you came into the Coast Guard in July of 1974?

A. Yes.
Q. And you went through a course of deck instruction; is that right?
A. Yes, sir.
Q. Do you recall upon your inspection on the 19th of February whether there was anyone other than the ABS and the owner's representative with you?
A. I don't recall, sir.
Q. Just three of you?
A. Yes, to the best of my knowledge.
Q. And you indicated that you went into various spaces, fore peak and after peak?
A. Yes.
Q. You actually went into those spaces?
A. Yes, sir.
Q. And you went into the cargo holds?
A. Yes, sir.
Q. How many cargo holds did the vessel have?
A. I believe there were three, sir.
Q. The cargo holds were separated by bulkhead or some arrangement?
A. They were separated by screening bulkhead, sir.
It is a non-watertight bulkhead for the purposes of separating cargo.
Q. And did you go in each of the three cargo holds; is that your testimony?
A. Yes.

Q. Did the ABS surveyor go with you?

A. Yes, sir.

Q. Did the owner's representative go with you?

A. Yes, sir.

Q. And you say you looked into the ballast tanks or went into the ballast tanks?

A. The only tanks we entered were the fore peak and after peak.

Q. You did not go into the ballast tanks?

A. The side tanks?

Q. Yes, sir, the side tanks?

A. No, sir.

Q. Why not?

A. The internal portion of the vessel for that area, the side tanks, the double bottoms are normally crawled 100 per cent during the drydock inspection, and we did not enter those during the course of the annual inspection.

Q. Is that normal procedure on inspection of lake vessels?

A. Yes, sir.

Q. Your testimony is that you did not enter any of the ballast tanks during this inspection?

A. Yes, sir.

Q. Were there any cofferdams or voids on the vessel?
A  I do not recall, sir.
Q  Do you recall inspecting any of the closures to the
    cargo holds, hatches and so forth?
A  Deck openings?
Q  Yes, sir.
A  No, sir.
Q  Were the hatches on or off, as you recall?
A  I don't recall. They could have been either way.
Q  Do you know how many hatches the Fitzgerald had?
A  I was told 21, but I am not sure.
Q  You are sure of the three cargo holds?
A  As I recall, yes, sir.
Q  Did you have any conversations with Mr. Paul about the
    extent or the -- the extent of the examination that you had
    conducted aboard the Fitzgerald?
A  Not that I recall, sir, no.
Q  Your testimony is that Mr. Paul signed that entry as
    being completed?
A  Yes, sir.
Q  Do you think that Mr. Paul made a separate inspection
    of the vessel to determine the condition of the structure?
A  I do not know if he did.
Q  You do not know?
A  No, sir.
Q  How long were you aboard on that day, on the 19th of
February?
A. I can check. I boarded the vessel at 0900 and left the vessel at 1300.
Q. And the inspection was conducted where? At what facility?
A. Toledo Overseas Terminal in Toledo, Ohio.
Q. You indicated that you had conducted a visual side shell inspection.
What did that consist of?
A. Well, before I boarded the vessel I just visually examined the side of the hull for any mechanical damage that was visible, and once I am aboard, I look over the outboard side and just to make sure, if there is any mechanical damage, I make a note of it and try to see it from down below.
Q. Do you recall what side to the vessel you may have boarded?
A. No, sir; I can't recall.
Q. To your knowledge, were there any outstanding requirements as far as hull repairs and so forth that were done during the winter layup season?
A. No, sir.
Q. Do you know whether any repairs were, in fact, accomplished during the winter layup season?
A. No, sir; I don't.
Q. Did you check any repairs that were reportedly done?
A. No, sir.

Q. You say minor work list items.
    What do you mean by minor work list items?
A. Often in the winter, when we enter cargo holds,
    there might be a loose rung on a ladder.
    We just point it out to the owner's rep, and it is
    taken care of, things like that. And anything that would
    concern the hull structure, a requirement would be written
    for it.

Q. As I understand your testimony, you indicated that the
    boundary, the tank top boundary, was an important structural
    feature of the vessel?
A. The tank top itself; yes, sir.

Q. And what was your comment in regard to the relative
    importance of the side slope in comparison to the tank top?
A. The side slope, as I said, is not considered a main
    strength member of the vessel.

Q. Do you know what the side slope plating, what compart-
    ments it separates?
A. I believe it separates side ballast tanks from the
    cargo holds.

Q. Do you know if, in fact, the side slope bulkheads
    or the side slopes were watertight?

    Was any test made to see if they were watertight?
A. I did not conduct any tests, but any areas that
did appear to be non-watertight were pointed out to the
owner's representative.

I don't recall the specifics about this vessel.

Q. As you know, Mr. Gordon, a vessel has been lost.

A. Yes, sir.

Q. I would like for you on these details, if you can,
to search your memory because the details are important
to the Board.

A. Yes, sir.

Q. Do a normal inspection do you check the slope bulk-
heads for watertight integrity?

A. I examine the slope bulkheads, but in order to
really tell if they are watertight, we would have to
require the vessel to fill the tanks; and I did not do
that.

Q. Did you feel that it was not required or you just
didn't do it?

A. I felt that in the case where I am in a very apparent
situation where there would be a leak that could impair
the seaworthiness of the vessel, we would require a test;
but at that time I hadn't seen any reason to, so I felt
it was not necessary at that time.

Q. Are you given any instructions on any particular
inspection that you go on?
Are you given any special instructions?

A. Special instructions from the SIM? No. The only thing I would imagine they would include would be him pointing out standing requirements; but in general, there are no special instructions, just general policies.

Q. How many inspections of this type have you conducted?

A. Approximately 30.

Q. I am talking now prior to the time that you inspected the Fitzgerald.

A. Prior to the Fitzgerald?

Q. Yes.

A. I would imagine 10 or 15, sir.

Q. Did you go along with anyone for training, or did you just pick up a load?

A. When I first started, I accompanied several inspectors on several different occasions.

Q. Are there any instructions or regulations or directions in the Toledo Office which indicate what parts of the structure should be looked at during the inspection for recertification?

A. Yes, sir; we have a Commanding Officer's instruction to the unit that outlines general policy for inspecting during the procedures, and policies are outlined prior to an inspector being sent out on his own by another inspector, and a final inspection in the accompaniment of the SIM.
Q. Did these instructions cover what parts of the vessel shall be looked at for recertification?

A. Yes, sir.

Q. Do you have a copy of that instruction with you?

A. I believe I have provided Capt. Wilson with a copy of that instruction when I first arrived, sir.

(Handing to witness.)

CDR. LOOSMORE: Is that it?


CAPT. ZABINSKI: Let's mark it for identification, please.

CDR. LOOSMORE: That would be Exhibit 63, sir.

REAR ADMIRAL BARROW: Exhibit 63, and what is it, please?

CDR. LOOSMORE: It is the "Officer in Charge Marine Inspection, Toledo, Ohio CO/MIO Instruction 5941, dated December, 1970; Subject: Inspection of Great Lakes Cargo Vessels."

It is two pages of instructions plus an enclosure, and one which is also two pages, standard abbreviations.

REAR ADMIRAL BARROW: Mark it 63 for identification.
CDR. LOOSMORE: A through D.

REAR ADMIRAL BARROW: 63-A through D will be marked for identification.

(Exhibit 63-A through D marked for identification and made part of the record.)

(Pause.)

CAPT. ZABINSKI: Counselor, do you want to see it?

(Handing to counsel.)

By Capt. Zabinski:

Q Mr. Gordon, by reference to this exhibit marked 63 for identification, would you read that from the part which refers to the inspection of the hull structure during the annual recertification or annual inspection?

A It is under paragraph 2 entitled "General Discussion."

"All layup, fitout, drydock and special examinations of Great Lakes cargo vessels shall be made in accordance with applicable regulations, the MMSM and current Commandant and district directives.

"Inspectors shall also be familiar with applicable navigation vessel inspection circulars and pertinent publications. Prior to inspecting a vessel, the assigned inspector will review the most recent inspection and drydock
examination files, the special examination file, and
the deferred requirement file for that vessel. Prior
to conducting an annual inspection for certification,
an application for inspection, Form CG-3752, will be completed.

"Form MIT-105 is to be completed prior to a drydock
examination indicating whether or not credit drydocking
is desired. Hull inspectors are cautioned not to inspect
internal parts of the vessel unless accompanied by a
licensed officer of the vessel or representative of the
owner and, when entering tanks they shall insure that an
additional person will stand by the access opening.

"In addition, require adequate lighting and reasonable
cleanliness of the spaces."

Q. The latter part of that seems to be more for safety
reasons, is that right, to have someone accompany you
and stand by with someone else?
A. That is right.

Q. And also to be a witness of any condition you may
observe?
A. Yes, sir.

Q. It indicates that you should review the drydock, the
last drydock book.

Did you do that?
A. Yes, sir, I did review the book. I misunderstood
your question.
Q. Did you review that special examination file at the Toledo office?
A. Yes, sir; I did.
Q. Is there any comment in that special examination or inspection book, the file, that was pertinent to this inspection that you recall?
A. I don't believe so, sir.
Q. Was the drydock examination conducted in Toledo?
A. No, sir.
Q. Do you know where the last drydocking was done?
A. No, sir; I don't. I don't recall.
Q. Do you recall when the last drydocking may have been done?
A. No, sir.
Q. This instruction indicates that certain conditions or certain regulations will be followed.
   Could you read those down for me, please, starting from the top?
A. "Layup, fitout, drydock and special examinations of Great Lakes cargo vessels shall be made in accordance with applicable regulations, the MMSM and current Commandant and district directives."
Q. What are the applicable regulations, as you know them?
A. Great Lakes cargo vessel inspected under Subchapter I, I believe.
I have to check the regulations to be sure. The Merchant Marine safety manual gives guidance and district and commandant instructions.

Q. Well, let's go back to the inspection under the regulations, cargo and miscellaneous vessels.

Is that what you indicated?

A. Yes, sir.

Q. Do you know what provisions, if any, are contained in the regulations pertaining to inspection of the hull at the time of initial certification or annual inspection?

A. I would have to refer to the regulations for that, sir.

CAPT. WILSON: Do we have a copy of the regulations with us? Do we have one to refer to, a copy of the regulations?

CDR. LOOMIS: I will have to send out for them.

CAPT. ZABINSKI: Whatever.

REAR ADMIRAL BARROW: Let's take a five-minute recess, please.

(REcess had.)

REAR ADMIRAL BARROW: Let the record show we reconvened at 12:12. Counsel for parties in interest the same as before.

EXAMINATION

By Capt. Zabinski:
Mr. Gordon, you have a copy of the regulations before you now, Subchapter 91.25, Inspection for Certification?

Yes, sir.

Could you read the applicable section pertaining to the hull during an annual certification, please?

Yes. Section 91.25 is entitled Inspection for Certification, and below that is Subpart 91.25-10, which is entitled "Scope for Inspection."

Subpart A says: "The inspection for certification shall include an inspection of the structure, boilers and other pressure vessels, machinery, and equipment.

"The inspection shall be such as to insure that the vessel, as regards the structure, boilers and other pressure vessels and their appurtenances, piping, main and auxiliary, electrical installations, life-saving appliances, fire detecting and extinguishing equipment, pilot ladders, pollution prevention equipment and other equipment, is in satisfactory condition and fit for the service for which it is intended, and that it complies with the applicable regulations for such vessel and determine that the vessel is in possession of a valid certificate issued by the Federal Communications Commission, if required."

And did you indicate that these are the basic guidelines for the inspection of the hull during this inspection procedure?
A. Yes, sir.

Q. When it says "hull," does it enumerate what areas are to be covered or what are the guidelines?

A. Under 91.25-25, it is entitled "Hull Equipment."

Subparagraph A says, "At each inspection for certification, the inspectors shall conduct the following tests and inspections of hull equipment:

"1. All watertight doors shall be operated locally by manual power and also by hydraulic or electric power if so fitted. Where remote control is fitted, the doors shall also be operated by the remote control apparatus.

"2. The remote controls of all valves shall be operated.

"3. An inspection of the cargo gear shall be required. The inspection may consist of tests and examinations to determine the condition and suitability of the cargo gear. Current valid certificates and registers of cargo gear, issued by recognized non-profit organizations or associations, approved by the commandant, may be accepted as prima facie evidence of the condition and suitability of the cargo gear.

"Cargo gear certificates and registers will not be issued by the Coast Guard."

Q. Mr. Gordon, I don't want to interrupt you in your statement, but I don't want to get in the record other
areas of the annual inspection.

There are many, many facets that go into the completion of the inspection. I am primarily interested in your calling to the Board's attention those factors which deal with the inspection of the hull, the part of the inspection that you conducted on 19 February.

A. Yes, sir.

That's about all the regulations that are in Subchapter I that are here, sir.

Q. Referring back now to Exhibit 63, you indicated that there were other guidelines that were to be followed. What was the next guideline down the line?

A. The Merchant Marine safety manual, sir.

Q. Could you refer to the Merchant Marine safety manual and please read to the Board those parts which are pertinent to the hull inspection for certification?

CDR. LOOSMORE: It has been sent for,

By Capt. Zabinski.

Q. While we are waiting for the Merchant Marine safety manual, what is the next item on the list?

A. "Current Commandant and District Directives."

Q. Do you have those with you?

A. I brought one with me, sir. It is a Ninth Coast Guard District Commander policy letter, 5941/3.
The subject is the examination of the Great Lakes bulk carriers.

The purpose of this letter, "The purpose of this instruction is to establish a procedure for regular inspection of vital members of bulk carriers."

Paragraph 3 is the discussion: "During the past several years, various programs and special examinations of Great Lakes bulk carriers have been instituted to reveal defects which would give early notice of weakness of the hull girder."

Q. Just a minute, Mr. Gordon.

Does this instruction pertain to annual inspection of vessels?

A. It is basically concerned with the spar deck, sir.

Q. The spar deck examination?

A. Yes, sir, which is part of the annual.

Q. What is the date of that inspection?


Q. Was that instruction in effect at the time that you conducted your inspection on the 19th of February, 1974?

A. No, sir, it was not; not this instruction.

Q. You can put that aside.

Do you know what instruction was in effect at the time that you made the inspection for certification?
A. Yes, sir. It was the District Commander's Instruction 5941.1C.

I believe it is dated 21 August 1970.

CAPT. ZABINSKI: Cdr. Loosmore, do we have a copy of that instruction to show the witness?

CDR. LOOSMORE: Yes, sir.

(Handing to witness.)

By Capt. Zabinski:

Q. Is that the instruction that was in effect at the time you conducted this inspection on the 19th of February?

A. Yes, sir.

Q. All right.

CAPT. ZABINSKI: I request that it be marked for identification, please, Admiral.

REAR ADMIRAL BARROW: 64 for identification. Would you identify it, please?

CDR. LOOSMORE: Yes, sir. This is the District Commander Instruction 5941.1C, Ninth Coast Guard District, Cleveland, Ohio, 28 August 1970, the subject is Examinations of Great Lakes Bulk Carriers.

REAR ADMIRAL BARROW: Mark it for identification as 64.

CDR. LOOSMORE: Yes, sir, and it consists
of two pages plus seven pages attached.

The copy I have has an additional page attached, entitled "Section 3 Directives, Cancelled," which I don't believe is part of this directive.

CAPT. ZABINSKI: Let's remove that from the instruction, otherwise it will be confusing.

CDR. LOOSMORE: Now, it is two pages plus seven pages of enclosures to be marked 64-A through whatever it comes out to, sir.

REAR ADMIRAL BARROW: Tell me what it is, please.

A through what?

CDR. LOOSMORE: A through I.

REAR ADMIRAL BARROW: 64-A through I for identification?

CDR. LOOSMORE: Do you want it marked, sir?

REAR ADMIRAL BARROW: Mark it so.

(Exhibit 64-A through I marked for identification and made part of the record.)

REAR ADMIRAL BARROW: Show it to counsel.

CDR. LOOSMORE: He has a copy.

MR. MURPHY: I have a copy; thank you.
By Capt. Zabinski:

Q. Mr. Gordon, would you look at this District Instruction which you have referred to, dated the 28th of August, and indicate to the Board the paragraph or section that applies to examinations for recertification, please?

(Handing to witness.)

A. Paragraph C is the instruction. It reads: "Experience during the initial program indicated that the major defects were discovered from the topside examination, thus there is no intent to stress under-deck examination beyond the routine examination conducted annually along with the more detailed examination at the five-year drydocking as deemed necessary.

"Special rigging for the under-deck inspection is not considered necessary in most cases."

Q. Are these ground rules for inspection for certification or for a spar deck inspection, would you say, Mr. Gordon?

A. It is my understanding, sir, that the spar deck examination is part of the inspection for certification.

Q. But did you conduct a spar deck examination on February 19, 1974?

A. No, sir; I did not.

Q. Do you know if a spar deck inspection was conducted prior to certification?

A. Yes, sir.
Q. When was that, sir?
A. I believe it was some time in November of that same year.
Q. Could you refer to the inspection book? Is it entered in the inspection book?
A. Yes, sir.
Q. Would you indicate what page and what exhibit you are referring to?
A. 45-A. On page 19, my note again is that I have "10/17/74, Spar deck completed in Cleveland, Ohio."
Q. Where was that information gotten from?
  Is that your entry?
A. Yes, sir.
Q. Where did you get that from?
A. From the bridge record card or the vessel certificate. I don't recall which. It was one of those two though.
Q. Are there any other instructions that pertain to the inspection of the hull during the period of the annual inspection other than this one, if you know?
A. I am not sure, sir.
Q. What is the next item in the Toledo inspection, the marine inspection notice or instruction?
A. "Inspectors shall also be familiar with applicable navigation and vessel inspection circulars."
Q. Are there any navigation and vessel inspection
circulars which are pertinent to the hull during the
period of certification?

A. Again I would have to refer to the publication.

Q. Please do so.

A. All right.

REAR ADMIRAL BARROW: Off the record.

(Discussion off the record.)

REAR ADMIRAL BARROW: We seem to be having
some difficulty in getting together the specific
instructions.

I suggest we take a break and get the publications,
and after lunch we can all get together.

We have one correction on the record to make,
and that relates to the specific dates of inspection
of this witness.

I think that in several instances we have been
talking where questions have been posed to the witness
in terms of this inspection having been made during
the month of February of 1974.

I would like to correct the record that the
specific inspections were in February of 1975 insofar
as this witness has inspected the Fitzgerald.

We will recess at this time and be back at 1330.

(At 12:30 p.m. the luncheon recess was taken to
reconvene at 1:30 p.m. this date.)
AFTERNOON SESSION

1:38 p.m.

REAR ADMIRAL BARROW: Let the record show we reconvened at 1338.

Counsel for party in interest, Oglebay-Norton, present.

Capt. Zabinski?

- - -

JAMES J. GORDON resumed the stand and testified further as follows:

EXAMINATION (CONTINUED)

By Capt. Zabinski:

Q. Mr. Gordon, have you researched the directives we talked about, the regulations, is that right, which you gave us the citations on the regulations for?

A. Yes.

Q. And Ninth District Instructions, we have those. Are we completed with all of the guidelines that are contained in the Ninth District Instruction?

A. Yes, sir.

Q. How about Navigation Vessel Inspection Circular, Headquarter Type?

A. Commandant's Instructions I have, but the NVIC's, I haven't.

I have not had time to go through those yet.
Q. How about the Merchant Marine Safety Manual, have you looked through there?

A. Yes.

Q. Can you give us the guidelines for that section of the inspection, please?

A. It is Section 3-5-25-A(2) of the Merchant Marine Safety Manual.

It says, "The approved plans in the classification certificate of the American Bureau of Shipping may be accepted by the Coast Guard in certain cases as evidence of structural efficiency of the hull.

"In all cases, however, the inspector must take sufficient examinations and tests of the hull structure at the inspection for certification to determine that the condition of the hull is suitable for the service in which the vessel is to be employed and is such as to warrant the belief that it may be used in navigation with safety to life."

Now, as far as I could tell -- not really that, but it is my understanding from reading these and recalling these, just recently, that there is no specific regulation requiring or regulation not requiring that these side tanks be entered at the annual inspection.

The previous section of Subchapter I which was read into the record under "Hull Equipment," that starts out
under Section 91.25-25(a) where it says, "At each inspection for certification, the inspector shall conduct the following tests and inspection of the hull equipment."

It goes on to list seven separate sections, none of which include the side tank areas.

Q. Is there a hull structural inspection required?
A. Yes, sir.

Q. How is that referenced in that paragraph you were just reading?
A. Section 91.25, entitled "Inspection for Certification," and 91.25-10 determines the "Scope of the Inspection."

I believe that was recorded, or rather read into the record earlier.

It says, "The inspection shall be such as to insure that the vessel as regards to the structure," and it goes on to say, "boilers and other pressure vessels and their appurtenances, piping, and other equipment is in satisfactory condition and fit for the service for which it is intended."

Q. You have testified now as to what sections of the vessel you have examined.
A. Yes.

Q. You indicated that you went into these spaces with other people.
A. Yes, sir.

Q. You were satisfied that the condition that the vessel
was in was seaworthy based on the conditions which you
observed when you inspected the vessel on the 19th of
February, 1975, in Toledo, Ohio.

A. Yes, sir.

Q. Insofar as the items that you inspected?

A. Yes, sir.

CAPT. ZABINSKI: That's all I have,

Admiral.

REAR ADMIRAL BARROW: Just several questions,

Mr. Gordon.

EXAMINATION

By Rear Admiral Barrow:

Q. Did I understand you to say that the spar deck examina-
tion, which was accomplished in the fall of the year, in
November, I believe --

A. Yes, sir.

Q. -- formed a part of the inspection for the certification
for the 1975 season; is that correct?

A. Yes, sir.

Q. You didn't carry out the spar deck examination?

A. No, sir.

Q. So, in fact, the spar deck examination together with the
examination of the holds, the tunnels and the after peak
and fore peak, which you accomplished, would constitute
the examination of the whole structure?
A. Yes, sir.

Q. I can't recall why you said that you didn't check off the particular block on the page where hull structure was indicated.

Would you tell me again, please?

A. I believe that was an oversight on my part, sir, as the spar deck examination was completed, and I didn't make the entry next to that block.

Q. Is it also possible that Mr. Paul -- did Mr. Paul sign off the inspection block certifying that the vessel was in safe seaworthy condition for issuance of a certificate?

A. I believe so, sir.

Q. Would you check the book and tell me what?

CDR. LOOSMORE: The book referred to is Exhibit 45.

THE WITNESS: On page 48 of the hull inspection book, "In my opinion, the vessel is fit for the service and route specified, signed W. R. Paul."

MR. MURPHY: May I have the item number, please?

CDR. LOOSMORE: 45-A.

MR. MURPHY: Thank you.

By Rear Admiral Barrow:

Q. Mr. Paul conducted part of the hull examination,
A. For the most part, the hull examination was conducted by myself and the spar deck was done in Cleveland. Mr. Paul might have; I am not sure.

Q. Would you look in the book to see if he accomplished part of the inspection?

A. The diary does not indicate that he had inspected the hull structure.

Q. Did he do part of the hull inspection, though? Did he indicate under the remarks part of the examination, leading to certifying this particular book, Mr. Gordon?

Would you look under remarks?

A. Yes, sir, on page 16 under Section G of the book, "Hull Decks, Fittings, and Watertight Integrity," Lt. Paul has signed off the water doors and subdivisions, bulkheads tested, bulkhead penetration, valves and controls, piping protection, hull openings and closures and deck openings and closures.

Q. Have you made other inspections other than this one examination on the Fitzgerald?

A. No, sir, I don't believe I have.

Q. No other visits of any other kind?

A. No, sir.

Q. Did you indicate for the record the company representa-
tive that attended the inspection with you?
A. I believe I did, Mr. Richard Feldtz.

REAR ADMIRAL BARROW: Counselor, do you have any questions?

MR. MURPHY: I have no questions, as long as we are all satisfied the record is clear that the inspection was made in 1975 rather than 1974.

REAR ADMIRAL BARROW: The record so indicates that.

Are there any other questions by the Board?

CDR. LOOSMORE: No, sir.

REAR ADMIRAL BARROW: Questions, Capt. Zabinski?

CAPT. ZABINSKI: Nothing.

REAR ADMIRAL BARROW: Are there questions by counsel for interested parties?

(No response.)

REAR ADMIRAL BARROW: Thank you very much, Mr. Gordon.

If there is anything you have not brought to our attention which has not been brought out by questions by members of the Board or counsel, which might assist us in our purpose of determining what the cause of this tragic accident was, I would ask you to tell us now.

THE WITNESS: I don't believe so, sir.
REAR ADMIRAL BARROW: Thank you very much. You are excused. (Witness excused.)

REAR ADMIRAL BARROW: Let's go off the record. (Discussion off the record.)

REAR ADMIRAL BARROW: Back on the record.

Cdr. Loosmore?

CDR. LOOSMORE: The Board recalls Lt. Walter.

You are reminded you are still under oath, sir.
CHESTER WALTER

was recalled as a witness and, having been previously duly
sworn, was examined and testified further as follows:

EXAMINATION

By Cdr. Loosmore:

Q I understand you have available for the Board a copy
of the inspection report for the survey you performed
on the Fitzgerald on June 19, 1974; is that correct?

A Yes, sir.

Q Is that the report?

A Yes, sir.

CDR. LOOSMORE: Sir, I have a handwritten
report on a form marked "Special Examination, File
MIT 101," which I would request be marked Exhibit 65
for identification.

REAR ADMIRAL BARROW: We'll mark it Exhibit 65
for identification.

(Exhibit 65 marked for
identification and made
part of the record.)

Q Sir, referring now to Exhibit 65, which is the
completed form examination dated June 19, 1974, Lt. Walter,
is that your handwriting?

A Yes.

Q Is that your signature at the bottom of it?
A. Yes, it is.
Q. Whose initials are these?
A. Cdr. Gafford.
Q. And what's the significance of that?
A. It signifies to me that he has seen this report.
Q. Would you read, please, the pertinent section under Remarks? Would you read that, please?
A. "Remarks: Boarded vessel 18 June 1974 to conduct damage survey on vessel's hull as a result of striking a pier at Soo Canal. Damaged area is in way of the port side tunnel forward and extends across six frame spaces (three foot spacing) at the extreme forward end of the tunnel. "One web, three frames and two deck beam ends are set in slightly. The side tank top is damaged a maximum of 30 inches in from the side. The side shell has no visible damage. Estimate repair cost is less than $1,000. The damage does not affect the vessel's seaworthiness."
This is followed by my signature.

CDR. LOOSMORE: I have no further questions.

REAR ADMIRAL BARROW: Questions by the Board?

EXAMINATION

By Capt. Zabinski:
Q. Whose estimate is that $1,000, Mr. Walter?
A. That estimate is based primarily on that of Mr.
Wilford Jeanquart, an ABS surveyor, sir.

I also concurred with that damage, based on my experience.

Q. Do you know if these repairs have been accomplished?

A. I do not know, sir.

CAPT. ZABINSKI: That's all I have,
Admiral.

REAR ADMIRAL BARROW: Counselor, do you have
a question?

MR. MURPHY: Yes.

May I see Exhibit 57-A and B, please?
(Handing to counsel.)

EXAMINATION

By Mr. Murphy:

Q. Lt. Walter, I hand you what has been introduced into
evidence in this hearing as Exhibit 57-A and B, which is
entitled "Winter Repairs," and it shows repairs performed
during the season of 1974-75.

Would you examine that document, please, and tell
me whether or not the damage which you observed is indicated
on that document and, if so, would you describe what it
appears in the area of the document?

A. There appears to be one item here which covers the
same general area of that special examination that I had
prepared.

Q. Would you read what the repair indicates, please?
A. The job description is, reading from this exhibit,
"Repair buckle main deck plating in port tunnel at forward
end (21 feet of deck plating involved)."

Q. Thank you, sir.

MR. MURPHY: I have no further
questions. Thank you.

REAR ADMIRAL BARROW: Any other questions
by the Board?

CDR. LOOMER: No, sir.

CAPT. WILSON: No, sir.

CAPT. ZABINSKI: No, sir.

REAR ADMIRAL BARROW: You are excused, Mr.
Walter.

(Witness excused.)

REAR ADMIRAL BARROW: Cdr. Loosmore, call
your next witness.

CDR. LOOMER: The Board calls Mr.
Don Amys to the stand, please.

Mr. Amys, would you raise your right hand,
please?
DONALD A. AMYS

was called as a witness, being first duly sworn, was examined and testified as follows:

CDR. LOOSMORE: Would you please be seated, sir.

MR. WICKA: May it please the Board, I would like to introduce myself and request permission to appear on behalf of this witness.

My name is Richard V. Wicka, W-i-c-k-a-, Assistant General Counsel, Burlington-Northern, Inc., 176 East Fifth Street, St Paul, Minnesota, and I would like the permission of the Board to appear under your regulations for this Board of Investigation on behalf of Mr. Amys.

REAR ADMIRAL BARROW: Yes, sir.

Your appearance is noted and you may participate by assistance to the witness. You may not participate in the questioning or the process of the Board itself.

MR. WICKA: I understand your regulations.

EXAMINATION

By Cdr. Loosmore:

Q Would you please state your name, address and occupation?

A Donald A. Amys, 1618 - 39th Avenue, East, Superior, Wisconsin, General Foreman for Burlington-Northern.
Q. How do you pronounce your name, sir?
A. Amys.
Q. Amys?
A. Mr. Amys, do you hold a Coast Guard license or document?
A. No, sir.
Q. Mr. Amys, how long have you been General Foreman for Burlington-Northern?
A. Approximately about six years.
Q. How long have you been employed by the Burlington-Northern Company?
A. About 27 years.
Q. What do your duties as General Foreman involve?
A. I take care of the men in our department on the Ore Dock Department and handing out the jobs and seeing that the men are doing the jobs, and I record all reports after the boats are loaded, after the men turn them in to me, our boat loaders; and I turn the proper papers over to the clerks who do the billing.
Q. Are you then in overall supervision of the loading of vessels, sir?
A. Yes, sir.
Q. This Board inquiry investigation is concerned with the loss of the Edmund Fitzgerald.
A. I have several questions which relate both generally
to the process of loading taconite cargo and to the Fitz-
gerald in particular.

We are making a verbatim record, and we would appreciate
it if you would speak as loudly and as clearly as you can
comfortably, and as slowly as you can.

Now, could you describe, briefly, the general process
of loading a large ore carrier such as the Fitzgerald
which was at your dock at Superior?

A. Well, I make out the books with the pocket numbers
in it, which has the pellets that are to be put into these
boats, and they are turned over to my boat loader.

He follows and loads according to what the mate wants.

We figure out his tonnage. It is figured out and
it is on the sheet and given to me.

I figure out by the size of the pockets and how much
the boat should be taking, tonnagewise. Then the boat
loader is the man that puts it into the boat, according
to the mate's wishes.

Q. Where does the cargo come from?
A. From the taconite plants up on the range.

Q. How does it get to your dock?
A. It is brought down in pellet cars, and it is put on a
belt and brought up onto the dock on a dock.

Unless our belt is down for repairs, the cars are
shuffled to the docks and pellets are put into the pockets.
Q  What is a pocket?
A  Well, a pocket holds on the average of about 300 tons. These are the holds or the pockets in the dock, and they are all numbered.
Q  And you put cargo in the pocket?
A  Right.
Q  From there where does it go?
A  Into the boat.
Q  How?
A  A chute is lowered into the boat and doors are tripped. It just runs into the boat, the holds of the boat.
Q  Do the whole contents of a particular pocket go into one particular hatch then?
A  Yes, sir.
Q  How do you know when a particular vessel is coming in?
A  From the vessel agent who gives it to our disco clerk, and it is recorded on the sheet. Copies are made and we get one of them.

The vessel agent tells us how much the boat is going to take, what time the boat is due, and the date and the time.
Q  Does the agent tell you or do you have information which determines where in the particular vessel the cargo is to be put or how much cargo is to be put?
A  No; the agent does not tell us that.
The mate who is loading the boat tells us where to put it in the boat. The only thing the agent tells us is how much tonnage he is going to take.

Q. Does he know that exactly or is that an approximate figure?
A. It is an approximate figure, I think.

Q. About how long does it take to load a boat the size of the Fitzgerald?
A. Well, the Fitzgerald doesn't come to the ore docks too often, but on a boat that size, we figure anywhere from five to six hours.

Q. To the best of your knowledge, did the Fitzgerald load at your dock on the 9th of November this year?
A. Yes, it did.

Q. Do you know how long it took to load that day?
A. Well, it started at 7:30 and was loaded at 1:15.

Q. 7:30 in the morning?
A. Right.

Q. Is that Eastern or Central Time?
A. That's Central Time.

Q. What records do you keep of a loading operation such as that which took place on the Fitzgerald on the 9th?
A. We keep the records when he comes in, the time he is finished loading, how long his delays are, pumping his water out and shifting time and loading time.
Q. Do you keep a record as to the amount?
A. The amount?
Q. Yes.
A. The amount of pellets that go into the boat, yes.
Q. Do you keep that by individual pocket numbers?
A. Right. I assign the pockets to the boat, and our boat loader puts them into the boat.
    We estimate just -- I estimate how many pockets he is going to take, taking on an average of 300 tons per pocket, and our boat loader puts it into the boat according to the mate, which is according to how he wants it in the boat and when and how much he wants.
Q. When and how much? Does he necessarily take a full pocket each time?
A. Well, if he doesn't want a 300 ton pocket in the dock, we do have 200 ton pockets and 100 ton pockets.
    It is entirely up to the mate what he wants.
Q. Do you keep track of which pockets were emptied into a particular vessel?
A. I do.
Q. Do you have records of which pockets and how much was in each one for the Fitzgerald?
A. I do.
Q. May I see the records, please?
A. Yes.
MR. WICKA: Are we off the record?
CDR. LOOMIS: We can be off the record.
MR. WICKA: I was going to say, Commander, we have here the boat book, and actually there is the writing on that sheet which was made by the boat loader, who is present here, by the name of Clarence Dennis; am I correct?
THE WITNESS: No. He didn't make out the boat book, but crossed out the pockets that had gone into them.

The general foreman for Burlington makes out the numbers.
CDR. LOOMIS: I have a piece of paper, a penciled written piece of paper denoted "National Pellets."

REAR ADMIRAL BARROW: We'll mark that for identification as Exhibit 66.

(Exhibit 66 marked for identification and made part of the record.)

Q Mr. Amys, there is writing on both sides of this piece of paper.
Do both sides of it apply to the Fitzgerald?

A No, it doesn't, sir. This is the original page from
the book that I have brought. The opposite side of this
page has no significance to the Fitzgerald at all. It
is another boat. It was a page from the book.
The opposite doesn't have anything to do.

Q. The side I am showing you now does?
A. That's right.

Q. It says, "E. Fitzgerald, Nat. --"
A. National Pellets.

Q. And it is dated 11/9, and I will mark that side of the
page No. 66.

(Exhibit 66 was marked for
identification and made
part of the record.)

CDR. LOOSMORE: Mr. Murphy?

(Handing to counsel.)

CDR. LOOSMORE: Let the record show
that the exhibit was examined by counsel.

Q. Referring to Exhibit 66, you started to say something
about the numbers, Mr. Amys.
A. Yes, the numbers in the book are put in by the general
foreman. We have the pellets and these are the other
pockets that the pellets are put in.

Q. Those are the numbers of --
A. Number of pockets.

Q. Number of pockets?
A. That is the pocket number in the dock. In each number shown here, it carries an average of 300 tons, which you will find marked right alongside of the pocket number over here.

Q. "Over here" referring to the lower right-hand part of the page.

A. Right.

The question was then raised about the 300 tons over here and you will find we have smaller pockets in the book for if the mate desires smaller pockets of pellets to put in the holds, when he does not desire to take 300 tons.

Q. What is the significance of the fact that the numerals are crossed out?

A. That shows that the boat loader has put these pockets into the boat and it is just a record. He crosses them out so he knows which have gone in the boat and which have not.

Q. Well, there doesn't seem to be any on there that are not crossed out.

A. Yes, sir; there are two down here, if you will see.

Q. That's right, there are.

A. These two pockets did not go in the boat.

CAPT. ZABINSKI: Can we have them identified in any way?

CDR. LOOSMORE: Yes, sir. No. 120 and
No. 124 are not crossed out as Mr. Amys pointed out.

Q. Could you explain the writing at the top of the right-hand side of the page, sir, please?

A. This is a record that is kept by the boat loader himself. It shows the time he starts loading the boat and the time he finishes loading the boat, the draft that the mate has given him, and the delays of the boat; such as, if you will see here, "Water, one hour."

Q. Yes, sir. Thank you.

Did I understand that this record was kept by Mr. Dennis?

A. That's right, the boat loader keeps this record, which is then turned in to myself and I record all of this.

Q. Is this writing at the bottom in red yours?

A. No, sir. I did not make this out because it came in at 7:30, which is the change of shift for us, and, you see, the policy is that the general foreman that is ahead of you would make out the boat book because we do not have time to make them out when we come to work; and he makes them out.

If the boat is due on a change of shift, like our men go to work at 7:30, and this is right at the change of the shift, and he makes it out.

I examine this thing before it is given to the boat loader to see that everything is proper, the pockets are
recorded properly.

Q. What does that red writing say?
A. This red writing says, "Red checks moved to go into the boat."

I will explain that to you. It just so happens at this time the red checks mean nothing as far as loading the boat. It means merely at the present time our belts were down and we are shoving cars to the dock, and in order to make it easier for us to dump the train, we ask that he take these pockets out of the dock.

There is no difference in the pellets; it is just that they are to be moved to that when we bring a cut of pellets up to the dock. It is easier for us to spot them on the dock rather than cutting the cars, breaking them and spotting over the different holds.

That's all it means.

Q. Were you on duty when the Fitzgerald was loaded?
A. Yes, sir.

Q. Do you have any record which indicates which pocket went into which hold on the vessel?
A. No, sir. We did not keep a record of this.

Q. Do you have any record which indicates the exact amount of cargo -- incidentally, what was the cargo so that we know what we are talking about?
A. The cargo was 26,116.
Q. Of taconite pellets?
A. Of taconite pellets, which was the cargo.

CAPT. ZABINSKI: Is that in tons?
THE WITNESS: That's tons.
CAPT. ZABINSKI: Long tons or short tons?
THE WITNESS: This is a long ton.

By Cdr. Loosmore:
Q. 2240 pounds per ton?
A. On the average, yes.
Q. Mr. Amys, I notice that this Exhibit 66 is made out
in the numbers of 300 and 100, yet you said the total
loading was added up to 26,116.
Do you have more exact records of the amount that was
in each?
A. Yes, sir, I do.
Q. How did you obtain that information?
A. Because our pellets are run over a scale that go into
the boat that come up on the belt. The pellets that are
dumped by the cars, we take the overall tonnage from the
mining company.
Q. What is this document here?
A. Here are the pocket numbers and here is the tonnage
into the pockets that were in the pockets.

CDR. LOOSMORE: All right. I have a

sheet marked "Burlington-Northern, Inc., Pocket
Loading Report, East of Dock No. 1, E. Fitzgerald,
11/9/75."

REAR ADMIRAL BARROW: Mark it for iden-
tification as Exhibit 67.

CDR. LOOSMORE: Yes, sir.

(Exhibit 67 was marked for identification and
made part of the record.)

REAR ADMIRAL BARROW: This, as I understand it,
constitutes the actual weight of the cars themselves,
the railroad cars; is that correct, that went into
each pocket?

THE WITNESS: No, sir. That is
taken on an average of the tonnage that comes from
the mines and we take the tonnage from the mine,
plus the number of cars and divide it, and we equal
this out into the tonnages into the pockets.

By Cdr. Loosmore:

Q This exhibit has been marked No. 67.

I note this is a copy. Where is the original of
this?

MR. WICKA: Commander, this was
prepared after the fact, and it was prepared
at the request of the vessel's agent to show
specifically the amount of tons into each of the
pockets, which was loaded into the Fitzgerald.

Q. Would such a record as this ordinarily be prepared and kept?

A. No, sir.

Q. In that case, how do you come up with the number 26116 point whatever it is?

As a normal rule, how do you determine that number?

A. Well, these pellets go over our scales, and it is ordered on hundred tons per pocket or whatever I tell our tripper man to put into a pocket.

You have seen on the other page that there was 100 tons or 200 tons.

REAR ADMIRAL BARROW: As I understand it, this is also an estimate; is that correct? On this Exhibit 67, these are estimates or averages?

THE WITNESS: Those are averages on the cars, yes, which come from the mines.

MR. WICKA: I think, Mr. Amys, if you will answer the Board's questions, I think that -- if you don't recall the question, you can have it read back.

I believe the question is: Are these estimates or are these the actual weights upon which the taconite ore was shipped in this instance?

THE WITNESS: You will find on this
here that there are belt weights and car weights.

Belt weights are exact, but car weights are estimates.

REAR ADMIRAL BARROW: Then I will ask you, sir, this: We have two exhibits here; one being 66, which indicates the pocket numbers, and basic 300-ton weights as well, and some that are 100. That is an estimated amount; is that correct, sir?

THE WITNESS: Yes.

REAR ADMIRAL BARROW: And the other on Exhibit 67 will have some that are 295.2 tons and some that are 294.3 tons and others, that is also an average?

THE WITNESS: Yes.

REAR ADMIRAL BARROW: Then I would ask: I think the logical question next would be whether or not you do have a record which will show the exact weight that went into the Fitzgerald?

THE WITNESS: As you will see here, we have prepared this, and this is our belt weights. This is what we weigh ourselves. This goes into the pockets.

A man orders this accordingly, and over here you will find that we have "direct" over here, which is dumped direct into the dock from the cars,
which is taken from the mine weights.

CDR. LOOMSORE: I have another three-page exhibit, which is a copy of a handwritten document entitled "E. Fitzgerald, 11-59," with four columns: "Pocket Number, Belt, Direct," and "Total Listed" on it, sir.

REAR ADMIRAL BARROW: We'll mark that 68 for identification.

CDR. LOOMSORE: A, B and C?

REAR ADMIRAL BARROW: 68-A, B and C.
(Exhibits 68-A, B and C marked for identification and made part of the record.)

By Cdr. Loosmore:

Q. Now, Mr. Amys, I think you previously stated that the column marked "Belt" was weighed on a scale on a belt; is that right?

A. Yes, sir; this is the Burlington-Northern scale.

Q. And what was the column marked "Direct"?

A. The column marked "Direct" was dumped into the dock direct from the cars, which is the tonnage that comes from the mines, which they give us the tonnage.

Q. So then for any particular pocket, are you saying that a given pocket would have some taconite from a car and some from the belt?
A. Yes, sir. As you will look at this exhibit, you will find that it shows there that some of these pockets have "Belt" and some have "Direct" and some have "Belt" only.

Q. I see. All right. For example, No. 134 on Exhibit 68-B has Belt but no Direct; is that correct?

A. Right, sir.

Q. Is this a record which is normally kept, or did you prepare this specially?

A. That was prepared specially.

Q. At whose request?

A. That I don’t know. I don’t know who, sir, had requested that. That was given to me.

MR. WICKA: Commander, I might say that that’s part of the information that I had asked to be prepared in connection with the appearance of this witness and the other witness here today.

In case there was a further breakdown of any information necessary, we had some of this additional information prepared not in the ordinary course.

MR. MURPHY: May I ask, for the record, counsel, who asked you to do that?

MR. WICKA: I was not asked by anyone; I did it, counsel, solely upon my motion, my own motion, just for my background information.

By Cdr. Loosmore:
Q. Mr. Amys, once a vessel is loaded, what information
do you provide to the vessel about how much cargo they
have aboard?
A. After the belt loader turns in his report to me
and what pockets have gone into the boat, I in turn make
out a report, which is given to our bookkeeper, who in
turn makes out the report from the tonnage that she
receives off our belt, and that is run through the IBM.
She in turn gives this to the boat company. The
boat itself calls and asks for this after he has pulled
away.

Q. Is there a piece of paper you give to the boat?
A. We have a bill of lading -- not to the boat, but we
have a bill of lading going to the company which shows
the tonnage.

Q. Do you give the boat any written information at all
about the amount of cargo that you think you put aboard?
A. No, sir. He calls in, and we just give this to him
over the phone.

There is nothing written.

Q. And what figures do you give him?
A. After this, our bookkeeper has run the tonnage
through, and this is where we derive that.
She gives the tonnage, and he asks for it.

MR. WICKA: When you say 'he,'
who are you referring to, Mr. Amys?

THE WITNESS: I am talking about

the captain or the mate from the boat.

By Cdr. Loosmore:

Q. All right, sir. I have what has already been entered
as Exhibit 9.

Do you recognize that?

A. I recognize it, sir, but I do not have nothing to do
with it. This is strictly up to the bookkeeper.

I do not get a record of this myself.

Q. Can you tell us what that is?

A. What this is?

Q. If you know.

A. This shows here the tonnage of National Pellets that
are dumped directly from the cars into the dock, plus
the National Pellets that come from a stockpile, which we
have put into the dock, and which have gone into the
Fitzgerald.

Q. What kind of a form is this?

A. This is a bill of lading which comes to the boat
captain.

Q. Is this the form that you said would go to the company
later on?

A. Yes, sir.

Q. All right. Now, you said that National Pellets dock
and National Pellets stockpile.

    Is that the significance of the "SP"?

A. Yes. SP is a stockpile, and where it says "Dock"
    is what we dump directly from the cars into the dock.

Q. I notice that the figures there on the dock on
    Exhibit 9, the dock and stockpile don't necessarily
    correspond to the total figures of "Belt" and "Direct" on
    Exhibit 68.

    Do those necessarily relate?

    Let me rephrase that: Would all of the belt loading
    have come from either the dock or the stockpile?

A. It comes from the stockpile.

Q. All of the belt loading should have come from the
    stockpile?

A. Right. The reason we are dumping direct is that our
    belts are down at times for repairs here, and this is why
    we are dumping directly into the dock.

    Otherwise, they are dumped at our car dump and brought
    all up into the belts.

Q. I see. Then would necessarily all the dock pellets
    have been dumped direct?

A. No, not all the dock pellets have been dumped direct;
    I mean, this is the belt.

    Here you will see it shows a stockpile (indicating).

Q. Well, on Exhibit 9, the figure shown for stockpile is
12,665 and on Exhibit 68 the figure shown for Belt is
16,962.

Those are obviously not the same figure. Should they
be?

A. I did not prepare this report, so I really do not know
why there should be any differential in it, myself.

Q. But as far as you know, anything from the stockpile
should have been weighed on the belt?

A. Yes, sir.

Q. Mr. Amys, why I am going into this in such detail is
that we are trying to obtain information as best we can in
order to reconstruct what the actual distribution of cargo
was along the length of the structure of the Fitzgerald
when it sailed from Superior.

Is there any record that you know of that is kept
anywhere in your organization which would assist us in that?

A. We don't have any records. If I understand you
right, we do not have any records that show what pockets
go into what hatches of the boat.

All I can say or all I can tell you is that what
pockets have gone into the boat. I cannot tell you
where they have gone into the boat because I did not load
the boat.

Our boat loader has done this and there is no record
kept with him as far as what pockets went into what hatches
in the boat.

Q. Were you there when the vessel was loaded?
A. I was there part time, sir.

Q. Were you there when it arrived?
A. Yes, sir.

Q. And at the start of the load?
A. Yes, sir.

Q. Were you there when it departed?
A. Yes, sir.

Q. Were you there when it arrived before it started to load?
A. Yes, sir.

Q. Did you notice whether this vessel came in and hit the pier at all?
A. No, sir, I didn't.

Q. Did you notice anything like that on the departure?
A. No, sir.

Q. I notice on Exhibit 66, the handwritten page, there are draft indications on those.
A. Yes, sir.

Q. Did you do that?
A. No, sir, the boat loader did.

Q. The boat loader did? All right.

Mr. Amys, is this kind of cargo that you load at Superior always the same thing?
A. No, sir. We do have raw ore that we load besides
pellets. We do load coal. We load potash.
Q. Do you use the same pockets and chutes and so forth,
no matter what load?
A. Well, we have certain docks and spots where our potash
is shipped from. We have certain spots on the side of
the docks where our coal is shipped from and also as far
as our pellets are concerned and our raw ore.
Q. You said you used a phrase "side of the dock."
What does that mean?
A. East side or west side of the dock. We refer to it
as side.
Q. Do you use the same side of the dock for the same
type of cargo?
A. Yes, sir, except -- no. Now, when we are not shipping
raw ore and our belt is down, we are using the west side
of No. 2 dock for our Butler pellets because we are unable
to dump pellets on that side of the dock because it is
strictly a belt system.
Q. Do you know where the Fitzgerald loaded exactly?
Which dock on which side?
A. Yes, sir. It loaded on the east side of No. 1 in
the inter-corners with the head pocket lined up for
pocket No. 2 in the dock or of the dock.
Q. With the head pocket lined up for Pocket No. 2?
A. That hatch of the boat lined up for Pocket No. 2 of the dock.
Q. The head hatch?
A. That is No. 1 hatch.
Q. During the course of the loading, did the vessel move anywhere from the dock or was all of the loading done right there, if you know?
A. The vessel had to shift for the pockets in the dock.
Q. Would you or would the boat loader have the better information on that?
A. The boat loader would have the better information.
Q. Okay. We will talk to him in a moment.
   Mr. Amys, would you know whether the previous load that had been loaded at that particular time was the same thing the Fitzgerald loaded?
A. I don't recall, sir.
Q. Would you have a record which would indicate if it was the same kind of cargo or different?
A. Yes, we would have records. I do not have those records with me, but we have a record of all our loading which is kept, the tonnages and so forth.
Q. Can I ask you if you can get together with your counsel and provide us with a letter to the Board and to look and see if there is something that was loaded differently?

   MR. WICKA: Just a moment.
(At this point in the proceedings, the witness had an off-the-record discussion with his counsel.)

REAR ADMMIRAL BARROW: Off the record for a moment.

(Discussion off the record.)

REAR ADMMIRAL BARROW: Back on the record.

By Cdr. Loosmore:

Q Mr. Amys, I know you don't have the information or you stated you don't have the information with you at the moment, but do you have any kind of what kind of cargo could have been loaded there, if it wasn't taconite?

A The only time that it would not be taconite loaded off of that side of the dock is when we are in need of space for raw ore and we do put raw ore into the east of No. 1, if necessary.

Sometimes we have a boat that comes in for a split cargo and may take raw ore and pellets, and we do put raw ore over there for the convenience of the boat, so he does not have to shift from dock to dock.

Q Would it have been anything else like coal or potash or wheat?

A No, no. That dock is strictly pellets or raw ore.

Q Okay. During the loading process, do you ever fill up a pocket again and load it, the same pocket, into the same
vessel?

A. I would say at times we do, if we do not have enough cargo in the dock for the boat. It is possible that our tripper may load this pocket again and it may go into the boat.

Q. Do you know whether that circumstance occurred with the loading of the Fitzgerald on the 9th?

A. No, sir. Our belt was down. Our belt wasn't running, so it wasn't possible.

Q. Therefore, you could not have loaded in the same pocket twice?

A. No, sir.

Q. All right. How do you know that a pocket is empty when you start?

A. We have a record, the general foreman has a record of the dock and each pocket in the dock, and we check this as such.

Q. Do you in the course of your daily duties, then, check each pocket to make sure it is empty?

A. Yes, sir.

As for the Fitzgerald, I checked after the boat was loaded to make sure that every pocket had gone into the boat, that the boat loader has so indicated in his book.

Q. You said that the Fitzgerald didn't load at your dock very often.
A. No, sir.
Q. Do you recall or do you have a record which would indicate the last time that it did load there?
A. I do have records of when she last loaded there as such.
Q. When was that, sir?
A. The last load there was on 11/9.
Q. Yes, of course, but just prior to that?
A. Prior to that was 8/1 of '75.
Q. 8/1 of '75?
Do you have any idea how many times during the '75 season the Fitzgerald loaded there?
A. I do, sir. He loaded four times in our dock and in the year of 1975.
Q. You seem to be reading a note. Does that indicate also how much cargo was taken each time?
A. Yes, sir.
Q. May I see that?

CDR. LOOSMORE: Off the record.

(Discussion off the record.)

REAR ADmiral Barrow: Back on the record.

By Cdr. Loosmore:
Q. Mr. Amys, would you consult whatever notes you have, if necessary, and tell us what information you have as far as loading date, quantity of cargo and type of cargo
taken and whatever else you have available with you for the
Fitzgerald during 1975 and earlier, if you have any
information?

A. On January 2nd of 1975, he took 25,700 tons of pellets.
Q. What was that figure again?
A. 25,700 tons.
On 6/30 of '75 he took 26,378 tons of pellets.
On 8/1 of '75 he took 26,367 tons of pellets.

CAPT. ZABINSKI: How many?
THE WITNESS: 26,367 tons.

These are all long tons.

REAR ADMIRAL BARROW: Yes, sir.

Mr. Amys, I am wondering if you could give us
also the drafts corresponding with those specific
readings for those times?

THE WITNESS: On 1/2 of '75, his
draft was 26 feet nine inches, 27 foot three inches,
and on 6/30 of '75, his draft was 27 feet six inches
and 27 feet nine inches.

On 8/1 of '75, his draft was 27 feet seven
inches and 27 feet eight inches.

By Cdr. Loosmore:
Q. And what figures did you have for the 9th of November
of this year?
A. His draft was 27 feet two inches and 27 feet six inches.
Q. What was the first figure, the January 2 figure in tons, sir?
A. 25,700.
Q. 700 even?
A. Right.
Q. Did you notice anything about the particular loading of the Fitzgerald at this time, which was in any way different from the prior loading?
A. I don't recall the loadings before this.
Q. Did you notice anything in this particular loading of this vessel at this time which differed in any way from the loadings that you generally have with other vessels at Superior?
A. I think this is a question that would have to be asked of the boat loader.
Q. I will.
A. I mean, I couldn't say because I don't know.
Q. Did you notice anything? Did you look at the vessel?
A. No, sir. When I was out observing this loading, he was loading in a normal procedure as other vessels do.
Q. Were there other vessels loading there at the time on that same No. 1?
A. No, sir.
Q. In the general area or the same procedure or the
same dock?
A. No, sir.
Q. Were there other vessels loading at your facility at that time, if you remember?
A. I won't say for sure.

CDR. LOOSMORE: I have nothing further.

EXAMINATION

By Rear Admiral Barrow:
Q. Mr. Amys, usually I ask other Board members if they have questions before I go ahead and ask questions, but I am confused about the figures.
I think I would like to get them clarified before I let them ask questions.

The first exhibit you spoke about was Exhibit 66 and that is the handwritten piece of paper in which the pockets are called 300-ton pockets and 100-ton pockets in round numbers.

I think that you have indicated that is an estimate.
The second exhibit which you have introduced is Exhibit 67. Do you have copies of that there?
A. Yes, sir.
Q. I think you indicated they were averages of cars and that also -- this is an average figure, based on the number of cars that you get; is that correct?
A. Yes, sir. That is an average.
Q. Then we asked you to produce, if you could, some indication of positive weights, and I have Exhibit 68 in which you have the pocket numbers and then a belt figure, a direct figure and a total.

As I understand it, are you telling me that the figures under the belt column are actual weights; is that correct?

A. Yes, sir. Those are off of our scales.

Q. They are actual weights coming across your scales?

A. Yes, sir.

Q. From your stockpile?

A. From our stockpile; yes.

Q. Then there is a second component that goes into that under the direct column which lists another figure. Where does that amount in each pocket come from?

A. We get our weights from the mines, which they give us the total weight of the train, and we then take the number of cars that are loaded and average it out.

Q. So that, in effect, is an average also?

A. Yes, sir.

Q. Is that correct?

A. Yes, sir.

Q. Because in actuality, and I will have you look at the two exhibits which you have given me, 67 and 68, and I note, for instance, under Pocket No. 2 for Exhibit 67, what is
the total tonnage there?

A. The total tonnage is 295.20.

Q. And under Exhibit 68-A for Pocket 2, the total is what?

A. 295.20.

Q. Which is precisely the same figure, so it appears to me that I think, if you will follow down through those two exhibits and pick out another one, perhaps in Pocket 30, would you give me the total tonnage for that on 67?

A. 299.40.

Q. Pocket No. 30.

A. Excuse me. 294.20.

Q. And on Exhibit 68-A, Pocket 30?

A. 294.20.

Q. In each case, it is the same. I believe if you will check the exhibits that you have shown us here, whether or not you take partially weighed as compared to average cars, incoming or the total average, each of them is the same, is it not?

A. That is correct.

Q. Well, I would think I would ask you then the other question, and that is that you do not have -- or do you have any figures which would give you the actual scale weights for what cargo went in the Fitzgerald on the 9th?

A. No, but would you repeat that question, please?

Q. Do you have in the records of your company anywhere
scale weights for the cargo that went into the Fitzgerald on the 11th -- excuse me on the 9th of November?

A. Yes. We have scale weights from the mine and from off the belt, but they are estimated off of the mine.

Q. They are estimated weights?

You have no precise weights for what cargo went in the Fitzgerald on the 9th?

A. No. It would be an average.

Q. Does the cargo in the cars coming from the mine or from your processing plant, can you give me an idea how the weights vary in those cars?

Is there quite a variance, or is it a small variance?

How would you describe it?

A. These cars are mechanically loaded from the mine, and I could not give you the precise tonnage in each car.

Q. Well, is your answer that you don't know what the variance would be, or you can't estimate, or you can't, by your judgment, tell me whether or not there is a variance there?

A. I think these cars are loaded at the mine; they are pretty much loaded to the same capacity.

Q. Do you dump pellets into the pockets at your piers there from the stockpile, or is most of your material taken over the belts into those pockets?
A. Our stockpile comes over the belt.

Q. You under no circumstances actually load cargo in cars and dump that at your piers from your stockpile?

A. No.

REAR ADMIRAL BARROW: Capt. Wilson?

EXAMINATION

By Capt. Wilson:

Q. I just have a couple of questions, Mr. Amys.

The cars you load from the mine directly, what is the distance that they travel?

A. That I don't know, sir. I couldn't tell you.

Q. Was it close by or quite a long distance?

A. Well, it is a distance. I would say the mine is about 85 miles.

Q. The cars come directly from the manufacturing process to the loading dock?

A. No. They don't come to the loading dock.

It all depends. I mean, they go -- our car dump is down about a mile from our dock where they are dumped on the belt in the summertime.

The only reason we are dumping direct from the cars at this time is because our belts are down for repairs.

Q. Yes, sir. Now, the cars that were dumped into the Fitzgerald, the pellets that ended out in the holds of the Fitzgerald, did they come directly from the processing
plant?
A. Yes.
Q. Were the cars staged any place? In other words, did they hold on a siding or anything?
A. No, sir.
Q. They came directly in?
Were the pellets in the cars at air temperature, or were they warm?
A. That I cannot give you; I don't know.
Q. Do you recall the day of the loading; do you recall what the air temperature was, approximately, not exactly?
A. Well, it was a nice day. I dare say it was 35 degrees, I suppose.
Q. How big -- what size railway cars do you bring the pellets down in or are they brought down?
A. That, I couldn't tell you.
Q. I am trying to get a picture of the operation and of the belts.
How are the pellets spread out or how deep are they on the belt?
A. Well, the belt is about, I would say, about half loaded when it is coming up.
No, I couldn't say as far as how deep they are.
Q. I am just trying to figure out how high it is.
A. I don't know.
Q. Who takes the draft readings on the boat before and after you start loading?
A. The draft readings, the mate is the one that gives it to us. We do not take the drafts ourselves, no.
Q. You mentioned that on your notes that there are delays for deballasting, I believe, and then you mentioned that it would be marked on here if there were any other delays.

What kind of other delays could you have?
A. Oh, other delays, we mean, like shifting from dock to dock and shifting from pocket to pocket, or interference with other boats. I am speaking of any other boats loading in the area.

Q. That would be indicated on here, I take it, on Exhibit 66?
A. Right.
Q. I see there is an indication on here of a one-hour delay.

Is this for water?
A. Yes, those were his pumps ballasting the water out.
Q. That's his pump time?
A. Yes.
Q. And according to this, there are no other delays on the loading of the Fitzgerald, is that correct?
A. Just his shifting time.
Q. What would that be?
A. We averaged that out ourselves on the delays. We figure out how long it takes, how many pockets we have, but that boat loader wouldn't keep that.

Q. That wouldn't be reported here, then?
A. No, sir.
Q. All right.

CAPT. WILSON: I have no other questions.

REAR ADMIRAL BARROW: Capt. Zabinski?

EXAMINATION

By Capt. Zabinski:

Q. Mr. Amys, nice to see you again.
A. Same here, sir.
Q. How much water do you have at the east side of No. 1, Mr. Amys?

Do you have that information or can somebody give that to us?
A. No, I really can't tell you how much. I can just tell you on an average that we have about 28 feet of water there, 28 feet of water.

Q. Was that on the 9th of November or was that just a mean amount of water that you had there?
A. That is just the mean amount of water we have.
Q. The mean amount?

Do you know if the lake was higher or lower that day
at Superior?
A. I don't recall, sir.
Q. Have you ever had any occasion where a vessel has
touched bottom loading there?
A. Yes, we do have vessels that do touch the bottom at
times.
Q. How do you know they touch bottom?
A. Because they tell us they are on the bottom and
they are unable to shift, dock shifting, because then
they are on the bottom.
Q. Did the Fitzgerald on November 9th have to shift
from one berth to the other?
A. The Fitzgerald just had the shift along the dock.
Q. Along the same dock?
A. Right, sir.
Q. And it didn't have to shift across the dock; is that
your testimony?
A. No, sir.
Q. You also have pockets on the other docks, don't
you?
A. Yes, sir.
Q. Do ships sometimes shift from the east side of one
to what -- what is it? -- the west side of No. 2; is that
the way it works out?
A. Yes, sir. We do have ships that have to do this.
These are ships that are taking a split cargo, National Pellets as well as Butler Pellets.

Q. When you say vessels are grounded or touch bottom, is it during the shifting over from one dock to another? Is that your testimony?

A. No, I don't think we have ever had one touch bottom on the shifting from dock to dock.

Q. Well, when would they touch bottom, in your experience?

A. When they are shifting along the dock.

Q. The same as the Fitzgerald?

A. Sometimes we have a pocket that may -- the door may come open and we lose a pocket of pellets. It goes into the water, and this is where they touch bottom, which we do have to have dredged out from time to time.

Q. Do you know when it was last dredged in that area?

A. No, sir.

Q. Do you know when your last report of a vessel reporting grounding in the area of the east side of Pier 1?

A. No, sir.

Q. Could you find that out and provide it to the Board? Is that possible? I am speaking of the last report of the grounding of any vessel at the east side of Pier 1.

A. Not really, sir. We really don't keep a record of that. When they go aground, that means they normally work themselves loose. It is not a matter of being unable to get out.
They work themselves out.

Q. Your testimony is that the Fitzgerald did not experience any grounding incident, to your knowledge?

A. Not to my knowledge.

Q. Would you know if she did, sir?

A. I wouldn't know. I wouldn't, sir. He would make a report to me.

Q. You received no such report?

A. I received no report of the Fitzgerald being grounded.

Q. What type of bottom is in there? Is it mud?

Do you know?

A. It's just mud.

Q. How accurate are the scales for the belts? Do you check them or are they checked periodically, or how does that work out?

A. Yes, sir, they are checked. I am unable to, when they are checked, as I do not know. I keep no record of it myself.

Q. Now, as far as anything to do with the sequence of which pocket and so forth, the boat loader would probably be able to provide us with that information, if he has it; is that right?

A. Yes, sir.

Q. Did the vessel's agent, whoever that might be, indicate any restrictions as far as loading the Fitzgerald on
November the 9th, 1975?

A. I received no report as such.

Q. What are these restrictions; could you give me an example of what would be a restriction, Mr. Amys? Would draft be a restriction?

A. Well, a draft would be a restriction, but I think this would be going to the captain of the boat.

Q. I see.

A. Not to us.

Q. What restrictions would you get? Could you give us just an example?

A. No, not really. We don't really get any restrictions.

Q. You did mention earlier that if there were any restrictions, the agent would advise you and I was just wondering or trying to see if there were any such restrictions given on the Fitzgerald on November 9th.

The mate or the people on the vessel give you the draft, which you record on this exhibit. Do they give you the midships draft at any time?

You have two drafts indicated, forward and aft, on here.

A. Yes, sir.

Q. Do they ever give you the midships draft?

A. There are some boats that do give us the midship draft.
Q. And do you log that just like you would log the draft of the Fitzgerald in this way?
A. Yes, sir.
Q. But do you recall if the Fitzgerald in her other visits, you described the other four, whether she gave a midships draft to the boat loaders, or did she just give you the forward and aft as you have indicated here?
A. Just the forward and aft as I indicated here.
Q. That testimony previously indicates such?
A. Yes, sir.
Q. When you indicated delays for water, one hour, do you mean delays for ballasting or deballasting Mr. Amys?
A. Yes, sir.
Q. You used the word "water."
A. Yes, that's right.
Q. You meant ballast?
A. That's right.
Q. Mr. Amys, how close do you think the figure 26,116 log tons is to the actual amount of cargo that was loaded onto the Fitzgerald on November 9?
A. I think you will find that is very close, sir; yes.
Q. Could you estimate, if you can, any -- is it within a half per cent or a quarter per cent or 500 pounds, if you know?
A. No, sir.
CAPT. ZABINSKI: I have nothing further.

REAR ADMIRAL BARROW: Counselor?

EXAMINATION

By Mr. Murphy:

Q Mr. Amys, my name is Mr. Murphy and I am an attorney for the Oglebay-Norton Company.

On the east side of your Dock No. 1 in the manner in which the Fitzgerald loaded on this occasion, how was she moored, starboard to the dock or port side to the dock?

A She would be port side.

Q The port side?

A Right.

Q This is a chute dock, as I understand it?

A Yes.

Q Mr. Amys, I have a photograph here that shows the Fitzgerald at some time which indicates to have been in 1967, loading at Duluth at a chute dock, and she happens to be moored starboard side to the dock.

I will ask you if that has any resemblance to your dock, or could it possibly be your dock; do you know?

A No, that is not our dock, sir.

Q Does that have any resemblance to your dock?

A Yes, sir.

MR. MURPHY: For whatever value this photograph may have, recognizing the differences
that the witnesses has made or indicated, I
would like to offer it to the Board as an exhibit.

REAR ADMIRAL BARROW: What was the purpose,
counselor?

MR. MURPHY: Only to assist the
Board if the Board feels it is of some value to
know what a chute dock looks like.

There were some questions about pockets. I
am offering it in the event the Board is interested
in receiving it.

REAR ADMIRAL BARROW: I don't think it is
really necessary, but I appreciate it very much.

I believe that the Board has actually visited
on site and seen the loading process in Duluth,
so I don't believe it is necessary.

MR. MURPHY: All right. Thank you.

Q Mr. Amys, I believe you stated that you observed the
Fitzgerald's arrival on this occasion and I am not sure
whether I heard you correctly or whether you were asked
whether you were present when the Fitzgerald departed on this
occasion, meaning the occasion of the daytime when she
loaded on November 9th.

Were you present at that time?

A I was working at the time; yes.

Q To the best of your knowledge, did she arrive and
depart in a normal manner?
A. As far as I know, yes, she did.
Q. You were reading from notes with respect to prior occasions that the Fitzgerald loaded at your dock in 1975.
Do you have notes as to any prior years?
A. Do I?
Q. Do you have notes for 1974?
A. Yes, sir.
Q. And would you tell us whether those notes indicate, please, sir, the number of the trips and so forth?
A. No, sir. She did not load at our dock in '74.
Q. I see. Thank you.
Are there other vessels the size of the Fitzgerald which haul at your dock for loading of taconite pellets?
A. Yes, sir.
Q. Could you offhand name any of those boats?
A. Not right at the present time, no.
Q. Did some of those boats load at your dock during the 1975 season to the best of your knowledge?
A. Yes, sir. I presume that they have loaded at our dock, but I couldn't say what dates or when, because I do not work all the shifts.

MR. MURPHY: May I examine Exhibit 66, please, sir?

CDR. LOOMIS: Yes.
By Mr. Murphy:

Q. I didn't quite understand the language in the red writing.

Would you read that for me, please?

A. "Red checks have to go in boat."

Q. It says "Red checks have to go in boat"?

A. Yes.

Q. Why was that again, sir?

A. The reason for the red checks is just for our dumping purposes.

As far as the pellets are concerned, it does not make any difference; it is just when our belt is down and we are shoving cars to the dock. It is a convenience to have these pockets out all in a row.

MR. MURPHY: May I have one moment, please?

REAR ADMIRAL BARROW: Off the record.

(Discussion off the record.)

REAR ADMIRAL BARROW: Back on the record.

By Mr. Murphy:

Q. Just so we will have a little better picture about a pocket dock, how are the pockets spaced apart in distance?

Are they a regular distance apart?

A. Yes, they have 12-foot centers.

Q. And are they numbered consecutively or are they numbered—
A. Yes. They are numbered, all the even being on the east side and all the odd being on the west side. That's why you go 6, 10, 14 and so on.

Q. So all the pockets on the east side of the dock are even numbers?

A. They are even numbers; yes, sir.

Q. Are there more than one individuals working as loaders at one time, or is there one loader or one man per pocket? Would you tell us about that, please?

A. There is one loader loading the boat, and he has maybe one or two assistants who will pull the spouts out of the boat, but he is the loader who puts the spouts in the boat.

Q. And where does he station himself?

A. He is on top of the deck where the motors are, where the levers are.

Q. How many pockets are there all together on the east side of the dock, sir?

A. There is 374 pockets on the dock in total. Half are on the east side and half are on the west side.

Q. Thank you. I noticed, I believe, from your testimony that the Fitzgerald started her loading in the No. 2 pocket at the forward end of the vessel, if I understood your testimony correctly?
A. Yes, sir.

Q. So that then much of the shifts she made would be out toward the end of the dock as she loaded; is that correct?

A. Right, sir.

Q. So that would indicate that when she finished loading, she was out near the outer end of the dock, or would it necessarily -- would that necessarily mean that?

A. In loading the boat, it doesn't necessarily mean that he takes every pocket in a row as he is going back. He does sometimes jump from the front end to the back end of the boat in loading, and he may go out to an outer pocket and work back in, whichever is for his convenience in loading and saving time, the mate's time, for his convenience in loading the boat, in saving time and shifting.

MR. MURPHY: No further questions.

EXAMINATION

By Rear Admiral Barrow:

Q. Mr. Amys, could you give me any approximation on how long it takes to dump a 300-ton pocket into the hold of a boat?

A. I cannot give you the approximate time it takes for the pellets to run out of the pocket into the boat.

Q. I am not asking for an exact figure; I am just asking
for a ball park figure based on your judgment of how long
it takes to run one pocket into the boat.
A  Well, it takes approximately about a minute and a
half to two minutes.
Q  A minute and a half to two minutes.
Could you give me an idea of the size of the chute
that you use to put down into the boat?
A  The length or the width? Are you talking of the length
or width?
Q  Generally the width and what shape it is, if you could,
please?
A  Right offhand I couldn't tell you just exactly what
the width is. I could estimate just about what it is.
Q  Just an estimate; this is what I am asking for.
A  I would say around six, about six feet, five to six
feet across.
Q  Five to six feet?
A  That's at the, what I would call the bottom end of
the chute; but where the end of the chute is that goes in
the boat, it tapers. I dare say it tapers to four feet.
They are a tapered chute.
Q  They are tapered chutes. What generally is the shape
of the chute itself?
A  Well, the chute itself is about two and a half feet
deep and they are pretty much a square chute, I mean,
they are rounded to a certain extent on the edges.

Q. When they put the chutes down into the hold, how do they put them into the center of the hold so that the pellet strikes first the tank tops or the side of the hold?
A. This varies with the mate unloading a boat, just where he wants it.

He tells our boat loader where to put the chute in the boat. Normally in the starting of the boat, we put them down on the combings.

Q. Down on the combings?
A. Of the boat.

Q. That would be the closest end to the pier?
A. Right.

Q. Would he, during this loading process, move the chute somewhat?
A. Yes. The mate tells the boat loader to raise or lower the spout to whatever the mate wants, where he wants the pellets to be put in the boat.

Q. In your experience, do the boats that come into your loading facility always come in bow first or do they sometimes back into the loading pier?
A. They usually come in bow first.

Q. The first bow first, always?
A. We do have, I would say we do have some boats that do come in stern first, but this is normally not with a
pellet boat or a raw ore boat. This is mostly potash boats.

Q. The pellet boats generally come in bow first?

A. Bow first, right.

Q. As you observed that the kind of loading process that is used there tends to push the boat away from the dock?

A. Yes, it does. I mean, this has a lot to do with the winches of the boat. There is a pressure tendency to put -- or to push the boat away from the dock, if the winches are not -- if he has poor winches, if they are not properly put down. But we stop loading immediately when it happens.

Q. When the boat is pushed away, you stop the loading process?

A. Yes.

Q. Have you had any experience or reports of damage to the cargo holds in the loading process itself?

A. No, sir.

Q. To your knowledge?

A. Not to my knowledge.

Q. Have you had any feel or any indication that loading of this kind of pellets causes a problem with the tank tops or the slope sides of the cargo holds?

A. Not to my knowledge, sir.

Q. That's all I have.

CAPT. ZABINSKI: That's all, sir.
REAR ADMIRAL BARROW: Any further questions?

CDR. LOOSMORE: Yes, I have a couple of quick ones.

EXAMINATION

By Cdr. Loosmore:

Q Mr. Amys, would you know offhand or could you get information on the name of the vessel that loaded at No. 1 East just before the Fitzgerald or just after the Fitzgerald?

A Yes; I could, yes.

Q Both, please.

MR. WICKA: Commander, would you consider the entire length of that dock on the east side or are you talking about the position approximately equivalent to the one where the Fitzgerald was?

CDR. LOOSMORE: The latter.

By Cdr. Loosmore:

Q Did the fact that the belt was down, I think is the phrase you used, does this affect the speed with which you can load a vessel at all?

A No. The belt has nothing to do with the speed of the boat. The pellets are usually in the dock before the boat arrives. Its cargo is usually in the dock.

Q I didn't understand your answer to Capt. Zabinski's question concerning the information about the last report of grounding at No. 1 east.
Did you say that you thought you could provide that
information or that you just didn't have the information?
A. No, sir. Sometimes these boats -- I mean, if a boat
does get on the bottom, there is really no record kept of it.
They merely let us know that there is a high spot there
and that we have to dredge it out and it should be
dredged out.
Q. Then do you go ahead and do that?
A. Yes, sir.
Q. Do you know when the last time that that happened was?
A. No, sir.
Q. If, when you provide this information on the vessel
that loaded just before and just after the Fitzgerald, if
you could provide it in the same form that you had for the
loadings of the Fitzgerald during 1975, the date, the name
of the vessel, if possible the drafts forward and aft,
midships, if you have them, and the quantity of the cargo
taken, I would appreciate it; and also the type of cargo.

That should be addressed to the Chairman of the
Marine Board of Investigation, care of the Ninth Coast Guard
District.

MR. WICKA: Maybe I will have
an opportunity to discuss this after to obtain the
correct address.

CDR. LOOSMORE: Yes.
That's what I have.

EXAMINATION

By Capt. Wilson:

Q You mentioned two different kinds; Butler Pellets and I believe another?
A Butler and National.

Q All right. What's the difference between the pellets?
A It is just the difference in the company. It is different companies.

Q The size and consistency of the pellets are the same then?
A That's generally correct, yes.

Q You said that periodically when you get some build-up in the slip that you have vessels grounded. When do they usually notice this? Is it when they are shifting, or is it when they are done loading?
A This is usually when they are finished loading.

Q Completed and down to their marks?
A Down to the completed marks.

Q To the best of your recollection, does that usually occur during the summertime or in the winter, I mean, in the cold weather?
A I don't think time has anything to do with it.

Q It just happens?
A Whenever it happens.
Q. What is the normal shifting time during the loading operation? How much do they normally spend in shifting?
A. It is usually about an hour.
Q. Usually about an hour?
A. Something like that.
Q. So would you say that during a normal loading operation they would have about one hour for shifting and one hour for deballasting?
A. Each boat is different; I couldn't state for certain.
Q. In this Exhibit 66, the Fitzgerald, it was noted that she used one hour for water.
Would her time spent in shifting be approximately an hour also?
A. According to the way her cargo was laid in the dock, I would say yes.
Q. Do you ever have any chutes down for repair? How do you handle the repair of your chutes?
A. We have a B & B department that comes in and repairs our chutes, maintenance men.
Q. During the time you were loading the Fitzgerald, were there any chutes down for repair in that area?
A. No, sir.

CAPT. WILSON: I have nothing further.
REAR ADMIRAL BARROW: Capt. Zabinski?
EXAMINATION

By Capt. Zabinski:

Q. Did you receive any reports of any difficulties experienced with the loading of the Fitzgerald on the 9th of November?

A. No, sir.

CAPT. ZABINSKI: I have nothing further.

EXAMINATION

By Rear Admiral Barrow:

Q. Mr. Amys, our purpose in being here is to find out to the best of our ability what happened to the Fitzgerald. Part of our process in that was to have you come in here and talk to us and tell us what you know about the loading process.

We asked you quite a few questions, and I will ask you one further question. I will ask you this: Is there anything you can recall from your experience on that day that would give any indication of any problem or any difficulty in the loading that you might tell us about now?

A. No, sir.

Q. Is there anything that we have not asked you that you can recollect which might help us in our purpose here today?

A. The only thing I might say is that in loading boats
at our dock, our chutes do not -- they only go up and
down and not from side to side.

They are straight up and down. There is no forward
or backward.

Q. You said a few minutes ago that in lowering your
chutes into the holds, into the hatches, and I may have
misunderstood you, that they go down far enough to rest
against the hatch.

Is that the word you used?

A. Against the combs.

Q. They can actually, when the ships are in to the pier,
tightly, your chute can actually rest up against the
combing itself; is that correct?

A. Yes.

Q. In the event any damage is done to boats that are
being loaded at your facility by a chute, do the boats
normally report damage to you?

A. Yes, sir, they do. We have to make a report, if
they report any damage done to the ship.

Q. And was any such report made on behalf of the
Fitzgerald during that loading on the 9th of November?

A. No, sir.

Q. Thank you very much, sir.

Is there anything else that you would like to add
to this investigation?
No, sir.

REAR ADMIRAL BARROW: Thank you very much, sir.

You are cautioned not to discuss your testimony with anyone other than counsel until the conclusion of this Marine Board of Investigation.

Thank you very much, sir.

(Witness excused.)

(REcess had.)

REAR ADMIRAL BARROW: Let the record show that we reconvened at 1558.

Counsel for the party in interest, as we commenced today, are present.

Cdr. Loosmore?

CDR. LOOSMORE: The Board calls Mr. Clarence Dennis, please.

MR. WICKA: May I address the Board? May we call the witness back for one clarification with respect to the side of the boat next to the dock involved?

CDR. LOOSMORE: Certainly. Mr. Amys?

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DONALD A. AMYS

was recalled as a witness, and having been previously duly
sworn, was examined and testified further as follows:

EXAMINATION

By Cdr. Loosmore:

Q. Mr. Amys, you are still under oath.

I understand there is some question.

A. Yes. In stating the boat's position to the dock,

he was loading on the starboard side and not the port side

of the boat.

REAR ADMIRAL BARROW: The starboard side
to the pier?

THE WITNESS: Yes, sir. That's all, sir.

REAR ADMIRAL BARROW: He did not back in?

He came in the starboard side straight ahead, is

that correct?

THE WITNESS: Yes, sir.

REAR ADMIRAL BARROW: Very well. Thank you very much. You are excused.

(Witness excused.)

CDR. LOOSMORE: The Board calls Mr. Clarence Dennis, please.

Would you raise your right hand, sir?

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CLARENCE E. DENNIS

was called as a witness and being first duly sworn, was
examined and testified as follows:

EXAMINATION

By Cdr. Loosmore:

Q. Would you please be seated.

Would you please state your name, address and occupa-
tion?

A. Clarence E. Dennis, Box 113, Maple, Wisconsin.

Q. And your occupation, sir?

A. Boat loader.

Q. Mr. Dennis, do you hold a Coast Guard license or
document?

A. No, sir.

Q. How long have you been a boat loader, Mr. Dennis?

A. Roughly 15 or 16 years.

Q. Where are you employed as a boat loader?

A. Burlington-Northern.

Q. Whereabouts?

A. Whereabouts?

Q. Burlington-Northern where?

A. In Superior, Wisconsin.

Q. Have you been at Burlington-Northern, Superior for
15 years?

A. I have been there about 34 years.
Q. Mr. Dennis, were you working as a boat loader on the morning or afternoon of the 9th of November when the Fitzgerald loaded?
A. Yes.
Q. And as a boat loader, what were your duties as far as that loading was concerned?
A. What did you do as far as the loading of the Fitzgerald?
Q. I put the spouts in the boat according to the orders from the mate, until the boat was loaded.
Q. Do you know the name of the mate you were talking to?
A. No, I don't.
Q. Was it the same one all the time?
A. The same one all the time.
Q. How do you know he was the mate?
A. He was an older man, not too tall, stocky and a very friendly guy.
Q. Did he identify himself?
A. No. They don't. He didn't.
Q. Did you have instructions as to which pockets were to be used for the loading?
A. Yes, with the boat book, I know what pockets are to go in and during the loading the mate let me know which ones he wants.
Q. Do you recognize this, showing you Exhibit 66?
A. Yes.

Q. Can you tell me what that is?

A. This page is out of a boat book which we keep at the docks.

Q. Did you make any other marks on that page?

A. I marked all these marks out. When I give the boat another pocket, I mark them off, and right in here is the date when I started the boat, finished the boat, the draft and the water and my initials.

Q. Are those your initials on there?

A. Well, I go by my middle name Ed, and that's why that is there.

Q. Where did the Fitzgerald load; where was the boat when it started to load?

A. The inner end of No. 1 Dock on the east side.

Q. The inner end of No. 1 Dock on the east side?

A. Yes.

Q. What number pocket does that correspond to?

A. The No. 1 hatch lines up with the 2 pocket.

Q. Is that the first pocket inboard?

A. That is the furthest in, because No. 1 is on the opposite side.

The odd numbers are on the west side.

Q. Are there as many pockets as there are hatches?

A. I don't understand your question.
Q. If No. 1 hatch was lined up with No. 2 pocket, then was No. 2 hatch lined up with No. 4 pocket?

A. It was lined up with No. 6. It is every other one.

Q. Every other one?

A. The way the boat is built it is every other one, and this had 21 hatches.

Q. And you said you selected whichever pockets the mate wanted?

A. Yes, sir.

Q. What kind of conversation went on about that?

A. Well, you ask the mate if he is ready to load. If he is, you start loading, and he goes from aft to forward.

He says that he wants a run.

Q. What is a run?

A. Everyone to 21, from 2 to 21. You see, those numbers vary. They are 2, 6, and it goes out into the 80's where that would be a run, 21 of them.

Q. The way I count this, you would start from 82 and then --

A. Yes, sir.

Q. -- do you go down and verify that number then?

A. Yes, sir.

CDR. LOOSMORE: I am referring and so is the witness to Exhibit 66.
Q. So you took one run and then what happened?
A. Then he told me -- I tell him what he's got and I
give him the list, the loading list, just similar, the
same as that.

It is a duplicate, and then he shifts 12 feet and he
takes the opposite run.

He said he wanted another run right through. He took
21 more.

Q. Do you recall what pockets those were, then?
A. Well, that would be right opposite that.

This copy is blurry.

Q. Let me have you refer to the original of that.
A. Yes. 86 would be right opposite, so it was 88.

Q. Is that another full run?
A. That's another full run, which he wanted.

REAR ADMIRAL BARRON: Was that in the opposite
direction?

THE WITNESS: No, he went back aft
and started loading forward again.

By Cdr. Loosmore:

Q. All right. Then what happened?
A. Then he shifted and took back aft 5 or 6. I am not
positive because so many boats you load, you don't pay
attention because some of them do it a little different.

Some might take 7, 8 and then stop for water and they might
even take three runs and take back aft, but he took about five or six after the first full run and he said he was going to stop for water, water ballast.

Q. What does that mean?
A. He's got to pump out his water in the tanks. The way the pellets, he's got them down as deep as he wants them, so he's got his water out, so he would have, I would imagine, his true weight, his load.

Q. Where are you when this is going on?
A. I am on top of the docks at the machines, the loading machines.

Q. As the vessel is loaded, and then he pumps out his ballast and it is loaded some more, how much does it move up and down?
A. I don't know.

Q. How much would you estimate?
A. I am not sure. A couple of pockets could sink him down maybe a foot, two or three pockets, I am not positive.

Q. How about a whole run?
A. I don't know. I don't know how much a run of those pellets would do to that boat.

Q. Was that boat a great deal different in size from the other boats that you load?
A. They all vary quite a bit. There are a lot with 18 hatches. This was a 21, and then you have 20's and 19,
24, 25, and some of those lengthened ones are 24 and 25 like the Beighley and the Sherwin.

They are lengthened boats, but they are all a little different, but they do things with the loading pretty much the same. They load through like that and then they get the stern end down so they can get the water pumped out easier, I would imagine.

Then, when he comes back, he might continue with the run. I am not positive. I am not sure just what he did because I load so many boats, but sometimes they will jump up forward and load down so that the boat is probably, then with the water out, and then he knows where he is at, with his depth.

He knows it is all true, the weight of the water, and then he might -- they load every boat -- every boat loads more on the end, the end compartments and they put less in the middle.

Q. As well as you can remember what the Fitzgerald did with that copy, which you called a boat book, is that right?

A. Yes.

Q. With that copy of the boat book which is there in front of you, after he had taken two complete runs, which, as I believe you said -- is that right?

A. Yes.
Q  -- then he went aft?
A  Yes.
Q  Did the whole vessel move after? Did he have to shift all the way?
A  Yes, all that ore is gone out of those pockets. He had to shift back and line up for how many he wants to stop for water, to pump out.
Q  So then he shifted a few feet after; how many did you say?
A  Probably five or six.
Q  Then he stopped for --
A  For pumping out, for the water, which is what we call it.
Q  Then about how long did that take him?
A  Like the book shows, about one hour.
Q  Was that the only time it was done?
A  Yes, that's the only time.
Q  And then what?
A  Then after that hour, he blew the signal. Then we went back out and finished loading the boat where he wanted it loaded.
Q  As well as you can remember, what was the next load that you took?
A  I am not sure.
     Like I say, they take here and there when they are
loading; especially, they start loading the ends more, and it is hard to remember just what sequence it was loaded.

Q. Did he ever take another full run through, as far as you know?

A. I don't think he did. I am pretty sure he didn't take a full run through after the two. I am not positive, but that is my feeling.

Q. Did you go along and verify that all of the pockets that were on that list were full before the loading started?

A. Every one I gave was full, except the ones that are marked 100's.

Q. Okay. What does that mean?

A. The ones that are hundreds are hundred tons. As it shows, they are checked out, and he took them when he finished.

Q. Do you remember where they went?

A. I am not positive, but it is always in the middle hatches, in the middle part of the boat.

Q. Well, that exhibit shows that there were only two of those, I believe?

A. Yes.

Q. Is it then the case that every one -- every other one of those was a full pocket, every other one that was used?

A. Yes.

Q. Did he ever put part of one pocket in one hatch
and part of it in another?

A. No. We don't split pockets, as we call it.

We don't do that about pockets.

We tell him he has to take it all or none. That's why he finishes with hundreds.

He will say, "I can't take a 300, so I will take a 100."

Q. Okay. Do you recall how many shifts had to be made in order to do that?

A. No, I don't.

His load was to the middle of the dock, so his shifting was just in the inner half of the dock.

He finished at 192, and that is right around the middle. So the shifting was never too long.

Like Mr. Amys said, his shifting time was down on account of his load was in the inner half instead of from one end to the other.

Q. Did you deal with the same mate all the time?

A. Yes. That boat I did.

Q. Do you know what trim lights are?

A. Yes.

Q. Did this boat have them?

A. Trim lights? Yes. That is what I watch.

Q. That is what you watch?

A. I watch and the mate watches that.

Q. What do they mean?
A. I try to keep that boat straight in loading, and the mate is there to see that I do.

When it is on the white, I know he is straight.

When he is not always straight is when you start watching, and he has to be in a little bit with the loading. That's the way it goes.

That is why you move the spouts up and down.

Q. Who does that?

A. I do.

Q. How do you do that?

A. With levers. There is a lever we call the clutch that pulls it up, and there is another one which is the brake, which stops it.

Q. What does that do when you pull on the clutch and the brake?

A. When I pull on the clutch, it pulls the spout up, and when I pull on the brake, it stops it. The foot brake just holds it.

Q. And what does that do as far as the cargo is concerned?

A. It trims the load.

Q. Do you wave the chutes back and forth?

A. No more than you have to, because it is a lot of work. You move them up and down as to what the mate wants.

If the piles are getting larger, he might want it up
more to keep the boat straight.

If he is pretty well loaded, he wants it up straight.

Q. Do you do one chute at a time then?
A. Yes. I put down one at a time.

Q. How much of a crew do you have working for you?
A. That day I had two helpers.

Q. And what do they do?
A. Pull the spouts.

Q. Pull the spouts?
A. After the pockets are emptied out, they shut the doors and pull the spout up where it belongs.

Q. How long does it take for a pocket to run out?
A. Well, I have never timed it, but like Mr. Amys says, it is around two minutes. I would say it would be around that.

Q. Once you start, do you walk away and let it run in, or do you watch carefully?
A. You have to watch pretty carefully. On the first two runs, you can set your brake and walk away to the next one.

Then your partner is watching it, too. For that day, I had two good partners.

Q. Did you ever load, not necessarily the Fitzgerald, but a boat with hot or warm cargo?
A. Yes, warm.

Q. How do you know?
A. You could see the steam sometimes. This is especially true in cold weather.

You can see a little steam that comes up.

Q. Could you see that on the day you loaded the Fitzgerald on Sunday?

A. Not that I recall.

Q. What kind of a day was it?

A. It was a nice day. It could have been a little cloudy, but it was not a stormy day but a nice day, because I didn't mind being out there at all.

In fact, I thought it was a nice day.

Q. Do you have any idea what the temperature was?

A. No; I don't.

Q. Have you been doing pretty much this type of work for the whole 34 years with Burlington-Northern?

A. Yes, and I operate other machines, too.

Q. Well, sure. How many boats would you say you have seen loaded?

A. I couldn't say because there are so many.

Q. How many a day?

A. There have been three or four.

Q. Three or four a day for 15 years?

A. Well, there are days that there might not be a boat in, and then we do other work like dumping ore and other dock maintenance.
Q. Had you loaded the Fitzgerald before?
A. No, I didn't.
Q. You never did before?
A. No, but I have loaded them even bigger. Like I say, there are bigger ones.
Q. This was a pretty good sized ship, wasn't it?
A. Yes, it was. With pellets, it was a nice ship.
I wouldn't mind loading it every day.
Q. What made it a nice ship?
A. There were no troubles. The mate was jolly.
With pellets, I don't think you have any trouble with the boats at all. It goes so good compared to raw ore.
Q. About how long did it take to load, do you have any idea?
A. I would imagine roughly around -- roughly, I would imagine, around four hours.
Q. Were you out there for the whole time then?
A. Yes.
Q. Was the mate out on deck the whole time?
A. Yes, and he had a partner with him, too.
Q. But this one guy was there the whole time?
A. He was there all the time.
Q. Did they put any of the hatch covers back on while they were finishing up?
A. That I can't recall.
Q. You don't handle those things, do you?
A. No. This time of the year you see them really doing it, but then it was such nice weather that I don't recall them doing it.

In the summertime, they will do it when pulling out from the dock.

Q. What do you mean "really doing it"?
A. In winter weather, when you get done with the part he is loading, he is putting the hatches on right quick.

Q. Were you standing there when the Fitzgerald came in?
A. No; I wasn't. I was in our quarters and Don brought me down the book, and it was time to go to work at 7:30, which is when we start, and I went to work.

Q. Was the ship there by then?
A. Yes.

Q. Did you watch him leave?
A. No, I didn't.

Q. About how long from the time that you finish up does it generally take until the vessel leaves?
A. It varies. Sometimes they might be waiting for somebody, or with hatches, some boats have harder, you know, problems with hatches than others, and it might vary and there is also the weather.

Q. Did you happen to notice at any time later whether they were gone or were waiting?
A. I went to the office to give Don the book.
Q. Yes.
A. I didn't pay no attention.
Q. So you don't know whether they stayed there a long time or not?
A. No, I don't.
Q. Have you ever seen a vessel ground to the bottom while you were loading? Have you ever seen that happen?
A. It happens, but it didn't happen with him because he would have told me. The mate will tell you.
Q. Do they know?
A. They know when they start to pull away with the winches and they are hardly moving and then they know.
Q. What do you mean pulling with the winches?
A. When they move the boat. They've got two winches forward and two winches aft, which moves the boat, and if they don't move very good, then the mate knows it and he will let us know.
Q. Then what happens?
A. I don't know.
Q. What do you do when they let you know?
A. There is not much I can do, just -- you don't know until he moves off and then if he is continuing finishing up the load, then you go where you have more ore to finish up what is in your book.
Q. They don't move until you have loaded all of the pockets in the particular area where you are, do they?

A. No.

Q. What do you do while they are shifting?

A. I am walking to where they are going to start loading and I stand there and sometimes freeze.

Q. What do you do while they are pumping out water?

A. I go in and probably eat.

Q. Do they try to combine moving and pumping at the same time?

A. Yes, they do that. In fact, that is what they do. They shift a little bit slower to get the water out.

The water pumping is shorter --

Q. It is shorter because they are moving at the same time?

A. When they are shifting, they are pumping water and if they shift a little slower, they get that water out while they are shifting, while they are working out there.

Q. You keep pretty good track of the pumping time?

A. Yes.

Q. Why?

A. It is our orders.

Q. You keep track of the shifting time, too?

A. I don't.

Q. How come?

A. I ain't told to.
Q. Okay.
A. I would have to have my watch on all the time, so I am not told to do it, so I don't.
Q. All right. Do you know any way that we can figure out, based upon the boat book or any other records that are kept at the dock there, how much cargo was where on that ship?
A. I couldn't answer that.
Q. Have you thought about that?
A. The office keeps track of all the records and I don't know.
Q. Do you keep a notebook or anything?
A. No, just the boat book.
Q. Did the mate have a notebook that he was referring to?
A. They do and he did. He marks down whatever he marks.
Q. What did it look like?
A. Just a sheet of paper and then I give him a sheet like this (indicating).

   It is a duplicate like this. He gets that and he knows what he's got and he knows where to move a little bit, but I will tell him. Sometimes he tells me because he is the boss. The mate has got to sail that, so he is the one that watches close.
Q. Did he have a little book, though, that he was working from?
A. They all have a book; yes.
Q. Will they have the same kind of book?
A. I don't know. That I don't know.
Q. You deal with all the mates. If you deal with a mate every time --
A. They are down there. You don't see. You are so busy with your own book, you don't know what they are marking down; so I really don't know if it is a sheet they've got in there or what. If it is in a book with a sheet or if it is in a regular book, I don't know.
Q. When you first start out, do the two of you kind of get together and talk face to face about it?
A. Yes, we holler at each other.
Q. You holler at each other?
A. We don't have a walkie-talkie with the mate, so we have to holler.
Q. Does he come up to the dock?
A. The mate didn't.
Q. The Fitzgerald mate didn't?
A. His first mate didn't.
Q. Did the guy you were talking to, was he the first mate?
A. I presume that he was. He was a short, very friendly man and it is usually the first mate.

If he goes to eat or something, then the second mate would do the loading, so they don't stop loading.
He is always there at the important times. He is there especially when he is finishing.

Q Where do you get the draft marks?
A I get the draft from the mate. When he is done and he says, "That's all," I ask him his draft and he hollers up the draft and I mark it down.

Q Do you ever check it?
A No.

Q As you are walking up and down the dock, do you look and see?
A It never interested me, so I don't do it.

Q Do you know whether they had midship marks on the ship?
A They all do.

Q Did this one?
A I wouldn't swear about it.

Q You didn't notice it?
A No, I didn't notice it.

It is against the dock and where I am at, you wouldn't be able to see them. I would have to be on No. 2 dock to see it.

Q How do they see it, if they all had them?
A They have a boy that they put over the side and he is watching that midship, but he didn't give me -- a lot of them don't give you the midship draft, but he's got a
man on the ends, on the stern, and up forward where the marks are. He has a man down there watching close and that's how he regulates his loading.

When he gets done, he has that man, one of his mates, I imagine, get the marks and he is right down there on the dock and he could see the numbers and he calls it to the mate over his walkie-talkie and the mate gives it to me, when he is done.

Q. What do you mean right down there at the dock? Does he actually go ashore?

A. Where the deckhands watch and pull the cables. They have one of the mates down there when the boat finishes, so he gets those figures accurate.

Q. These are people from the ship that go ashore?

A. From the ship, one of the mates from the ship.

Q. Is there anybody who works at the dock that is ashore down there that is looking at these things?

A. No, no.

Q. So would there be anybody that might know what the ship marks were like?

A. I couldn't answer that.

Q. What was going on in the Fitzgerald when you walked down the dock and were all finished? Were they waiting for somebody?

A. Not that I know of.
Q. Was there any activity on the deck?
A. Yes. I don't know about him, but they always get the hatches closed and start with pulling the winches. It is a general procedure.

Q. To pull a ship out?
A. They move it out and the guys get aboard and they get under their own power and move out.

Q. Do they use a tug?
A. The Fitzgerald didn't. Most of them don't any more. They have bow rusters, and the weather was good, so I would imagine he went out under his own. I am just presuming now.

Q. Was it windy?
A. No, it wasn't. Like I said, it was a nice day for working outdoors.

Q. What day of the week was it?
A. Sunday.

Q. Sunday?
A. Did you load another ship right after at that same place right after that?
A. I didn't. It was the following day or the day after that -- I didn't.

Q. Did you work or was it just that that dock wasn't used?
A. Well, I worked, but I was on another job on Monday, but Sunday I know I was loading because I was the senior
boat loader that day.

Q. Does that mean that you get to pick out the dock you want?

A. This was the only boat and I had that boat to load.

CDR. LOOSMORE: That's all I have.

REAR ADMIRAL BARROW: Capt. Wilson?

EXAMINATION

By Capt. Wilson:

Q. Have you loaded a boat at that same dock since the Fitzgerald was loaded?

A. I don't know. Not that I can recall.

Q. How far in advance of the boat's arrival are the pockets loaded?

A. I don't know. The office knows that. Mr. Amys knows that. They know that better than I do because I just work out on the dock.

Q. Were there any unusual delays while the Fitzgerald was being loaded?

A. No.

Q. Just a smooth load?

A. Very good.

Q. Did anyone from the Fitzgerald give you any indication of any problems?

A. No, they didn't. Everything seemed to be very well.

Q. Were there any, to your knowledge, or did you notice
while you were there, any problems or indication of
machinery problems on the ship?
   Did she start making black smoke or anything?
A. No, not that I noticed. Everything seemed to be
   fine.
Q. Now, you mentioned this and I am not sure I wrote it
down properly.
   How many pockets did the Fitzgerald take before they
stopped for water?
A. Well, they had 21, 21, and about five or six back aft
   and he stopped for water for an hour.
Q. And then he stopped for water for an hour?
A. Yes.
Q. Is that the usual time it takes them for water or
   was he a little faster than some?
A. Different boats are different. Some have better pumps.
   Some are smaller, some are bigger, and some take two or
   three hours and some 15 or 20 minutes.

(N.B.: See next page.)
Q. It is pretty hard to tell?

A. It is hard to tell, yes.

CAPTAIN WILSON: That's all I have.

REAR ADMIRAL BARROW: Captain Zabinski?

EXAMINATION

By Captain Zabinski:

Q. Mr. Dennis, do you have any Coast Guard license or document?

A. No, sir.

Q. So you are not a seaman or have never been a seaman?

A. Not in the Navy or Coast Guard.

Q. How about the Merchant Marine?

A. I sailed two seasons on the Great Lakes before I hired out. I was with Great Northern then in '42. About '40 and '41, I was sailing on the Joe Morrow steamship.

Q. Did you have seaman's papers?

A. I had co-passing and I had a fireman and oiler papers.

Q. How well do you remember the loading of the Fitzgerald on the ninth of November

A. Well, I said it was just a regular ordinary loading procedure, and everything seemed fine because the mate was well content and jolly.

The boat was straight, when he finished with the two one-hundreds.

Q. How do you know?
A. He was on the white light. There is a red and green on each side also.

Q. When you say he made a run or two runs, I think you indicated, on the first run, as I understood your testimony, he started at the 21 hatch, then 20, 19, 18, 17, and he goes on up the deck? Is that what you mean by a run?

A. Yes.

Q. And he put 300 tons or a pocket in each one of those hatches; is that what you are saying?

A. Yes.

Q. Then he shifted, and he took another run?

A. Yes, sir.

Q. Did he again start at Hatch 21, 20, 19, 18 and go up the line as best you can recollect?

A. Yes.

Q. And he stopped for ballast?

A. And he shifted and picked up about five or six pockets back and stopped for water.

Q. But you are fairly certain that when he loaded, he started off in the aft hatch and progressed on each hatch going forward?

A. Yes, sir.

Q. On both runs?

A. Yes, sir.

Q. Did you go aboard the Fitzgerald at all?
A. No, sir.

Q. Do you go aboard the ships normally, Mr. Dennis?

A. No, sir.

Q. Do you get a cup of coffee or anything while it is taking off ballast?

A. No, because it is too hard to get to the boat. There are stairways at each end of the dock, and it would be too much trouble to walk.

Q. You say you are on the dock. About how high are they?

A. About 100 feet high.

Q. So it would be easier for you to get your own coffee?

A. I can get my coffee easier from my own lunchbucket, yes.

Q. Do you know if before the ship came in if there were any repair crews waiting for the ship to come in?

A. No; there wasn't.

Q. Do you know if there were any people waiting on the dock for the Fitzgerald to come in?

A. I didn't see or notice if there were any people. In fact, I didn't even notice -- like I didn't notice any men's wives that had come aboard. That is what struck me funny.

You know, I figured after the accident, I figured everybody maybe was from the lower Lakes, down here. There could have been, but I didn't notice passengers.

Q. It is not unusual to have some of their families to come
down and spend a couple of hours with the crew? Is that
the way it works out?
A. Yes, sir.
Q. To your knowledge, nothing went wrong with the loading
of the Fitzgerald?
A. No, sir.
Q. It loaded in a normal way?
A. A very normal way.
Q. And you have loaded it before?
A. I don't recall loading the Fitzgerald.
Q. This was the Fitzgerald?
A. For the Fitzgerald, yes.
Q. How do you know the mate was so jolly?
A. He would wave at us, and he even said, "So long fellows.
Good luck," and this and that.
He was a good friendly guy. He was not muttering away
or angry.
Q. Is that unusual on these Lakes, Mr. Dennis?
A. I suppose it is personality. Some mates are grouchy,
and some are nice guys.
CAPTAIN ZABINSKI: Thank you.

EXAMINATION

By Rear Admiral Barrow:
Q. Mr. Dennis, would you have known if there was someone
from a repair facility who had boarded the Fitzgerald during
the loading process?

A. Well, as far as I know, I would have because it is usually a shipyard scow that comes up and ties up beside the boat, and you see those men working on the boat with welding torches.

Q. They would have come by the boat instead of bringing a truck down through the gate?

A. Sometimes they come by truck. If it is major, they will come with that scow with all their major equipment.

Q. A repair facility had sent someone down by truck, would you have known this or not?

A. That I couldn't say. I didn't notice. That's what I noticed, there were so few visitors, like wives.

Q. Is there a security office entrance into the facility?

A. Yes, there is.

Q. And do people have to check into there, and do they have to identify themselves before they go down and board the vessels?

A. Yes, sir.

REAR ADMIRAL BARROW: I would ask that the records of the loading facility security office be checked for visitors to the Fitzgerald during that loading process and be furnished to the Chairman of the Marine Board of Investigation.

THE WITNESS: There is a gate we have
to go through, and they have to check in with the guard.

Q. I understand. But you noticed no scow or any trucks alongside during the loading process?

A. I didn't see anything of that nature.

REAR ADMIRAL BARROW: Counsel?

MR. MURPHY: I have no questions.

REAR ADMIRAL BARROW: Thank you very much, Mr. Dennis. I will ask you now -- do you have another question?

CAPTAIN WILSON: Yes, sir. I have just one question if he could include on the request for anyone who signed in to go to the boat, perhaps anyone that left also, anyone that left the boat through the dock office.

EXAMINATION

By Captain Wilson:

Q. Would a person leaving the ship for any reason have to sign out at the dock office or the security office?

A. The security gate, that's out at the gate. They have a building, and there is a guard there.

REAR ADMIRAL BARROW: I think I would ask for the same information; that if someone left the Fitzgerald during the loading process and if that information is contained within the loading facility, that we be furnished that information also.
By Captain Wilson:

Q. Did you notice, while the Fitzgerald was there, did they take on fuel?

A. That I don't recall. I don't recall that.

I don't recall if the fuel boat was there, if he got fuel there.

Q. And there would not be any record anywhere?

A. That I don't know, unless it was with that fuel company in Superior.

They would have the records.

CAPTAIN WILSON: Thank you, sir.

REAR ADMIRAL BARROW: Thank you, Mr. Dennis.

We have asked you a number of questions. I will ask you one more.

You know our purpose here is to find out the cause of the sinking of the Fitzgerald.

If there is anything within your knowledge at this time which we have not asked you and you have not told us, which would help us in our purpose, I would appreciate it if you told us now.

THE WITNESS: I told you all I know, sir.

REAR ADMIRAL BARROW: Is there anything you can add?

THE WITNESS: Nothing unusual.
Rear Admiral Barrow: Thank you. You are excused, and you are cautioned not to discuss your testimony with anyone, other than counsel, until after the conclusion of the investigation.

MR. WICKA: May I approach the Board for the name and correct address for mailing this material?

Rear Admiral Barrow: Yes, sir. Let's go off the record.

(Discussion had off the record.)

Rear Admiral Barrow: Call your next witness, please.

Commander Loosmore: The Board calls Lieutenant Commander Mason.

Rear Admiral Barrow: May we take about a five-minutes recess?

(Recess had.)

Rear Admiral Barrow: Let the record show that we reconvened at 1655. Counsel for the party in interest, Oglebay-Norton, present as before.

Commander Loosmore, call your next witness.

Commander Loosmore: Would you stand, sir? Would you raise your right hand.
ROBERT W. MASON

was called as a witness and, being first duly sworn, was
examined and testified as follows:

EXAMINATION

By Commander Loosmore:

Q  Be seated, please.

Would you please state your name, rank, serial number
and duty station?

A  Robert W. Mason, Lieutenant Commander of the United
States Guard, Serial No. 7522, assigned as Chief, Merchant
Marine Technical Branch, 9th Coast Guard District, Cleveland,
Ohio.

Q  Commander Mason, do you hold any Merchant Marine
license or document?

A  No, sir, I do not.

Q  How long have you been assigned as Chief of the Merchant
Marine Technical Branch?

A  Since the 19th of July 1975.

Q  What were your duties prior to that?

A  As Assistant Chief of the same office.

Q  How long have you been a commissioned officer?

A  Since the 6th of June, 1965.

Q  Where did you go to school?

A  Graduated, 1965, U. S. Coast Guard Academy, graduated
in 1972, University of Michigan.
Q. What did you study at Michigan?
A. Studied science, specializing in naval architecture and marine engineering.
Q. Did you get a degree from Michigan?
A. I got a Masters degree in engineering.
Q. Are your duties here in the 9th Coast Guard District related to merchant vessels or Coast Guard vessels?
A. Merchant vessels.
Q. What specifically? What aspect of merchant vessels?
A. As far as the evaluation from the standpoint of blueprints and stability, to insure that vessels being built, converted or altered and coming under the cognizance of the Coast Guard Regulations, are in compliance with those regulations.
Q. You mentioned stability. Does your office, do you or your staff supervise stability tests?
A. Yes, sir.
Q. Are you familiar with the Edmund Fitzgerald, the vessel which is the subject of this Marine Board of Investigation?
A. I have never been on it, no, sir.
Q. Are you generally familiar with that type of vessel?
A. Yes, sir.
Q. Did your office have or does it have a file on this vessel?
A. Yes, sir.
Q. Does that file contain any stability information as far as the vessel was concerned?

A. Yes, sir, it does.

Q. What was that information?

A. It consists of the loading manual for the vessel and the 1973 load line regulations, a set of light ship and bending moment shear diagrams prepared by R. A. Stearn and strength calculations under the 1968 strength standard.

Q. Do you have any information concerning the requirement for a stability test on that vessel?

A. Yes, sir.

My office wrote a letter which indicated a stability test would not be required for the vessel under these 1973 load line regulations, due to comparisons with other vessels and the inherent stability of the vessels, based on those comparisons.

Q. Do you have a copy of that letter with you?

A. Yes, sir, I do.

Q. You handed me a copy of a letter dated 23 October 1973. I have here Exhibits 51-D and 51-E, dated 23 October 1973. Is that the same letter that you showed me?

A. It is the same.

Q. And that is the letter which approved the loading manual and also said that a stability test was not required?

A. No, sir. This letter approves only the stability of
the vessel. There is another letter approving the loading manual.

Q. What letter approves the loading manual?
A. There is a letter issued by my office dated 23 October 1973 to the submitters of the loading manual.

Q. I have here an Exhibit 51-C. Do you recognize that?
A. Yes, sir, I do. That is the letter in question.

Q. All right. Exhibit 51-D, as you testified, says that a stability test was not required for the Edmund Fitzgerald. What was the basis for that decision?
A. There were certain letters written back in the 1950s, which said that due to the inherent strength of the vessel, no stability test would be required for Great Lake straight deck vessels. There is also a Merchant Marine technical note in 1966, which gives comparisons of similar vessels to be used for evaluation to determine if stability tests are required.

The regulations in subchapter I, which is for the cargo and miscellaneous vessels, allows the Coast Guard to determine if or if not a stability test is necessary, due to the proportion and arrangements of the vessel.

Q. Taking those one at a time, do you have a copy of that letter?
A. I don't have a copy of the letter, no, sir.
I believe it has already been introduced as evidence.
Of which letter? The mid-1950s letter that you were
talking about?
A Yes, sir.
Q All right. Perhaps we will have you describe that
letter a little better.
Do you know who it was written from or who to?
A I don't have that data right now, no, sir.
Q Do you have a copy of the m.m.t. note with you?
A Yes, sir, I do.
Q May I see that, please?
A (Handing.)
Q I have a copy of a Merchant Marine Technical Note,
The subject is Compilation of Data on Cargo Vessels,
Tankers and Bulk Carriers.
Commander Mason, do you know offhand if any of the cargo
vessels listed on the enclosures here are Great Lake type
carriers?
A None of the vessels listed on the enclosures there.
The last two pages refer strictly to dry bulk carriers.
None of those vessels are Great Lake vessels.
Q Then does this Tech Note apply at all?
A Yes, sir, the Tech Note applies in that the stability
criterion for oceangoing vessels is the same criterion for
the straight deck Great Lakes carriers. The proportions and
arrangements of the Great Lakes carriers are such that the 
resultant metacentric heights of those vessels are much 
greater than what is available in the ones listed.

COMMANDER LOOSMORE: I would like to make 
this exhibit, this Tech Note Exhibit 69. This consists 
of eight pages.

(Pause.)

REAR ADMIRAL BARROW: Let the record show that 
the Board has looked at this particular exhibit. It 
contains no information of direct contact on the Board's 
consideration. I don't think it is necessary.

It is simply a listing of other vessels. It has 
no message for the Board's purpose here.

By Commander Loosmore:

Q. Are there any other instructions or any other written 
information which concerns the lack of requirement, if I might 
put it that way, for a stability test on the Fitzgerald.

A. Written information as to setting a lack of a stability 
test is set up in the resultant letters, and when I say 
resultant, I mean they are the result of several conver-
sations between the personnel at this office and the personnel 
at headquarters, two letters signed by the then Chief of the 
Marine Safety Division, 9th Coast Guard District, going out 
to industry, and one from the Commander of the 9th Coast 
Guard District and to the Commandant, m.m.t., setting up the
stability requirements under the 1973 load line regulations.

Q. Do you have a copy of those with you?
A. Yes, sir, I do. This is the letter from the District commander.

Q. This letter seems to refer to some enclosures. Do you have copies of the enclosures?
A. No, sir, I don't at the present moment. I can obtain them for you if you desire.

Q. This letter also refers to a Commandant letter which preceded it.
   Do you have a copy of that letter?
A. I have it in my office. I do not have it with me.

Q. Before I request this be marked for identification, as I understand what you said, this letter is one of the letters which says that a stability test for a vessel like this is not required?
A. Yes, sir, the first one dated June 14 states the policy. That letter to the Commandant states that we are continuing that policy.

Q. All right. Let's look at the 14th one first.
A. All right.

COMMANDER LOOSMORE Sir, I have in front of me a copy of a letter, File 5948 of 14 June 73 from the Commandant M, 9th Coast Guard District, with a hand notation, and the subject is: "Great Lakes Load Lines
Rule Revision, Coast Guard Approval Action."

This includes a phrase or something, "As regards to stability straight deck bulk carriers and barges will be accepted with no required submittal." It is signed by Captain Austin. I would like to have this marked as 69-A and -B for identification.

REAR ADMIRAL BARROW: It will be marked as 69-A and -B for identification.

(Exhibit No. 69-A and -B was marked for identification and made a part of the record.)

REAR ADMIRAL BARROW: Off the record for a minute.

(Discussion had off the record.)

By Captain Loosmore:

Q Commander Mason, would it be possible to obtain a distribution list for this letter of June 14th, 1973? Do you have such a list?

A I do not have it in my file, no, sir.

I do know from experience, with having been through this, who that letter was sent through.

Q Would you obtain -- would you attempt to obtain a list to whom it was sent and forward that to the Board?

A Yes, I will.

MR. MURPHY: I think in that instance,
Mr. Chairman, counsel is entitled to a copy of that
list, too, if you will, please.

REAR ADMIRAL BARROW: I think the record
should show that this is a form letter and I am
assuming it was sent to the marine industry within the
9th Coast Guard District.

Is that a fair statement?

THE WITNESS: Yes, sir, all designers,
shipbuilders and operators.

REAR ADMIRAL BARROW: If you can find such a
list, would you furnish it, please?

THE WITNESS: Yes, sir.

REAR ADMIRAL BARROW: Fine.

By Commander Loosmore:

Q. Now, the other letter that you had was this 2nd of
August letter.

A. Yes, sir.

Q. What did this say?

A. That states to the commandant that we are continuing
the policy of not requiring a stability test for the
straight deck vessels.

Q. Does the letter of 2 August 73 contain anything in
addition to the 14th June letter?

A. No, sir.

REAR ADMIRAL BARROW: Off the record, please.
(Discussion had off the record.)

REAR ADMIRAL BARROW: Back on the record.

By Commander Loosmore:

Q Is that it, as far as written instructions that you
have or your office has concerning the requirement or a lack
of a requirement for a stability test for Great Lakes' ore
carriers?

A We have a stability criteria for Great Lakes vessels
and we have the regulations which state that if the commandant
is satisfied, that due to the vessel's proportions and
arrangements, more than adequate stability is available, a
test will not be required.

Q You said you have the criteria?

A Yes, sir.

Q How -- where is that contained?

A That is set out in the Merchant Marine Technical Note
No. 965.

Q I am looking at the copy of the Merchant Marine Technical
Note No. 965, which is entitled, "Mean Bulk Cargo Heeling
Moments Determination of Values."

Would you repeat what this does?

A The formula at the bottom of the first page sets the
stability criteria for Great Lakes bulk carriers.

Q How do you use that criteria?

A That criteria is basically used based on data in a 1932
Society of Naval Engineers' paper from a gentleman by the
name of Niedermeier, developed within the Coast Guard by a
gentleman by the name of Magee, and only set down, besides in
that m.m.t. note, in very rough notes provided to me from
Coast Guard Headquarters.

Q. Well, since no stability test is required on these
vessels, how do you obtain the data in order to tell whether
or not a particular vessel meets this criteria or not?

REAR ADMIRAL BARROW: May we go off the
record for a minute, please?

(Discussion had off the record.)

REAR ADMIRAL BARROW: Back on the record.

By Commander Loosmore:

Q. I am looking at Merchant Marine Tech Note 9-65.

Before I offer this as an exhibit, have you done
stability calculations on the Fitzgerald or a vessel like
the Fitzgerald in spite of the fact that you have a statement
in a policy letter that says that stability tests are not
required?

A. We have done calculations, yes, sir.

Q. Have you used this information in connection with these
calculations?

A. Yes, sir, we have.

Q. And can you summarize the general results of those
calculations?
A. Yes, sir. What happened is the previous Branch Chief and myself both arrived in a six-month period. We questioned the absence of a criterion in a letter file stating that no stability test was required.

At that time there were two self-unloading vessels being built.

We took the stability criterion set in that, applied them against the self-unloading vessels. Okay?

Those vessels have a higher center of gravity due to the unloading equipment. We took a series of straight deck vessels, using their length, breadth, depth and known hydrostatics, in assuming a center of gravity at one-half the depth of the vessel and found out in all cases the vessels which ranged in length from 630 feet up to 820 foot far exceeded the stated criterion.

Q. What criteria?

A. The criteria he has in the memo.

Q. Can we identify that?

A. In Tech Note 9-65, sir.

Q. Then what did you conclude as to the lack of requirement for a straight deck stability test?

A. We concluded that vessels built as known Great Lakes straight deck vessels, due to their proportions and arrange-ments far exceeded the Coast Guard stability criteria.

COMMANDER LOOSMORE: Since the criterion
included in this Tech Note is the basis for the
reevaluation of the question of a stability test I
think perhaps we could have it, or I feel it is
important that it is before the Board, and I would
request that it be marked Exhibit No. 70 for
identification.

REAR ADMIRAL BARROW: Mark it 70.

COMMANDER LOOSMORE: It consists of two
sheets, and I will mark it 70-A and 70-B.

REAR ADMIRAL BARROW: So marked as 70-A and
70-B.

(Exhibits 70-A and 70-B were
marked for identification and
made a part of the record.)

By Commander Loosmore:

Q Does your office get involved in any questions
concerning load line statements?

A Yes.

Q Do you have any information on the load line statement
for the Fitzgerald?

A Yes, sir, I do.

Q Particularly in the load line statement which was
recently changed in the 1973 Regulations?

A Yes, I do.

Q How did your office get involved?
A. Under the 1973 load line regulations, the Coast Guard became involved in approving the loading manuals for the vessel and insuring that stability and loading information was available on each of the ships to be issued in 1973 load line for the use of the master of the vessel.

Q. Did you do any structural calculations?

A. Yes, sir, we did.

Q. What type of structural calculations?

A. We did calculations relating to the longitudinal strength of the vessel in accordance with the Interim Great Lakes Strength Standard.

Q. What were the results of these calculations?

A. The results of the calculations showed that the vessel as built met the Interim Great Lakes Strength Standard.

Q. Is that standard still in force?

A. Yes, sir, it is.

Q. Did your office do the calculations to determine the load line itself?

A. No, sir. The American Bureau of Shipping is assigned by the commandant as the issuing authority for the load line and they do the calculations.

Q. Do your records indicate what the date of the plans that you used for the structural calculations were?

A. The calculations only relate that the section modulus values were obtained from Columbia Steamship Company.
I have since verified those with drawing takings and
the Arthur B. Homer, which was a sister ship to this. The
Homer is being lengthened, and when we did the midship
calculations, we compared it against the existing vessel and
the lengthened vessel and the calculations from Columbia, as
far as the section modulus, met those values which we
obtained.

Q. For the record, what was the midship section modulus
that you used for those calculations?
A. 42,965 inches, squared feet squared.

Q. You mean inches squared feet?
A. Yes, excuse me, inches squared feet.

Q. Do you have any record to indicate whether or not any
plan review was done for any modifications of the Fitzgerald
required for the new 1973 load line?
A. No, sir, we do not.

Q. Commander Mason, would you attempt to see if you could
obtain a copy of the 1958 letter that you referred to?
A. Yes, sir, I will.

Q. The one referring to the stability letter, and forward
that to the Board along with the distribution list of
Exhibit 69-A?
A. Yes, sir, I will.

COMMANDER LOOSMORE: Those are all the
questions I have, sir.
REAR ADMIRAL BARROW: Captain Wilson?

EXAMINATION

By Captain Wilson:

Q. You mentioned the stability test not being required on the straight-deckers because of their similarities with others and the others were oceangoing ships?

A. The others were some of the oceangoing ships.

They were also the vessels that Commander Deck and I ran off the calculations on in 1972.

Q. We have mentioned a great deal over the past several days concerning stability criteria.

Were the considerations for stability criteria intact or damage stability?

A. Intact.

Q. Pardon me?

A. Intact criteria.

Q. There were no criteria used in stability for either ocean or Great Lakes ships that considered damage stability?

A. There are for passenger vessels, damage criteria.

There are for tugboats, damage criteria.

For the vessels that we are concerned with at the present time, for cargo and miscellaneous vessels, there are no damage stability criteria.

You mentioned that among your other duties were the approval of plans for modifications of vessels.
During this approval, is attention paid and modification made to the designers, builders or owners, as the case may be, concerning welding sequence to be utilized?

A. In most cases, a welding sequence or approval diagram is not submitted to us. It is at the discretion of the officer in charge, Marine Inspection, to take care of this item.

We become involved when we receive a request for technical assistance from the officer in charge of Marine Inspection.

Q. Is this true no matter what the grade steel is being used in construction?

A. Yes, sir.

CAPTAIN WILSON: That's all I have.

REAR ADMIRAL BARROW: Captain Zabinski?

EXAMINATION

By Captain Zabinski:

Q. Commander Mason, as I understand your testimony here, there are no requirements for a Great Lakes straight deck carrier to have a stability test; is that correct?

A. No, sir. There is not a requirement --

Q. As a hazard?

A. No, sir.

Q. Now, there is a change as far as the self-unloading of bulk carriers are concerned, is that right?
A. There is a criterion for self-unloaders, yes, sir.

Q. When did that come into being?

A. As far as I can trace it back, it went back to the original 1932 paper by Mr. Niedermeir.

Q. When we talk stability test, it is intact stability; is that correct?

A. Yes.

Q. Of self-unloaders since the 1930s; is that your testimony?

A. Yes. As far as the actual Coast Guard requirement, 1962 is the date or stage in the regulations.

Q. Establishing what?

A. A set criterion in the regulations.

Q. For self-unloaders?

A. For all cargo and miscellaneous vessels.

Q. What do the regulations say? Can you read the regulation on that for us?

A. If I could get a copy of subchapter I-46 CFR, Part 93, these regulations were amended last year to include a stated criterion, Captain.

Prior to that, it said the stability shall be to the satisfaction of the commandant.

Q. Read the section for us or the citation.

A. The section as it now states is 46 CFR Part 93, the actual criterion is set down in Section 93.07-5.
Q. How does that read?
A. 46 CFR 93.07-5 says, "All vessels within the purview of this part must be designed so as to be able to provide sufficient stability in an impact condition in all service conditions."

In 93.07-10, it says, "Weather criteria. The required minimum metacentric height (GM) in feet in any particular draft is obtained from the following formula." Then it lists a formula for conditions of operation which defines all the factors in that formula.

Q. In the opening paragraph, and this is 9.307-15, it says that it applies to certain vessels. Which kind?
A. All cargo and miscellaneous vessels. That's Section 93.07-5. Prior to last year, it was the only section in that which stated a stability requirement.

This weather criteria was added in 1974.

Do you want me to continue on this?

Q. Well, the sequence of paragraphs, are they on the calculations or --
A. On the requirement for the stability in that it sets up the criterion in which we operate special cases.

93.07-15 says, "Special Cases."

It says, "The criteria specified in Section 93.07-10 are generally limited in application to flush deck mechanically-powered vessels of ordinary proportions and form which carry
cargo below the main deck. For other vessels, additional
calculations showing that the vessel has a safety level
equivalent to that achieved by Section 93.07-10 must be
submitted. The extent of such calculations will be determined
by the commandant." It is based on that section and the fact
that the proportions of the Great Lakes vessels provides so
much inherent stability over those required for the oceangoing
vessels, that the determination was made that no stability
test would be required.

Q. Just for the record, what wind heel criteria is used?
Is there a velocity of the wind given?
A. No, sir. What the commandant has done is through:
certain tests, and using a standard wind velocity, he used
GM equals P times A times H over the factor delta times the
tangent. Then they set up two criteria for Great Lakes
vessels, one for winter and one for summer, and they state
that for winter that P will equal the factor 0.005 plus the
quantity squared of L divided by 14,200.

They state that for Great Lakes summer P will equal
the factor 0.0033, plus the quantity squared L over 14,200.

They go further on to define L as the length between
perpendiculars in feet.

A is projected lateral area in square feet of
proportion of vessel above water line.

H is vertical distance in feet from center of A to
center of underwater lateral area or approximately one-half
draft point.

Delta is displacement in long tons.
The last one is angle of heel to one-half the freeboard
to the deck or 14 degrees, whichever is less.

Then it says, "For vessels having a discontinuous
weather deck or abnormal shear, the angle to one-half the
freeboard may be suitably modified."

Q. Can you convert that to knots or wind force for us, or
is it possible?

A. The basic criteria is set on a standard wind at 55 knots.

Q. You indicated that the loading manual or one of the
conditions of the loading manual was only being able to put
the cargo so as not to introduce undue stresses, but also
based on stability; is that correct?

A. No, sir. The condition of the loading manual is
strictly related to strength. The conditions of the 1973
load line regulations stated that the Coast Guard would also
be responsible to insure that the master had on board
information relating to the stability of the vessel.

Q. Well, is there any information in a loading manual,
which was an exhibit approved before this Board, any
stability information?

A. That exists only in the exhibit letter I introduced,
which sets up certain operating criteria.
Q. For the Fitzgerald?

A. Yes, sir.

CAPTAIN ZABINSKI: Could I see that exhibit, please, Commander Loosmore?

(Handing.)

COMMANDER LOOSMORE: This is referring to Exhibits 51-D and -E.

By Captain Zabinski:

Q. This letter says, "A stability review of subject vessel. What review was made of the Fitzgerald?"

A. On a comparison with similar existing vessels, comparisons in length, breadth, depth of the vessel, in comparison with oceangoing vessels and their available metacentric height and the calculations we did in 1972.

Q. Did the owner or naval architect for the owner submit any stability calculations for review by the Coast Guard?

A. No, sir.

Q. Were any required to be submitted?

A. No, sir.

Q. What is 46 CFR 45.105 that is referred to in here?

It says, "The requirements for stability test of subject vessel is dispensed with under the provision of 46 CFR 45.105."

A. That is the section, sir, of the 1973 load line regulations, which state that the command and Coast Guard shall insure that a vessel has adequate stability for the service
Q. We had some question about the hull stress information contained in the manual.

We had Mr. Stearn as a witness before this Board and a question about the sequence of loading, whether the sequence of loading was indicated in the loading manual that was approved by both the American Bureau and the Coast Guard.

Mr. Stearn indicated to the Board that although the total amounts, total tonnage, that is permitted to go into each hatch, although those were contained in the manual and that loads, whether it be 100, 200, 300-ton lots, by whatever way they arrived at the total amount, that the sequence of those individual loadings was not spelled out.

By reference to the loading manual, can you tell us if that was correct in your opinion?

COMMANDER LOOSMORE: I am handing the witness Exhibit 10.

By Captain Zabinski:

Q. Do you understand the question?

A. Yes sir, I do.

No, sir, in the loading manual for the Edmund Fitzgerald there is only a requirement for a specific number of tons per cargo hatch.

Q. Would it be possible for a vessel like the Fitzgerald to be loaded to the tonnages indicated in this manual and
still, during the process of loading, be improperly stressed
if the sequence of loading were not carefully watched, in
your opinion?
A  It is possible, yes, sir.
Q  Would the same thing be true on discharging the vessel?
A  It is also possible, yes, sir.
Q  We asked previous witnesses about why the regulations
require a loading manual, but not an unloading manual.
   Is it not, in your opinion, possible, equally possible
to stress or overstress a vehicle while unloading, as you
do when you are loading?
A  It is equally possible, yes, sir.
Q  Why, and if you know, why don't the regulations
address themselves to an unloading manual?
A  Although the vessels guidance manual for loading is
generally referred to as a loading manual, it basically
refers to the strength of the vessel in still water, when
underway.
As to why the Coast Guard has not required a sequence
loading or unloading manual I cannot say.
Q  It does require one for loading, though, right?
A  No, sir. It requires one for its relationship upon
still water bending.
As a matter of fact, the different companies sometime
refer to it just as a guidance manual for loading and others
as a loading manual, but the basic strength criteria that
is taken out of it only relates to underway still water
strength.
Q  Underway still water strength? Is it possible to have
underway still water condition?
I am confused by the term "underway still water."
Is it possible to have such a thing when you have a
ship dynamically moving through the water?
A  What we say when we say underway still water strength,
the Matthews' criteria, which is set up in a joint Coast
Guard for the United States, the Administrative Transportation
Department for Canada, Industry and Operators' Technical
Committee, establishes a wave theory which divides the
loading of a vessel into wave action, some springing motion
in still water, okay?
We take that still water portion of the maximum, the
effect that the vessel will see, and use that for the
criteria in the loading manual, and such design is that if
the vessel keep its stress below the still water, it will
also keep its stress under the maximum underway.
Q  And also in this Exhibit 51-D, "The stability guidance
information contained herein is sufficient."
What is that stability guidance information in the manual?
A  The stability guidance in the manual merely states that
the vessel should be loaded to zero list, and I believe it is
based -- I'd better check it, but there is information in
there relating strictly to eliminating the hog and deflection.
Q   How about stability, are we talking here of longitudinal
stability? Can we use that phrase, or are we talking about
transverse stability?
A   We're talking about overall stability.
Q   Both the longitudinal and transverse?
A   Yes, sir.
Q   "The stability guidance information contained herein
is sufficient."
Now, do we have a section in there for transverse
stability?
A   No, sir, we do not.
Q   Do we have one for longitudinal stability?
A   No, sir, we do not. All we have is guidance which
states in equal loading, port and starboard, for the ballast
tanks, and maintained in the cargo so that you have zero
list in the vessel, minimizing the hog and sag deflections.
Q   The next sentence reads, "The reduced tank vent heights,
previously approved," by so and so, and are approved under
so and so.
What tank vents are we talking about?
A   The Marine Engineering Regulations state that the
commandant has the ability and discretion, in case the vessel
tank vents in the way of the cargo holds create an
interference with the loading or unloading of the vessel, to reduce those tank vents.

The Fitzgerald, when it was built in 1958, I believe was allowed to reduce its tank vents below within required minimum height.

The 1973 load line regulations specified that on the spar deck, the deck vent lights have to be a certain height. We also allow under the Marine Engineering Regulations, in effect, that having a 30-inch tank vent in the way of the cargo holds would create an interference with loading and unloading vessels. We allowed that the tank vents would be able to stay where originally installed.

Q. Do you recall what that height was that was previously approved?

A. I believe it is 18 inches, sir.

Q. When you say 18 inches, are you talking about the height of the vent or are you talking about the height of the closure above the vent?

A. The height of the vent opening above the weather deck.

Q. Your impression is that it was 18 inches?

A. Yes, sir.

Q. I think we have an exhibit before the Board, if you would have a look at that, please.

(Handing to witness.)

A. This printout, Captain, which is the Great Lakes
Engineering Works Drawing 77-300 --

COMMANDER LOOSMORE: Exhibit 6-I.

THE WITNESS: They are the standard

Great Lakes mushroom vent covers with a stated height

on the drawing of 14 inches between the weather deck

and the top of the vent pipe.

By Captain Zabinski:

Q In your letter of 23 October 73, you say as previously

approved. You are talking about that approval?

A Yes, sir, the approval for the Edmund Fitzgerald.

Q Now, what vents are serviced? Are they the ballast

tanks, the fuel tanks, or what do they service?

A They serve the ballast tanks and in some cases they

service the vents to the underdeck longitudinal tunnel.

Q We have information that the ABS may have required an

alteration and such alteration may have been accomplished on

increasing the height of the vents going through the tunnels.

Are you aware or do you have anything in your file

concerning this modification?

A No, sir, we do not.

Q As I understand your testimony, you used, and this is

in the longitudinal bending moment, you used the Arthur B.

Homer, the calculations that you had made for that and made

them to the Fitzgerald, the indication that it was a sister

class vessel; is that correct?
Q. Did you, in fact, run a kind of determination to see that the Fitzgerald was exactly like the Homer?
A. The determination we ran was statements from the designer, who was R. A. Stearn from the Frazer Shipyard and from a spotcheck with American Shipbuilding, which now owns the plants.

The two vessels were built of the same hull design with slight modifications in the quarters.

Q. Just the modifications in the quarters?
A. Yes, sir.

Q. And you were satisfied that they were identical vessels in cross-section?
A. Yes, sir.

Q. These are calculations you made for the 1973 load lines; is that correct?
A. The original calculations were for a 96-foot lengthening of both vessels. We also did a spotcheck of the vessel in its existing arrangement and structure.

Q. Are you inferring that the Fitzgerald was lengthened?
A. No, sir. I am inferring that the Frazer Shipyard has submitted certain drawings for a lengthening of both vessels.

Q. Both the Fitzgerald and the Homer?
A. Yes, sir.

Q. To your knowledge, did the lengthening of the Fitzgerald take place?
A. No, sir, it did not.

Q. The status of the lengthening of the Homer?

A. The lengthening of the Homer has not yet been completed, no, sir.

CAPTAIN ZABINSKI: That is all I have.

EXAMINATION

By Rear Admiral Barrow:

Q. Mr. Mason, in connection with some comments on the load line assessment, you mentioned the term "Interim Strength Standards"?

A. Yes, sir.

Q. Could you tell me what you mean by interim with relation to those standards.

A. Okay. The ABS standards existing prior to 1968 went up to vessels slightly in excess of 700 feet. There was at that time talk about building additional locks at Sault Sainte Marie, and there was a consideration among all the parties involved as to: Should the ABS standard be extrapolated out to 1000 feet or should the government agencies, speaking with respect to the Coast Guard for the United States, the Ministry of Transportation for Canada, establish separate federal standards?

Out of this came a Joint Great Lakes Technical Committee, which established under the editorship of one Mr. Matthews in Canada a final report to the Technical Committee, wherein
in 1968, it adopted by all the parties involved in 1969 which set up a strength standard.

By interim, part of the evaluation of the standard was that when certain vessels longer than 710 feet were built, then the strength standard was to be reevaluated due to the actual experience in service.

The United States has not yet accepted that as the final standard for vessels longer than 710 feet.

Q. But the standards are actually in use?
A. They are actually in use and constantly are in evaluation through the instrumentation programs and through the inspection going back to the officers in charge, marine inspection to the Merchant Vessel Inspection Division and the Coast Guard Headquarters.

Q. We have heard a good deal of testimony from people who have loaded ore boats on the Lakes which indicate a general feeling that as long as you load one of these boats on an even keel that you do not overstress it.

Would you comment on that and tell me if that is a fact or not?

A. Having evaluated many of these vessels, I would say that you can load it on an even keel and overstress it.

Q. And in what areas would you say that is true?
A. No specific areas, Admiral. What we have done is taken certain loadings submitted to us in the loading manuals from
vessels, which we have been able to get from certain drawings, and put up on the computer that we have in Coast Guard Headquarters and run the loaders through.

We have gotten some conditions which exceeds the acceptable and allowable bending moments for the vessels. Some of these conditions can be arrived at by keeping the vessel on an even keel.

Q. Any particular part of a given vessel that would be susceptible to this over stressing?

A. You basically have three parts: Forward and way of the bulkhead, separating the peak and the cargo hold, or for the older vessels, it is between the dark hold bulkhead and the cargo hold, somewhere in the area of midship's and back-aft in way of the engineroom bulkheads.

Q. Even though the vessel is on an even keel?

A. Yes, sir.

REAR ADMIRAL BARROW: Counselor?

EXAMINATION

By Mr. Murphy:

Q. If that is your opinion, Mr. Mason, why is the Coast Guard approves the loading manual in the accepted procedure?

A. The loadings given in the manual are run through either spotchecking of the calculations submitted by the designer or doing complete calculations on our own to see that the loadings included in here will provide loadings that will not
overstress the vessel.

Q. Well, I guess I misunderstood you.
If the loadings provided in there are carried out, then
are you saying that it is not possible to overstress the
vessel on an even keel?
A. If the loadings included in the manual are carried out,
it is possible that you will not overstress the vessel.
Q. That is why it is approved in that manner?
A. Yes, sir.
Q. And did I misunderstand your answer to the Admiral?
A. No. He asked me if you keep the vessel on an even keel.
It is possible to keep it on an even keel and not be in
compliance with the approved loading.
Q. And in what manner is that, sir?
A. Just by varying the cargo.
Q. Is it possible to load the cargo in the holds as
required by the loading manual, keep it on an even keel and
still overstress it?
A. Would you restate that?
Q. Is it possible to load the vessel in the manner required
by the loading manual with the amounts specified in the
various holds and keep it on an even keel and still over-
stress it?
A. In accordance with the calculations which we have
reviewed or have done, it is not probable that you could go
to that condition.

Q. Otherwise you would not approve it; is that right?

A. That's correct, sir.

Q. I believe you stated that with respect to the ballast
tank vents that they were permitted for the reasons you
stated to stay where they were originally installed, and you
gave the opinion that you felt that height was 18 inches, and
you examined the drawing and determined it to be 14 inches.

Is it then, after examining the drawing, that you
corrected your answer, that the 14 inches was the distance
approved by the Coast Guard?

A. Yes, sir, it is.

Q. With respect to the load line changes in 1973, I am
not familiar with how the load line marks are actually
placed upon the vessel.

Who has that responsibility?

A. The commandant has given that responsibility to the
American Bureau of Shipping as the signing authority.

Q. And after the signing authority of American Bureau,
they append the load line to the side of the vessel, and
does the Coast Guard then examine and approve it?

A. The ABS submits a report to its New York office on
placement on board the vessel. As to the extent of the
Marine Inspection or the commandant with respect to the
ship's characteristics, I cannot say.
Q. But the Coast Guard does rely upon the expertise of ABS to make sure those are correct; is that correct?
A. Yes.

MR. MURPHY: I have no further questions.

REAR ADMIRAL BARROW: Is there anything further by the Board?

EXAMINATION

By Commander Loosmore:

Q. This is Exhibit 6-I, the vent cap. After looking at that drawing, can you indicate from your own knowledge, or from anything indicated on the drawing, whether that is a Coast Guard approved drawing?
A. No, sir. It does not state on here that it is a Coast Guard approved drawing.

Q. Do you have knowledge, independent of that drawing, that the Coast Guard approved a 14-inch vent height?
A. Other than an available certificate of inspection being signed, I have none, no, sir.

COMMANDER LOOSMORE: That's all I have.

REAR ADMIRAL BARROW: Captain Wilson?

CAPTAIN WILSON: I have one question.

EXAMINATION

By Captain Wilson:

Q. Sir, mention has been made of increasing the tunnel vent
heights. Did you say that you did have approved plans for that?

A. No, sir. We do not have approved plans for that.

Q. Would that normally come under your cognizance?

A. It should normally come under our cognizance, yes, sir.

We have stated to industry on several occasions that we will allow the tank vents in way of the cargo holds to be maintained at the reduced vent height.

The vents fore and aft of that shall be raised in accordance with the 1973 load line regulations.

The requirements of subchapter I-46, CFR, Parts 90 to 98 require that the alterations to the vessel, which would be required if these vent heights were raised that the drawing should be submitted to the Coast Guard for approval.

Q. I believe you said for the ballast tank vents. Would this also be for the tunnel vents?

A. Yes. We will not allow fuel tank vents to be maintained in that area or at the reduced height.

CAPTAIN WILSON: That's all I have.

REAR ADMIRAL BARROW: Captain Zabinski?

EXAMINATION

By Captain Zabinski:

Q. Would you look at that plan again, Mr. Mason?

I would like for you to review it and see if you can respond to this question:
Is there any arrangement on that vent cap which prevents it from being screwed completely off?

A Captain, there seems to be an indicator attached to the mushroom cap on here, which would prevent it from being screwed all the way off.

Q Can that indicator be removed, or is it a permanent part of the cap?

A It can be removed, yes, sir.

Q If that indicator were removed or if it somehow became detached, is there just one indicator?

A On this drawing there is one indicator, yes, sir.

Q If that became detached, would it be possible to completely unscrew the ventilator?

A Not the ventilator, the vent cap.

Q Can you tell me the size of the attachment, of whether it is a screw or a bolt, or is it welded, or what is the nature of the attachment of the indicator to the vent cap?

A Okay. On the outside of the vent part, there is a threaded attachment, which is then screwed through several lock washers and lock nuts into the vent pipe.

The mushroom cap is then fitted over this threaded juncture.

Q But what holds the indicator to the cap?

A The indicator itself is attached to the cap through a lock nut and a lock washer arrangement.
Q. And the size of that lock nut?

A. One half, 13 threads per inch National Course Cap Screw with a lock washer.

Q. We have testimony that these are taken off at periodic intervals, possibly up to a year, the caps are taken off to clean the threads so that the cap will be free to rotate.

To accomplish that, what would have to be done in your judgment?

A. To take the cap off, sir?

Q. Yes.

A. To take the cap off, you have to unscrew the locking arrangement on the indicator and just screw the cap off.

Q. I would like to go back to the loading manual again.

MR. MURPHY: Excuse me, sir. May we have the notation of that exhibit before we change the subject?

COMMANDER LOOSMORE: 6-I.

By Captain Zabinski:

Q. Would you look at the loading manual?

COMMANDER LOOSMORE: Exhibit 10.

Q. You have indicated to counsel that if the vessel were loaded with the capacity shown on the plan, in the loading manual, I'm sorry, and was on an even keel, that she would not be overstressed.

Previously, I asked you if the manual indicated what
sequence of cargo loading should be used or what the manual
required for obtaining totals, total tonnage within each
hatch.

You indicated that there was no sequence indicated; is
that correct?

A. That's correct.

Q. The total tonnage and the total distribution is, but
not the individual loadings?

A. That's correct.

Q. In response to my question, you indicated if it were
possible that an improper loading sequence was used to obtain
the total tonnage within each hatch, although ultimately
if the amounts were correct, that during that process the
vessel could be overstressed; is that your testimony?

A. It could be.
Q. Let me ask you to look at the loading manual and ask you if there is any guidance for the master or the mate or whoever the loading people are as to what they should do or not do as to ballast at the same time they are loading cargo?

A. No, sir; there are no instructions as to how to control the ballast during loading.

Q. I ask you this question: If the vessel is in the process of loading, let us assume in the proper sequence, and in the proper way to keep the vessel in an unstressed condition, but during the same period the vessel's ballast, which is within the vessel, is removed in an improper sequence, would that not introduce a stress in the hull girder, in your opinion?

A. It possibly -- it is possible to do it. The conditions in which to do it, I cannot tell you.

Q. I see. But it is possible?

A. Yes, sir.

CAPT. ZABINSKI: That's all, Admiral.

REAR ADMIRAL BARROW: Any questions of counsel?

MR. MURPHY: Yes, sir.

EXAMINATION

By Mr. Murphy:

Q. You were just asked about putting the proper amounts of cargo into the vessel and then in an improper sequence.
Do you have any opinion as to what would constitute 
an improper sequence?
A    No, sir, I don't have that to state.
Q    If the sequence here were the sequence that is customarily 
and usually followed on this or similar vessels, then 
would you consider it possible that the vessel would be 
overstressed?
A    I can only state that experience with the loading 
masters on the vessels has not shown any significant 
problems with the vessels, but that it is also possible 
through a loading sequence to overstress the vessel.
Q    Well, you are referring to experience of the loading 
masters.

You are referring to those who have charge of putting 
the cargo aboard the vessel and determining that sequence, 
is that correct?
A    Yes, sir.
Q    And if the evidence were to be that this particular 
vessel or if the vessel which we are talking about here 
were loaded in that sequence, which is commonly accepted 
to be the usual sequence, then what would your opinion 
be about over stressing?
A    If I understand you right, you are saying that if the 
mate or the loading master, as he may be called aboard 
the vessel, loads it in his normal procedure?
Yes. In his normal procedure, which is assumed for the purposes of this question, to be the normal procedure followed by other mates under similar circumstances.

A. It is then quite possible that the vessel was not overstressed.

REAR ADMIRAL BARROW: Off the record momentarily.

(Discussion off the record.)

REAR ADMIRAL BARROW: Back on the record.

MR. MURPHY: No further questions,

Mr. Chairman.

REAR ADMIRAL BARROW: Capt. Zabinski?

CAPT. ZABINSKI: Yes.

EXAMINATION

By Capt. Zabinski:

Q. Mr. Mason, how can the people on the ship, the master, the mate, tell if their vessel is overstressed or not?

A. There is no way on board the vessel except for such vessels which have installed loading machines to have a definite indication if they are overstressing the vessel.

Q. Would it be fair to say that even though people may be using a sequence of loading, discharging, that in all honesty and all, they feel they are loading their vessel in a proper manner, that in fact that vessel may be reaching overstressed conditions?

A. It is quite possibl, yes, sir.
Q. And really the only time that you know that the vessel is overstressed is when she, in fact, deforms?
A. That is correct, sir, yes.
Q. But up until the point of deformation she can be overstressed up to that point and people not be aware of it?
A. Yes, sir.
Q. With no outside indications?
A. Yes, sir.

CAPT. ZABINSKI: Fine, thank you.
I have no further questions.
REAR ADMIRAL BARROW: Counselor?
MR. MURPHY: Yes.

EXAMINATION

By Mr. Murphy:
Q. What knowledge does the Coast Guard have about the existence of such a problem?
A. The existence of what problem?
Q. The problem that the captain just asked you about that might well exist that the master or mate may not be aware of.
What knowledge does the Coast Guard have?
A. I can't tell you at the present moment.
Q. Do you personally have knowledge of such a problem?
A. I have knowledge of certain occasions, not on the
Great Lakes, where they followed a standard loading procedure and created some problems.

Q. Do you have any knowledge of any situations on the Great Lakes?

A. Not at the present or recent times; no, sir.

Q. Has the Coast Guard advised the industry of any such problems?

A. The Coast Guard in the Great Lakes area has not advised the industry of such a problem; no, sir.

MR. MURPHY: Thank you.

REAR ADMIRAL BARROW: Counselor, are you finished?

MR. MURPHY: I beg your pardon.

Yes, sir.

REAR ADMIRAL BARROW: Any further questions by the Board?

CDR. LOOMSORE: No, sir.

CAPT. WILSON: I have one.

EXAMINATION

By Capt. Wilson:

Q. Cdr. Mason, I got a little bit confused on the events.

If you take a look at 6-G, Exhibit 6-G, does this indicate both the ballast vent system and the tunnel vent system?
A. Yes, sir; it does.

Q. If I understood what you said correctly, the letter permitted the maintenance of the lower height of the ballast vents because of the interference with loading machinery; was that correct?

A. Yes, sir.

Q. However, we have had testimony and I believe you indicated that you had a copy of it, that required raising the tunnel vents and raising the height of the tunnel vents to meet the 1973 load line requirements, is that correct?

A. No, sir.

If I remember the testimony correctly, you asked me if we had knowledge of a possible ABS requirement, that those tunnel vents be raised.

I said I did not have such knowledge.

REAR ADMIRAL BARROW: That's what he said.

CAPT. WILSON: Okay, then. I misunderstood you.

REAR ADMIRAL BARROW: Are you finished, Capt. Wilson?

CAPT. WILSON: That's all.

REAR ADMIRAL BARROW: Capt. Zabinski?

CAPT. ZABINSKI: Yes.
EXAMINATION

By Capt. Zabinski:

Q Mr. Mason, back to the loading manual again --
A Yes, sir.

Q -- when did the loading manual come into being
as a requirement for Great Lakes vessels?
A For Great Lakes vessels, the requirement was an
American Bureau of Shipping requirement in 1969 for those
vessels who were to go to a deeper draft under what
we have termed as the 1969 amendments to the Great Lakes
Load Line Regulations.

At that time, only the American Bureau reviewed the
manual.

Q And when did that come into being for the Fitzgerald?
A I am not sure for the Fitzgerald exactly when she was
required to have a manual other than that she was
definitely required by the Coast Guard to have a manual in
accordance with the 1973 Load Line Regulations.

Q The Load Line Convention, as I understood your
testimony, was a joint venture between the Dominion of
Canada and the United States, is that correct?
A The Interim Strength Standard and the results
from the Great Lakes Load Line Regulation Amendments in 1973
were a joint venture; yes, sir.

Q And also was the loading manual a part of that
convention or was that something that the United States adopted unilaterally?

A. The loading manual is also a part of it.

Q. So both countries were concerned about the absence -- or let me put it in a positive way.

Both countries in 1973 indicated a desirability for masters to be provided with this information, loading information; is that correct?

A. Yes, sir.

CAPT. ZABINSKI: Thank you.

That's all, Admiral.

REAR ADMIRAL BARROW: Counselor?

MR. MURPHY: No questions.

REAR ADMIRAL BARROW: Thank you very much, Mr. Mason.

Recognizing your testimony up until this date, is there anything which you have knowledge of in relation to the Fitzgerald, which in your capacity you think that we should know, in order to help us achieve our purposes in this investigation?

THE WITNESS: I have no additional knowledge, no, sir.

REAR ADMIRAL BARROW: Very well. You are cautioned not to discuss your testimony with anyone other than counsel before the conclusion of this
You are excused. Thank you.

THE WITNESS: Yes, sir.

(Witness excused.)

REAR ADMIRAL BARROW: Five-minute recess, please.

(Recess had.)

REAR ADMIRAL BARROW: Let the record show we reconvened at 1848. Counsel for parties in interest, same as before.

Cdr. Loosmore?
SIDNEY SPINNER

was called as a witness and, having been first duly sworn, was examined and testified as follows:

EXAMINATION

By Cdr. Loosmore:

Q. Would you please state your name, address, and occupation?

A. Sidney L. Spinner, 28626 Aspen Drive, North Olmsted. My occupation is Fleet Engineer, Columbis Transportation Division, Oglebay-Norton Company.

Q. Mr. Spinner, I would like you to speak up so that we can all hear you as well as the reporters.

Mr. Spinner, do you hold a Coast Guard license or document?

A. Yes, I do.

Q. Sould you describe that, please?

A. Chief Engineer license, Steam and Motor, any horse power.

Q. And what routes?

A. No routes.

Q. How long have you held such a license, sir?

A. The chief's license?

Q. Yes.

A. I would have to refer to my briefcase.

Q. Do you have the license with you?

A. Yes, sir.
Q. Would you please?

(Witness does as directed.)

A. Here it is.

(Handing document.)

CDR. LOOSMORE: Thank you, sir.

I have here a United States Coast Guard license No. 398373 made out to Sidney L. Spinner, S-p-i-n-n-e-r, Chief Engineer, Steam and Motor Vessels of any Horse Power, issued on the 21st day of December, 1972, in Toled, Ohio.

REAR ADMIRAL BARROW: Is there an issue number on it?

CAPT. WILSON: The issue number?

CDR. LOOSMORE: 6-8, sir.

The book number is 140251-R.

(Handing to witness.)

REAR ADMIRAL BARROW: Note that the license was returned to the witness.

By Cdr. Loosmore:

Q. Mr. Spinner, how long have you been fleet engineer with Columbia?

A. January the 10th, 1966.

Q. Could you summarize your experience in related areas prior to that, sir?

A. I obtained a marine engineer's license in 1942,
I worked with the license since then with Columbia Transportation Division until I came ashore as fleet engineer.

Q  Have you been with Columbia since 1942?
A  I have been with Columbia since 1939.

Q  Could you describe briefly what your duties as fleet engineer involve?
A  Administration, maintenance and repair to machinery, electrical systems and pipings aboard the vessels of the Columbia Transportation Division.

Q  Are you responsible for all of that?
A  I have an assistant, yes.

Q  You do have an assistant?
A  There is an assistant and myself.

Q  Who is that?
A  Lowell Stager.

Q  Do your duties involve visits to the various vessels within the Columbia fleet?
A  Periodically, yes.

Q  As you know, this Marine Board of Investigation is concerned with the loss of the Fitzgerald. Do you recall or do you have information which indicates the last time you visited the Fitzgerald?
A  Not right at hand, no.

I would have to get into my log book that I keep in the
I am entirely unprepared here, because I was called out of a meeting this afternoon to come over here to testify.

MR. MURPHY: I would like the record to show that this witness was produced upon a specific request by the Board in response to someone who would be qualified on the recent automation of the vessel, which has been previously described to the Board.

I don't mean by that statement to limit his testimony, but that he is unprepared and was only advised a short time ago that he would be called upon to testify.

REAR ADMIRAL BARROW: Yes. I think possibly we are going to have to discuss a few more things in automation.

I was not aware that counsel felt I was strictly limiting it to that particular subject. That's one of the subjects we will need to discuss.

If there are other logs or pieces of paper, perhaps he can get those, but I think we should proceed with what the witness has in his memory at this time, and we may ask for some additional things later.

By Cdr. Loosmore:

Q Mr. Spinner, would you say that you were on board the
Fitzgerald a month before it was lost?

A. Six weeks, approximately.

Q. Do you recall the occasion of that visit or what the purpose of that visit was?

A. Yes, it was to pick up winter work, repair work, which would be done this winter.

Q. Who prepared that winter work list?

A. The chief engineer with his assistant engineers.

Q. I realize that you probably don't have that list with you because of the short notice or this call, but do you recall whether that was an extensive list or not?

A. No, it wasn't.

In fact, I think the largest item on that would be anticipated requirements from the Coast Guard at the annual inspection and the American Bureau requirements.

The rest was just routine maintenance and repair.

Q. One of the points of concern, which was one of the reasons you were requested to come here, concerns the interim automation.

Do you know and again, without notes that you may not have, do you know when that was installed on the Fitzgerald?

A. The automation was started in the fall of 1971 through the winter of '71 and the spring of '72 completed.

Q. Who designed the system which was installed in '71 and '72?
A. The system of Bailey Meter boiler automation and 762 is the number on the Bailey system.

Q. Is that a fully automated unmanned engine room type of system?

A. Not unmanned, no.

Q. What success have you had with it since it was installed?

A. We have had very little trouble with the automation on the Fitzgerald.

Q. Do you have any idea how or what percentage of the time it operates -- or I guess the better question would be: What percentage of the time of the vessel's operation is the automation system not operating?

A. Percentage of the time that it was not operating?

Q. Not operating.

A. On the automation?

Q. Yes.

A. Less than one per cent, I would say.

Q. How many ballast pumps were there on the Fitzgerald?

A. Six.

Q. Do you know, again, offhand what the capacities were?

A. Four of what we term "main ballast pumps," 7000 gallons per minute capacity, two of what we call "auxiliary ballast pumps," 2000 gallons per minute.

Q. Where were these pumps located?
1. Lower engine room in the after end of the vessel.
2. All six of them?
3. Yes.
4. Where were the ballast manifolds located?
5. Forward of the ballast pumps in the lower engine room.
6. Was the piping arrangement such that any pump could pump any space?
7. Yes.
8. And where were the manifolds to control that?
9. The valving was adjacent with the ballast manifold.
10. All right there?
11. In the vicinity of the ballast manifolds.
12. We have had prior testimony that there were remote reading gauges on the ballast tanks.
13. Known as King gauges, which are mercury level indicators.
14. How did they operate? Did they work all right, or was that a source of problems?
15. As far as I know, I have heard no complaints in the area of the King gauges.
16. Where did the indicators for the King gauges -- where were they located?
17. In the lower engine room by the ballast pumps to my knowledge.
18. Yes, sir. Of course, all of this is of necessity,
and I am asking you to exercise your memory.

Were there any other remote readouts for the King
gauges installed, to the best of your knowledge?
A. Not to the best of my knowledge.
Q. Was the vessel originally designed with a bow
thruster?
A. No. The bow thruster was installed later.
Q. Do you know when offhand?
A. I would have to go into my records for that.
Q. Has it been in the last five years or so?
A. I don't know.
Q. Okay. If you don't know, that's fine.
What kind of bow thruster was installed on the Fitz-
gerald?
A. A Bird-Johnson at variable pitch.
Q. Is that an electric motor?
A. No; it is driven by a diesel.
Q. There is no electric conversion at all to it?
A. No.
Q. And where was this diesel located?
A. In the forward -- what we term as the dark hole of
the vessel:
Q. Was the fuel tank right there with it?
A. Yes.
Q. How was that engine started?
A. It was started with air, pneumatically.

Q. Remotely or on the spot?

A. From the pilothouse, or it was down in the diesel engine room.

Q. And where was the fuel tank located?

A. It was aft, on the aft bulkhead of the blind hole.

REAR ADMIRAL BARROW: Capt. Wilson?

EXAMINATION

By Capt. Wilson:

Q. Mr. Spinner, does the changing of a bucket or propeller blade — did this have buckets?

A. Yes.

Q. Did the changing of a bucket come under your cognizance?

A. Yes, partly.

As far as the actual changing of the propeller blade, yes. The trimming of the vessel to tip the vessel to get the hub out of the water so replacement could be made, I believe to the best of my knowledge it is set up in a loading manual, and it is up to the mate and his deck department to trim the vessel as such so repairs can be made.

Q. So getting the vessel prepared for examining the bucket or replacing the bucket would be the mate's responsibility?

A. Yes, it would.

Q. Have you recently, within the last year, been on the
Fitzgerald or on the dock near the Fitzgerald to examine
the bucket? Have you had bucket problems?
A. We changed one propeller blade in October.
   I started that October 15th and completed it throughout
   the night on the 16th.
   It was done at Toledo, Ohio.
Q. You were there for this?
A. No. I was not, but Mr. Stager represented the owners.
Q. Had you tipped the ship at any time previous to that
   where you were there this year?
A. Yes, in June, for a propeller inspection.
Q. You did or did not change a bucket at that time?
A. No, we did not.
Q. You just examined it?
A. We examined the propeller blades and found what we
   thought was a six or seven-inch crack in the fillet of one
   blade. It didn't warrant changing, and nobody could tell
   us even with die checking if it was definitely a crack.

   This was approximately six inches in length, and then
   we operated the vessel with the intentions of further survey
   at a later date, which we did in October, and it showed
   the crack was progressing. It was definitely a crack,
   and a decision was made to change the blade.
Q. At the time of this examination, did you notice any
   other damage to the buckets other than this crack?
A. No, everything was tight.
Q. Where was the tip ship operation that took place in June?
A. In Toledo.
Q. That was in Toledo also?
A. Yes.
Q. Were there any other people there at the time but yourself and the ship's people?
A. Myself and the ship's people.
Q. Do you recall what the vessel was doing at the time? Had it just come in or was it getting ready to leave?
A. No, we tipped her with cargo in the forward, unloaded aft, as far as I can recollect. It was up to the mate to do the tipping of the vessel.
Q. As far as your recollection, there was some cargo forward but you don't know how much?
A. Yes.
Q. Do you recall the dock that the vessel was at at the time?
A. No, I would have to look.
Q. Do you recall whether she was more of the port than the starboard side?
A. I don't remember.
Q. Then after you finished examining the propeller, were they about done with the unloading at that time?
A. No, the unloading had ceased while we were making examination and measurements. Then, when we finished, of course, we notified the mate that we had finished our survey and it was up to him to proceed.

Q. Where is the emergency generator located -- or where was the emergency generator located on the Fitzgerald?

A. There is a 30 KW generator for emergency lighting located on the boat deck adjacent to the fans, for draft fan room in the after cabins.

Q. That is a 30 KW generator?

A. That is for emergency lighting only.

Q. That does not feed to the board? Does it have a separate board in with the generator?

A. It has a separate board, an eight-circuit board, with six boards being activated for emergency lighting on a different level of the after -- I don't recall on the after end of the vessel.

There were two spare circuits, and I know that.

There is an emergency generator on the main deck in the engine room, starboard side, with a capacity of 200 KW, which is started from the main switchboard, connected to the main switchboard buses for different circuits, emergency circuits.

Q. That is on the main deck?

A. That is on the main deck, starboard side, engine room.
Q. Forward near the tunnel door?
A. No, near the boiler room bulkhead.
Q. And the 30 KW generator, you said that handled emergency lighting just aft?
A. That was what I was trying to recall. Without looking at the diagram, I couldn't tell you.
   I don't know if it took into the navigation aid or not. I just don't recall right now.
Q. Was there a company policy or procedure on how often the emergency generator should be operated and used?
A. Not to my knowledge.
Q. So it was just --
A. Up to the discretion --
Q. Of the chief engineer?
A. -- of the chief engineer.
Q. To make sure it was working?
A. Yes.
Q. To your knowledge, was the chief pretty good about operating the machinery by way of standby machinery?
A. Yes.
Q. To your knowledge, was it a common practice to load it up or did they just start it and run it?
A. Start it and run it and check the oil.
Q. They didn't load it up?

MR. MURPHY: Mr. Chairman, if I
may interrupt a moment, I find in going through
my records that the company has furnished to me,
that I do have the winter work list for the engine
room department, and I thought rather than go
through this again, if the Board would care to
receive them now and do it all at once, I will be
happy to produce them at this time.

REAR ADMIRAL BARROW: If you would pass
them to the recorder, please.

(Handing.)

CDR. LOOMIS: I have two sheets of
paper, one is entitled, "Columbia Transportation
Division, Winter Work, 1975-76, Edmund Fitzgerald,
Machinery," consisting of two pages, the second of
which is dated 9/30/75.

I believe the next number is 71, sir.

REAR ADMIRAL BARROW: Yes, mark it 71 for
identification, the winter work list.

CDR. LOOMIS: It will be 71-A and B,
sir.

MR. MURPHY: Which one is that, sir?

CDR. LOOMIS: '75-76.

(Exhibit 71-A and B marked
for identification and made
part of the record.)
CDR. LOOSMORE: The other one is a two-page form entitled "Winter Repairs, Form ON-1013, Vessel Edmund Fitzgerald," and the season is the '74-'75. The pages are numbered page No. 73 and page No. 74.

REAR ADMIRAL BARROW: Mark it 72-A and B.

CDR. LOOSMORE: Yes, sir.

(Exhibit 72-A and B marked for identification and made part of the record.)

REAR ADMIRAL BARROW: May I see them?

Excuse me. Let the witness see them first.

(Pause.)

By Cdr. Loosmore:

Q. Sir, I have Exhibit 71-A and 71-B. Can you identify them for us, please?

A. Yes. This is the winter work list of the Edmund Fitzgerald.

Q. How does that relate to the information you said you picked up from the Fitzgerald approximately six weeks ago?

A. There are certain jobs that have been completed.

Q. Jobs that what?

A. On the vessel. On 11-10-9-6 it says, "Install weldolet in steam piping so atomizing steam can be rerouted." We wanted to weld it in and make a penetration.
We have discussed installing individual pipes to ballast piping for adding Zimmite to ballast tanks. It is undecided now whether we are going to continue using Zimmite.

On my report or final winter work list, it will be canceled out.

The next item says, "Send boiler main feed pump motor to shop for overhaul."

The crew has done that previous or after that had been written.

I was informed by the chief engineer that we could cancel that out, because the crew had done it at an extended delay at an unloading dock.

Q. And I have here Exhibit 72-A and B. Could you identify that?

A. This is the 1974-75 winter work list for the Edmund Fitzgerald.

This is at Toledo, Ohio, and it names the contractors alongside the pricing.

Q. Were there any other items accomplished?

A. No.

By Rear Admiral Barrow:

Q. Chief, could you tell me if the items which are contained on Exhibit 71-A, which is your winter work list, 1975 and '76, are all of these items ones submitted by the
chief engineer on the Fitzgerald, or is it a combination
of some of his and some of yours?
A. I think it is a combination. I usually carry those,
but as I said, I am not sure I have it.

Here is the actual winter work list.

REAR ADMIRAL BARROW: Let's go off the
record a few minutes.

(Discussion off the record.)

By Rear Admiral Barrow:

Q. Does this constitute the chief engineer on the Fitzgerald, his submittal for inclusion of the '75-'76 work
list?

A. Yes.

REAR ADMIRAL BARROW: I think I would like
it marked for identification.

CDR. LOOSMORE: I have a handwritten memo
consisting of three pages on letterhead of Columbia
Transportation, Oglebay-Norton Co.

The vessel is the Edmund Fitzgerald, engine
room, winter work, 1975-'76, and the second page is
boiler room winter work, 1975, and the third page
is Deck and Misc., Winter Work.

Each of the pages has markings in red pencil.

At the upper right-hand corner is written

9-29-75.
REAR ADMIRAL BARROW: How many pages?
CDR. LOOSMORE: Three pages.

(Exhibits 73-A, B and C marked for identification and made part of the record.)

By Cdr. Loosmore:

Q Mr. Spinner, I hand you 73-A, B and C. Can you tell me what that is?
A That is the chief engineer's request for winter work on the Edmund Fitzgerald.
Q Who wrote in ball point pen, if you know?
A It looks to me like the chief engineer's writing of the Fitzgerald.
Q. Who made the markings on that in red pencil?

A. I did.

Q. What are the markings, or what do the markings indicate?

A. The markings indicate that this was transposed over to a typewritten winter work sheet.

Q. And is the sheet to which it was transposed, is that available?

A. That's it.

Q. Referring to Item 71A and B?

A. Yes.

COMMANDER LOOSMORE: All right, sir, thank you.

EXAMINATION

By Rear Admiral Barrow:

Q. Chief, I will ask you on one of the items on the winter work list here, I think Captain Zabinski asked you about the "Install weldolet in steam piping so atomizing steam can be rerouted."

I still don't understand what the purpose of this is. Why was he trying to reroute this?

A. I have no idea. I had not seen the job.

Q. What sort of atomizing system is there for the boilers?

A. Steam atomizing.

Q. You have a steam atomizing system already?

A. Yes. Why he wanted to reroute it, I don't know.

Q. But, this calls for installing something, so that it
could be rerouted.

A. Yes.

Q. And you don't know?

A. I don't know if it is a bypass or rerouted, so that he could maintain a part of the atomized steamer.

Q. I see. I am not sure I understand how things appear on the winter work list without your understanding what they are for, but were you intending that he would amplify this?

A. Some of the jobs, I didn't go over with the chief engineer or his assistants. It is a possibility that Mr. Stager did.

Q. I notice on the work list submitted here, which I am referring to, Exhibit 73-A, that there is an item for "lifting the high pressure turbine, check the blading, thrust and bearings."

Was this accomplished?

A. In what year?

Q. "Lift high pressure turbine, check blading, thrust and bearings."

It is an item on the list.

A. 1974-75.

Q. Now, this was submitted, a rough copy, 9-29-75.

A. No, that isn't on the winter work list.

Q. Now, do you know why that was of a concern here that would have required that the high pressure turbine be lifted?
A. No. The procedure for the turbine over the period of years, every other year we lift it and inspect the turbine. One year the high pressure unit on the compound turbine, the next year the low pressure, the following year the high, and then the low.

It got to a point where we started to evaluate the condition of these turbines and it was nil. We were just opening them up and employing a serviceman to come down and take some measurements, saying, "Everything is fine, boys," and close it up again.

So evaluating the reports and contacting Westinghouse in Detroit, we decided, well, maybe this year we will skip it for one year and check it next year because we were on a continuous machine survey for American Bureau of Shipping, which requires these units to be opened once every five years for inspection.

Q. When was the last time that the turbine was -- the casings were opened?

A. That would be two years ago. That was two years ago.

Q. Two years ago?

A. Yes, last year we had the low pressure.

Q. There is an item on the chief engineer's list here calling for an overhaul of the force draft fan.

Do you know what was wrong with that, Chief?

A. The force draft fan, '74-75, was foundation. We had
vibration that we were trying to quiet down.

Q. Now, sir. This was on the list that I am reading from.

A. That's shafting, renew bearings and shafting, and the parts were on board.

Q. Did that show up on your typewritten list, Chief?

A. Yes. It is Item No. 09-03-9-6.

Q. There is an item on here for a Bailey serviceman to be present at the fit-out.

A. That is routine.

Q. Is that a customary thing?

A. That is a customary thing.

Q. That's routine.

A. What does he do?

A. Recalibrates any minor maintenance, checking the system out, going through alarms and cutouts, making sure that they are functioning prior to Coast Guard inspection and final acceptance by the Coast Guard of the automation of the boilers.

All these items are on an approved check-off list submitted to the Coast Guard and approved and followed at every spring fit-out.

Q. Are you talking about an approved test procedure for an automated boiler? Is that what you are saying?

Q. Before the automation of this boiler, you had coal-fired boilers?
A. Yes.

Q. And were they automatic stokers?

A. Yes.

Q. What was the purpose of going into an oil-firing system and automation system, Mr. Spinner?

A. Reduce manning and reduce operating costs of the vessel.

Q. What was the manning requirement?

A. Anticipation of things involved with the EPA and the environmental groups.

Q. You get less smoke with the oil?

A. Yes.

Q. What was your manning requirement as far as unlicensed personnel for the engineroom before automation?

A. Three firemen, three coal passers, three oilers.

Q. What is it now?

A. Three oilers, one QMED, Qualified Member of the Engineroom, and one wiper.

Q. Did you attend the vessel when it went through the automation installation?

A. No, sir.

Q. Who was there for that particular operation?

A. We had an owner's representative hired by the company.

Q. Who was that?

A. Sidney Gernander.

Q. Is he with the company still, or was he for just that
purposes? Is he still with the company or not?
A. No, he is an independent owner's representative, hired
by the company to supervise the installation of that
Fitzgerald boiler automation.
Q. Insofar as the operation of the main machinery plan,
what does the automation of the boilers do for you in the
way of controlling the main propulsion machinery? You
operate this vessel from the wheelhouse, for instance?
A. No, it is not part of the house control.
Q. Can you tell me how the operation works then, please?
A. It has an operating console in the engine room and also
one in the boiler room with the necessary component parts
for automation, alarms, starting and stopping of the
automated system.
Q. Can you give me the procedure? Say you get a bell,
do you operate on a telegraph system, for instance?
A. Yes.
Q. And then what happens from that point?
A. The engineer operates the throttle, which opens up or
operates the turbine.
Q. Is there any manual operation for the boiler itself?
A. No.
Q. So all that is done is the throttle is opened?
A. Change of steam flow sets up the automation.
Q. There is no manual control, feed water or anything else?
No, that is all automated.

Do you follow this procedure both when steady steaming as well as maneuvering?

Yes.

When you light off the boilers and place them in operation in an automatic control system, do you actually maneuver right from the pier out to sea in the automatic position? Is that correct?

Yes, sir.

Can you tell me from the installation period in '72 to the present time of any periods in which the automated system did not function?

On the automation, or they have to go to manual?

When you had to go to manual.

To my knowledge, no. The only thing I can recollect is the Chief Engineer requesting servicemen, Bailey servicemen to service the system during the season.

This season so far, I am trying to visualize, I think maybe during spring fit-out he requested service twice for minor adjustments on the system this year.

He requested servicemen for minor adjustments this year?

Yes.

What period would that be?

I would have to get into the files with the accounting department.
Q. And would you have reports covering those periods where you had service?
A. Yes, reports, and also requisitions signed by the Chief Engineer, when he is satisfied that the discrepancies are taken care of.

He issues a requisition to the Bailey Meter Company.

Q. Would you furnish for the Board, please, the specific reports covering those periods?
A. Yes.

Q. Is there a requirement to log the necessity to shift from automatic control to manual control?
A. Is there a log kept?
Q. No. Is there a company policy to log it?
A. No.

Q. Would you think it should be a normal procedure, or that it should be a normal procedure for a chief engineer to log, going from automatic control to manual control?
A. I believe that's up to the discrepancy of the chief engineer.

Q. But on the reduced manning for these vessels where automatic control is predicated on the automatic condition, would you not think it would be appropriate for a chief engineer to log this situation when he has to go from automatic to manual control?
A. I do. Although it is not done.
Q  Do you have access to the logs from the fleet boats?
A  Yes, the office logs?
Q  Yes.
A  Yes.
Q  You don't see the logs themselves?
A  Well --
Q  Do you see the office logs?
A  Yes.
Q  Do you look at those logs?
A  Yes.
Q  And how often do you get them.
A  On the self-unloaders, it depends, maybe it is a week or every two weeks.
        Also, on bulk freighters, maybe it is every 15 days, which constitutes three trips or so.
Q  They would cover the previous period each day for three weeks?
A  Oh, yes.
Q  And what kind of information is there located in that engine log, the office log?
A  The points the vessels are passing, the time they are passing, a.m. or p.m., the speed of the --

MR. MURPHY:  Mr. Chairman, excuse me.

I believe those logs are in evidence.

THE WITNESS:  This is just one that I
have got from one of the vessels, but it gives all the
pertinent information.

It would be the same as the engineer's log sheets,
that you have with the revolutions, times and so forth.

Also, there is one space that states, "State any
matter of interest or mishap that happens during the
voyage," which is filled in.

Q. What are you referring to, Chief? You have read an
indication, "No mishaps."

A. No. It says, "State other matters of interest or any
mishaps on the trip."

That would be on the bottom left-hand edge of the log,
the engineer's log.

Q. And do you examine these logs for unusual events?
Is that your testimony?

A. Unusual events and also speed and fuel.

Q. Do you have any requirements for the chief engineer to
make any specific reports to you, other than what's in the log?

A. Oh, yes. We have numerous forms, engine operating
forms, pressures, temperatures, tank level readings, and we
have bow thruster condition inspection report forms.

Q. Are there actual requirements out for those, or do you
just take the forms to the chief engineer and tell him what
to submit to you?

A. That is correct, and he has a request form for
stationery with all the file numbers on them, so he can
keep replenished and keep them aboard.

Q. Is the chief engineer authorized to spend a certain level
of funds, up to a certain level, for repairs?

A. There is no limit. It depends on the emergency.
    You try to maintain and keep it down, but sometimes it
is pertinent that he gets on the telephone, say, from Duluth-
Superior, and he needs repairs.
    We give him verbal authorization to get the repairs
done and to issue a requisition.

Q. Does he call you each time for that, or does he have
authority to spend?

A. Usually, if it is a big repair job, he will call.
    He will make it a point to get in contact with someone.

Q. But for smaller items, does he have the authority to
spend for smaller items?

A. Yes.

Q. And he makes reports to you?

A. He sends it direct into the office.

REAR ADMIRAL BARROW: I think we had asked
for copies of purchase orders for repairs from both the
deck and the engineroom.

MR. MURPHY: If not, we'll be sure
that that includes the engine.
By Rear Admiral Barrow:

Q    Chief, you have indicated that you have one assistant, and
     that is Mr. Stager; is that correct?
A    That is correct.
Q    And he is stationed or assigned generally in the Toledo
     area?
A    Yes. We have an office in Toledo.
Q    I believe another witness has said there are some 19
     boats in the fleet; is that correct?
A    That is correct.
Q    Do you have any division of responsibility as far as
     visits to vessels at any particular time?
A    No.
Q    And how do you accomplish the required trips to the ships?
A    Well, the majority of the operations are in the Toledo
     area, both self-unloaders and the bulk freighters.
Q    And Mr. Stager would be normally the person who visits
     the ships most often; is that correct?
A    Yes, that is correct.
Q    Specifically with regard to the Fitzgerald, she went
     through an annual inspection in early 1975.
     Would you have visited the ship at that time, at any time
     during her annual inspection?
A    Yes.
Q    And when would that have been? Do you have those records?
By Rear Admiral Barrow:

Q. Chief, you have indicated that you have one assistant, and that is Mr. Stager; is that correct?

A. That is correct.

Q. And he is stationed or assigned generally in the Toledo area?

A. Yes. We have an office in Toledo.

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A. Well, the majority of the operations are in the Toledo area, both self-unloaders and the bulk freighters.

Q. And Mr. Stager would be normally the person who visits the ships most often; is that correct?

A. Yes, that is correct.

Q. Specifically with regard to the Fitzgerald, she went through an annual inspection in early 1975.

Would you have visited the ship at that time, at any time during her annual inspection?

A. Yes.

Q. And when would that have been? Do you have those records?
I have it in the office.

Did you attend the entire inspection period there or just some part of it?

Just some part of it.

Do you recall what you went for specifically on that visit?

No. It was just routine, or perhaps I was in the area.

You have no report of that visit, do you?

I probably have it logged in my memorandum.

Which you made out upon return from the ship?

Yes.

There was also an annual American Shipping Survey in the first part of this year?

Yes. They do attend.

Do you recall visiting the ship during that survey period?

No.

REAR ADMIRAL BARROW: That's all I have.

Captain Zabinski, do you have any questions?

EXAMINATION

By Captain Zabinski:

Chief, we were trying to get a handle on the ballast system yesterday, how it is handled, ballasting procedures, and deballasting.

We had Mr. Feldtz, and he tells us that everything stops at the engineroom bulkhead as far as the deck and the engineroom's responsibility.
What are the normal procedures.
You have sailed Columbia vessels, haven't you?
A. Yes.
Q. When was the last time you sailed as chief aboard one?
A. 1965.
Q. And what are the procedures at Columbia? The ship comes
along, and let's say we are coming along a loading dock.
With respect to the ballasting procedures, what are the
procedures for ballasting?
A. The pilothouse watch notifies the engineroom watch and
tells him, or says, "Pump out water."
That initiates the start of pumping the ballast.
Q. How do you know whether to put two, four, or six pumps
on the line?
What sequence do you use?
A. It varies on every vessel.
On the Fitzgerald, I don't know what procedure there was.
They have four pumps. I am assuming, with the amount of
ballast water, depending on the type of gear and the amount
of ballast water in the tanks, that they would put all four
pumps on and put out the ballasts as fast as they can, because
your loading rate is fast.
Q. But normally does the engineer, the engineer on watch,
I presume, does he get orders as to what sequence to
discharge the ballast?
Q. Who tells him that, Chief?
A. The pilothouse watch, whether it is the mate or the captain.
Q. Themate or the captain?
A. Yes.
Q. How about ballasting, the same procedure?
A. Yes.
Q. To your knowledge was there any deficiency, say, valves or anything that needed to have overhauling?
A. No, nothing indicated any malfunction or valves that needed repair.
Q. With respect to the ballast system aboard the Fitzgerald?
A. Yes.
Q. What size lines are they going into the ballast tank, Chief?
A. Twelve-inch. The cargo hold section is 10 inches. No. 8 tank is 10 inches. I think there is one more 10-incher in that system. The rest are 12 inches.
Q. How do you pump out the cargo hold? What pump do you use for that?
A. The auxiliary ballast pump.
Q. Is that one of the --
A. It is 2,000 gallons.
Q. Two-thousand gallons?
Yes.

How often in a normal operation would you have to pump out the cargo hold?

On the Fitzgerald?

Yes. Is there a record of when they pump out?

I don't think they keep a log of that, but it depends, I imagine, mostly on the weather during unloading procedures, or it would have to be for the unloading procedure when the hatches were off.

During rain?

The water would accumulate.

Do they normally lot when they start the ballast pumps and how many they put on, Chief?

No.

Is there any way of telling how much ballast the vessel actually carries, by either the engineroom records or by the deck records?

By the deck records, they have a manual sounding.

I am not too familiar with the procedure now, since the manning has changed.

They have what we call a sounding board, where all your ballast tanks, the recordings are chalked up and mocked up.

And where is this board kept?

Usually in the pilothouse, and one in the engineroom.

And who takes those soundings?
A. Normally it would be the deck department, somebody in
the deck department.
Q. And what do they do, do they go down and put it in
chalk on the board?
A. Yes.
Q. How often during the day are they sounding, Chief?
A. It used to be, when I sailed, every watch.
Now that they are changing manning, I think I couldn't
verify how often they are sounding, whether it is once or
twice a day.
Q. How could we find that out, as to what the procedures
were on the Fitzgerald, let's say, during this operating
season?
A. I am sure that our personnel department would be pretty
close to the subject.
Q. On how often they sound?
A. Yes.
Q. Why would the personnel department have that information,
Chief?
A. Because of labor negotiations, job assignments, reduced
manning.
Q. I see. Is sounding a part of the union agreement?
A. Yes.
Q. As to how often it should be done?
A. Who does it.
Q. What union would that be?
A. The Steelworkers.
Q. Do you know when the last time any repairs were done to the ballast pumps themselves?
A. I would have to refer to American Bureau Shipping continuous machinery survey reports as to when they were opened and examined and approved.
Q. Is that survey done frequently?
A. Every five years.
Q. When was the last machinery survey?
A. As I say, it is continuous. We don’t do all machinery, recondition it in one year and then five years later go back and do it again.

It is continuous. You do so many components or parts of the machinery this year, and you do so many the next year, so at the end of five years we have completed the whole thing.
Q. Do you recall when the last time the ballast system was checked?
A. No. I would have to check on that.
Q. Could you get that record for us, please?
A. Yes.
Q. What kind of fuel does the Fitzgerald use?
A. Bunker C.
Q. Do you know where she has bunkered or where she may have bunkered last?
As far as I can recollect, she bunkered on her last voyage at the ore dock.

Q. At the ore dock in Duluth or Superior?
A. Yes.
Q. Superior?
A. Yes.
Q. How do they normally get fuel, Chief?
A. By barge.
Q. By barge?
A. Yes.
Q. Do you know how much fuel, or are there any records that would indicate how much fuel was delivered to the Fitzgerald?
A. Approximately 50,000 gallons.
Q. Is there an invoice or something on that?
A. Yes.
Q. There is an invoice?
A. Yes.

MR. MURPHY: I think that is already in evidence.

REAR ADMIRAL BARROW: I think we've got that on the other witness.

By Captain Zabinski:

Q. Where is the fuel stowed? Do you have double-bottom tanks?
A. No, we have separate fuel oil tanks that were built in
conjunction with the automation, the changeover from coal
to fuel oil. We have fuel tanks port and starboard,
57,000 gallons each.

Q. How many boilers does she have?
A. Two.

Q. What are the normal import procedures as far as keeping
boilers on the line? Is there one on a line or both?
A. Both on the line.

Q. You don't shut them down?
A. No.

Q. On this automation system, do you have any records of
any breakdown at any time that the vessel lost time because
of a loss of the automated plant?
A. No, sir, not on the Fitzgerald that I can recollect.

Q. Would there be such a record or you just can't recollect
it, Chief?
A. There could be on the engineer's log, and it was
probably noted.

Q. Can you search the logs and give us the dates?
A. I think you have the logs.

Q. We have them for the one year for the '75 operating
season.
A. You want me to research that?
Q. Yes,
A. Yes, sir.
MR. MURPHY: This is since the
automation, Captain Zabinski?

CAPTAIN ZABINSKI: Yes, it is, please.

That is right.

By Captain Zabinski:

Q. Generators, how many generators does she have?

A. Two.

Q. Is the normal operation the operation of both of them or is one enough to hold the load?

A. One is enough to hold the load.

Q. Can you have them parallel?

A. They can be parallel, three ways. The ship service generator can be parallel with the diesel emergency generator.

Q. Does the diesel emergency generator start up when you lose your plant?

A. No, just the 30KW emergency lighting will start up on voltage drop. Then, it is a manual operation to start the emergency generator at the switchboard.

Q. What happens to the automated plant, if we use the generators?

A. If you use the generators, all power?

Q. Yes.

A. You would have a flame-up.

Q. And you start up this diesel generator, as you indicated?

A. Yes.
Q. Does the diesel generator have enough KW to pick up the boiler operation?
A. Yes, and then you light up by hand.
Q. Is that with the boilers starting up or would you have to go in and reset cycles and so forth on a flame sequence?
A. You would have to start it all over again.
Q. How is that done, Chief? Let's say we have a blackout. What would be the procedure to start these boilers back up again?
A. That, I am not familiar with. I have never operated one of these. As far as going step by step through it, right now, I couldn't tell you.
Q. But could you tell us, if it is in automatic, if they start up on their own or do you have to start up the cycle again?
A. You can start it. I imagine you can start up on a new one. When the first cycle is over and everything is in line, and you have more power, yes.
Q. Start right up again?
A. Start right up again.
Q. But, you would have to -- the engineer would have to start that cycle?
A. That is right.
Q. Would the emergency generator, and I am talking about the emergency generator, does that have sufficient power to
keep or does it have enough KW to keep both boilers going?
A. Yes. It has 200 KW in them.
Q. It has enough in them to keep the force draft fan going?
A. Yes.
Q. On your 30-KW generator, I understood you to say, Chief, that you had the emergency lights, and also I thought I heard you say you had the force draft fan also on, was that correct?
A. No.
Q. That's just the lighting?
A. These are just for lighting.
Q. How about the steering lighting, is that on a diesel generator, the steering gear, is that on the diesel generator?
A. On the 30 KW?
Q. Well, let's say -- is it on the 30 KW?
A. No, it is on the 200.
Q. It is on the 200?
A. Yes.
Q. So you have the diesel generator coming on. Is it connected to a separate switchboard which is isolated from all of the extraneous circuits?
A. Yes.
Q. Is that the way it works?
A. Yes.
Q. And you have -- what? -- on a 200 KW?
A. What's that?
Q. What do you have?
A. I couldn't name it right now without looking at the diagram, the electrical No. 1 line.
Q. I think we should get that diagram, if we haven't already asked for it, the electrical 1 line diagram that the Chief has referred to.

Does the 30-KW emergency generator have an automatic starter, Chief?
A. Yes.
Q. To your knowledge, is there any kind of a Coast Guard requirement for testing the emergency generator periodically or a periodic check of the emergency generator system?
A. Not periodically, no, sir.
Q. If there was one, you would be familiar with it, is that right?
A. I think I would be.
Q. It is your testimony that it is just started up and stopped, is that correct, just run for a little bit?
A. Yes.
Q. Is it operated under load, as far as you know?
A. I couldn't state if it was or not.
Q. I am primarily directing these questions in line with what would be done or could be done on the Fitzgerald, too, and if the procedures there are different, I wish you would let me know.
Q. But, to your knowledge, the tests are just a matter of starting up the diesel generator and it could operate under no load.

A. Yes.

Q. And shut down?

A. Yes.

Q. This item on the 75-76 work list, which you indicated was canceled, the item was install pipes, individual pipes, for this Zimmite system.

What is a Zimmite system, Chief?

A. It is an anti-mud chemical introduced into the ballast system to keep the mud fluffy and in suspension so it can be pumped over the side. It lowers the level of the mud in the ballast tanks.

Q. Do you use the Zimmite now, Chief?

A. Yes, on a number of our vessels.

Q. How about on the Fitzgerald, was Zimmite used on there?

A. It was used on there because it was introduced into, I think into the discharge site of the ballast pump system, and he wanted individual standpipes and valvings, so he could say so much in this tank and so much in this tank, individual feeds.

Q. Is that mud accumulation a problem on Lake vessels, Chief?

A. Yes.
Q. What is the undesirable feature about having mud accumulation, besides the difficulty in inspection?

A. Loss of revenue.

Q. The more mud you carry, the less cargo you carry.

A. Yes.

Q. Does the mud in any way, in your experience, Chief, does the mud in any way affect the steel or the ballast tank boundaries?

A. I would have no knowledge of that.

Q. Does it have a deteriorating effect or a corrosive effect, as far as you know?

A. No, not that I know of.

Q. No?

A. Not that I know of.

Q. How about this Zimmite? How long have you been using that stuff, Chief?

A. In some vessels, I would say 10 or 12 years.

Q. Ten or 12 years?

A. To the best of my knowledge.

Q. You think you have been using that for that long in the Fitzgerald?

A. I don't know if they initiated the chemical when that vessel came out or not.

Q. What is Zimmite, Chief?

A. I don't know. I don't know if anybody knows. It is a
special compound, a chemical compound.

Q. Have you found that the addition of that into your ballast tanks, that it has any effect on the structural steel, or the structure of the vessel?
A. No.

Q. Does it keep them clean?
A. Some say it does and some say it don't, and some say it depends on the user and the condition that it is used under. There are pros and cons to it. I don't know. I don't get involved in it.

Q. Chief, do you have any type of welding or burning equipment on board these vessels so that the chief and engineers could do their own repairs?
A. Not on the Fitzgerald.

Q. Not on the Fitzgerald?
A. No.

Q. Do you have it on other ships of the company?
A. Yes, self-unloading vessels.

Q. Self-unloading vessels?
A. Yes.

Q. Part of the flotsam that we found, the stuff that came up and floated up from the Fitzgerald, a couple of items were propane tanks, Chief. We found some propane tanks, large cylinders.

I am wondering, can you tell us, where were they stowed
on the Fitzgerald? What were they used for?
A. I think they were used for the galley fuel. Where they
were stored would be on the boat deck level.
Q. Stowed inside the house?
A. They have a special house. The Coast Guard requires a
special housing and the securing arrangement, and also to be
ventilated.
Q. How many tanks were in the Fitzgerald, if you know?
A. That, I couldn't say.
Q. Would you say they carried several as a rule?
A. Oh, yes, they carry several in use and several spares
for the voyage.
Q. Are they put in racks?
A. Yes.
Q. Are they fairly loose?
A. No, they should be put in the racks.
Q. What would you say caused these to drift loose this way,
Chief?
They have their caps on them like they were not in use.
Did you see those propane tanks?
A. No, sir, I haven't.
Q. They have been picked up. We don't know whether they
were full or not, but they still have the caps in place.
A. And they assumed that they were from the Fitzgerald?
Q. Well, we picked them up in that area, yes, sir, but she
1. did -- is it your testimony that she did have propane cylinders?
2. A Yes.
3. Q Do you have anything to do with the hatches at all?
4. Do the shipboard engineers usually have anything to do with the hatches, hatches carrying gear or anything of that type?
5. A No, sir.
6. Q Who is responsible? Is that the chief?
7. A The maintenance department.
8. Q The maintenance department? That comes under the engineering people, right?
10. Q How about radios that need repair and radar, do you have anybody aboard the vessel for that?
11. A No, service is requested in the morning reports.
12. Q Who would take care of the repairs on the radar, say, if one needed servicing? Does that come under you?
13. A I think radars are leased.
14. No, that comes under Captain Jacobson and Mr. Feldtz.
15. CAPTAIN ZABINSKI: That's all I have.

EXAMINATION

By Rear Admiral Barrow:

Q Chief, I have noticed in looking at the engineer's log here that I come across quite often the term under, "other matters of interest: Clean ballast tanks on Lake Superior."
I think that is a procedure set up by Captain Jacobson
and Mr. Feldtz to get the mud out of the water bottoms of
the vessels.

Are you familiar with the process and how they go about
this?

No, not really, no.

CAPTAIN ZABINSKI: Would that be on the
eastbound?

REAR ADMIRAL BARROW: That was on the east-
bound. That is why I was interested.

CAPTAIN ZABINSKI: You don't know who would
have information on that, Chief, do you?

THE WITNESS: I think there was a log
kept on that, if I am not mistaken.

REAR ADMIRAL BARROW: I think I would be
interested in that.

By Rear Admiral Barrow:

But, you are not familiar with the process how they
go about it at all?

No, I have no knowledge. That is under the mate's
department.

Did you indicate that you had gone to Toledo during one
of the tipping operations to take a look at the wheel?

Yes.

That would have been when?
1. In June, as near as I can recollect. I think it was in June.

2. I want to ask you to take a look at the engineer's log for the specific days here and see if there is an entry under this particular date.

3. "Toledo, tram wheel down one-eighth from mark, two blades have small cracks."

4. What did that operation involve in Toledo, the tram wheel?

5. Measuring the wear down of the stern bearing.

6. Did they have to tip the ship in order to check this?

7. At the wheel inspection, propeller inspection, also your outboard bearing measurement is taken. It is routine.

8. Where were you when this happened?

9. Toledo.

10. In Toledo?

11. Yes.

12. What is the date?

13. June. It would be the 12th.

14. Would this have been the occasion upon which you went over and took a look?

15. Yes, it was.

16. There is an entry under this particular page under matters of interest.

17. Would you read that one, please, sir?

18. "Tip vessel in Toledo, 6/17/75, found cracks earlier..."
reported, only one blade showed a crack.

Q. As I understand your testimony, when we started earlier, you indicated that it appeared there wasn't a crack.

A. We dicked it. There was two cracks. There was a crack on each blade and we dicked them and we couldn't determine whether there was a crack or not, so the one that we were suspicious of, we center-punched and we watched that one.

Q. Which one did you center punch?

A. The one that we thought definitely had a crack, we center-punched:

The other one was a foundry mark, as it turned out.

Q. What other entry is that in that other matter of interest: "6/17/75, Silver Bay, Bailey problems"?

That perhaps would have been one of the periods in which he requested some assistance.

A. Requested service, yes.

Q. And you were going to provide us with a report on that.

A. That's right.

Q. I think under this specific date for the engineer's log, would you give us a date on that?

A. That was Trip 13, Silver Bay to Toledo.

Q. And what were the comments?

A. "Vibration, very great, changed water ballast from other trips, washing ballast tanks."
Q. Now, that is on a trip from where to where?
A. Silver Bay to Toledo.

Q. The indication you have read there, "Vibration very great," did you get any report on that, or do you have any idea what that's about?
A. That could be just a matter of washing or cleaning the ballast tank while the vessel is in a loaded condition coming down the Lake.

Q. What it says, though, as I say, is "changed water ballast from other trips."

Does that indicate there is some water ballast in there?

What does it mean to you?
A. I have no idea, outside of the last sentence that said they were cleaning ballast tanks.

REAR ADMIRAL BARROW: Any other questions by the Board?

EXAMINATION

By Captain Zabinski:

Q. Chief, would you have any idea how they cleaned the ballast tanks?
A. I imagine by hosing and pumping them.

Q. They send a man in and clean them?
A. Yes, to agitate with a hose.

REAR ADMIRAL BARROW: Counselor, would you like to ask questions?
MR. MURPHY: No. I have no questions. Thank you, Mr. Chairman.

REAR ADMIRAL BARROW: Any other questions?

CAPTAIN WILSON: I have just two.

EXAMINATION

By Captain Wilson:

Q Chief, where do you generally take on feed water?

Where would the vessel generally take on feed water, what lake?

A The Fitzgerald feed water, I think with the automation, she is a closed system.

She would evaporate water in Lake Superior and filter feed water tanks in Lake Superior, unless there is an emergency and time lapsed where you had to run and evaporate in Lake Huron.

Q So it is generally run in Lake Superior?

A Yes.

Q How much feed did the Fitzgerald use, do you know?

Can you tell from the logs?

A No.

Q It is not logged?

A I have no idea.

Q Do you know how much he generally used? How much would she have to make up, say, in Superior?

A That I don't know.

Q Do you have any idea?
A: Do I have any idea?
Q: Can you give us a guess?
A: I can't. I have never been aboard on that boat. I have no idea.
I don't know whether it would be in the automation specs or not.
Q: I see. You generally bunkered up at the loading docks. Is there any particular reason for that?
A: We generally do. It is not entirely; sometimes we bunker along the Detroit and St. Clair Rivers.
If it is a determination of any bunkering in Toledo, we have changed the bunkering operation to Superior to cut down the lost time and extra docking and maneuvering.
Q: How much, can you tell from the logs, how much fuel did she consume?
A: For the Fitzgerald? It would be approximately 8,200 gallons a day on an average.
CAPTAIN WILSON: That's all I have.
EXAMINATION
By Captain Zabinski:
Q: Chief, we have the Fitzgerald on a trip from Duluth-Superior across Lake Superior, and the vessel indicated to a ship astern that they had lost some vents.
A: Would you go over that again?
Q: I say that --
A. From the beginning.

Q. I say we have the Fitzgerald, a crew of 29 aboard, sailing across Lake Superior.

The Captain reports to the ship astern that they lost some vents.

What vents might they be, Chief?

A. It could have been vents from the spar deck into the ballast tanks, or it could have been vents from the spar deck into the side tunnels.

I have yet to hear what side of the ship the vents are gone from, whether it was the port or the starboard.

Q. Would it make any difference?

A. No, no.

Q. But that's what he reports, and he says that he is taking on water, and he has got his pumps on, developing a list.

He is proceeding, and suddenly a ship that was keeping him on the radar, suddenly the ship is gone.

Here we are, the ship is lost, and we do not have a soul recovered; not a body recovered.

I wonder if, in light of your experience with the Fitzgerald and other ships in the fleet, what you think may have happened, because we didn't save anyone or didn't recover any bodies to date.

A. The only thing I can say is that it is my observation
that he had problems he never realized, and they were greater.

Q. When you say "he" you mean --

A. Captain McSorley.

Q. Could you give us any idea what may have been causing the list that he is supposed to have reported?

A. No. I can't visualize that he could take that much water, and I can't visualize the cargo shifting. I don't know.

Q. Do you know or any deficiency, you, personally, do you know of any deficiency aboard the Fitzgerald which could have caused her to be lost on this voyage?

A. No, sir. I have sailed under Captain McSorley as a Chief Engineer for X number of years, five, I think I was with him.

The ability of the chief engineer and his assistants, I don't have an answer.

REAR ADMIRAL BARROW: Thank you very much.

I will ask you if there is anything further which you have in your knowledge which has not been brought out by questioning here that you think might be of assistance to the Board in arriving at a cause for this casualty or anything further that hasn't been brought out --

THE WITNESS: No, sir. I don't have anything.

REAR ADMIRAL BARROW: Thank you very much.

You are excused.
that he had problems he never realized, and they were greater.

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A. Captain McSorley.

Q. Could you give us any idea what may have been causing the list that he is supposed to have reported?

A. No. I can't visualize that he could take that much water, and I can't visualize the cargo shifting. I don't know.

Q. Do you know or any deficiency, you, personally, do you know of any deficiency aboard the Fitzgerald which could have caused her to be lost on this voyage?

A. No, sir. I have sailed under Captain McSorley as a Chief Engineer for X number of years, five, I think I was with him.

The ability of the chief engineer and his assistants, I don't have an answer.

REAR ADMIRAL BARROW: Thank you very much.

I will ask you if there is anything further which you have in your knowledge which has not been brought out by questioning here that you think might be of assistance to the Board in arriving at a cause for this casualty or anything further that hasn't been brought out --

THE WITNESS: No, sir. I don't have anything.

REAR ADMIRAL BARROW: Thank you very much.

You are excused.
You are cautioned not to discuss your testimony with anyone other than counsel until the Board is concluded with its investigation.

I think we need to take care of the exhibits which have been introduce into the record for identification, Commander Loosmore.

(Witness excused.)

COMMANDER LOOSMORE: Number 63 through Number 73. Do you want them itemized?

REAR ADMIRAL BARROW: Yes.

COMMANDER LOOSMORE: 63-A through -D is the CO-MIO Toledo Instruction 2/70; 64-A through -I is the Commander, 9th Coast Guard District, Instruction 5941.1C; 65 is the Toledo MIO Special Inspection Report; 66 is a page from the Burlington Northern Loading Dock Superior Boat Book; 67 is the Burlington Northern Pocket Loading Report.

68-A through -C is a tabulation of pocket weights from Burlington Northern-Superior; 69 is the Commander of the 9th Coast Guard District letter M of June 14, 1973; 70-A and -B, MMT, Tech Note 9-65; 71-A and -B is the winter work list machinery for 1975 and 1976; 72-A and -B is the winter repairs, 74 and 75; and 73-A through -C is the rough copy of the engineroom winter work.

REAR ADMIRAL BARROW: Is there any objection?
MR. MURPHY: No objection.

REAR ADMIRAL BARROW: With no objection, it will all be entered into the record.

MR. MURPHY: Earlier, when some of the earlier exhibits were proffered, I think some of those were not introduced, and it was my intention at a later date to make sure they were all in, but in the last few days, of course, they have been introduced with that one exception last night of that manual, as we have been going on, but I think there are still some of the earlier exhibits that have not formally been introduced.

We can do that at a later date.

REAR ADMIRAL BARROW: Do you have any further items that we have asked for for introduction as exhibits which you have tonight that you would like to offer?

MR. MURPHY: I can answer that in two parts. I have them. Are you requesting that I offer them?

REAR ADMIRAL BARROW: Maybe we can get them lined up and get to them early tomorrow.

MR. MURPHY: Thank you. I would appreciate it.

REAR ADMIRAL BARROW: Off the record for a few minutes.

(Discussion had off the record.)
REAR ADMIRAL BARROW: We'll adjourn at 0830 and convene at 0930. Thank you very much.

(Thereupon at 2030, the hearing was adjourned to reconvene the following day, Wednesday, November 26, 1975, at 9:30 a.m.)

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DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

In the Matter of:

Marine Board of Investigation
Sinking of the SS Edmund Fitzgerald
on Lake Superior 10 November 1975

31st Floor
Federal Office Building
1240 East Ninth Street
Cleveland, Ohio

Wednesday, November 26, 1975

The above-entitled matter came on for further hearing, pursuant to adjournment, at 9:30 a.m.

BEFORE:

Marine Board of Investigation:

Rear Admiral Winford W. Barrow, Chairman
Capt. Adam S. Zabinski, Member
Capt. James A. Wilson, Member
Cdr. C. S. Loosmore, Recorder
APPEARANCES:

On behalf of The Oglebay-Norton Co.:

Jaeger & Murphy, by
John T. Jaeger
Thomas O. Murphy
Richard C. Binzley
2700 Terminal Tower
Cleveland, Ohio 44113

and

Arter & Hadden, by
Robert G. McCreary, Jr.
1144 Union Commerce Building
Cleveland, Ohio 44115

and

Bradley, Eaton, Jackman & McGovern, by
Warren A. Jackman
135 South LaSalle Street
Chicago, Illinois 60603

On behalf of the Toledo Trust Company:

John J. Schuchmann
700 Security Building
Toledo, Ohio 43604

On behalf of Cargo Aboard the SS Edmund Fitzgerald:

Bigham, Englar, Jones & Houstbon, by
Donald M. Waeschle
99 John Street
New York, New York 10038
APPEARANCES (Continued):

On behalf of Seafarers' International Union, James Pratt and John Poviach:

Ned L. Mann
Victor G. Hanson
Rodney Coleman

On behalf of Marine Engineers Beneficial Association:

Gerald Lackey
Merritt Green II

On behalf of United Steelworkers of America, Local 5000:

Samuel Gaines
James J. Courtney
PROCEEDINGS

9:42 a.m.

REAR ADMIRAL BARROW: Good morning, gentlemen.

Let the record show that the Marine Board of Investigation reconvened at 0942.

Counselor, one of the pieces of paper we have not asked for, and I recognize we asked for many of them, but that is an expression of the relationship between the owner and the operator.

I think we need this in the record.

MR. MURPHY: Yes. I was not aware actually that that document had been requested.

I think when I made my opening statement, you inquired as to whether or not the owner would appear, and I think my response was to the effect that, since Oglebay-Norton was the operator of the vessel and had full responsibility for the operation, I didn't expect the owner to appear.

Now I was not aware of the fact that some documentary evidence had been requested.

REAR ADMIRAL BARROW: I think we need a charter arrangement or the arrangement between the owner and the operator.

You are right, we did not ask for that specifically.
MR. MURPHY: May I approach the bench for a minute?

REAR ADMIRAL BARROW: Yes. Off the record.

(Discussion off the record.)

REAR ADMIRAL BARROW: Back on the record, please.

Counselor, before we get started, there is one additional item I think that I would like to take care of.

You may recall that we have sent or planned to send two carbide water lights to a testing laboratory. I would ask that the two end pieces from the electric water lights which were attached to the lines and ring buoys and which we reviewed last Sunday, that those two pieces also be furnished to the Board for our inspection of those and for the sending to the laboratory also.

MR. MURPHY: Yes, that was agreed to.

That is correct.

CAPT. ZABINSKI: We will detach the plugs from the ring, if they are as such, so that counsel is aware of what has become of them and the record is clear on that point.

MR. MURPHY: The record is clear.

REAR ADMIRAL BARROW: Cdr. Loosmore, call
your next witness.

CDR. LOOSMORE: Sir, there are several pieces of documentary evidence which were requested and which we were informed were available that we deferred last night and said that we would receive this morning.

REAR ADMIRAL BARROW: Fine. You may proceed with that aspect if you like.

CDR. LOOSMORE: Mr. Murphy, do you have some of the documents?

MR. MURPHY: Yes, I have some of the evidence that was requested at the original day or date some time ago.

Since that time, as you know, Mr. Feldtz has testified and Mr. Feldtz was requested to produce a number of documents. I gave him a typewritten list of those documents yesterday morning and I am informed as of today that he should be here shortly with such documents that he has been able to acquire.

The documents that I have contained in my file that I have had for a number of days include some of the following: The Board had requested and inquired as to whether or not there were any physical examination reports with respect to Capt. McSorley, the master of the Fitzgerald, and I have been
furnished by the company with copies of reports of
the physical examination of Capt. McSorley for
the commencement of the 1974 navigation season,
dated 4/17/74, as well as a report of an examination
of Capt. McSorley conducted on 4/8/75; in response
to the Board's request, I now offer those into
evidence as exhibits.

They are Xerox copies, the originals of which
are in the company files.

CDR. LOOSMORE: My notes indicate that
those would be Exhibits 74-A and 74-B, sir.

REAR ADMIRAL BARROW: Mark them 74-A and B for
identification.

(Exhibits 74-A and B marked
for identification and made
part of the record.)

REAR ADMIRAL BARROW: If there are no comments
or arguments, we will admit those into evidence at
this time.

MR. MURPHY: The Board also had re-
quested information with respect to the Fitzgerald's
future destination and future scheduling following this
trip, and I have been furnished by the company with
a copy of a document entitled "Columbia Transportation
Division, Oglebay-Norton Co., Vessel Report, Monday,
November 10, 1975," which shows the last report of the Fitzgerald having cleared Superior on the 9th on this trip, her destination being Detroit; that her orders were Silver Bay to Toledo and Silver Bay to Toledo.

This was the only information available as to her future schedule.

It is in this form that the company prepares and publishes the advance trips of their various vessels. This report, of course, includes the schedules of all the vessels in the fleet that is put out and published as an interoffice memorandum on a daily basis.

I would offer this into evidence in response to the Board's request.

REAR ADMIRAL BARROW: Mr. Murphy, the significance of the orders there at least at the time this paper was put out was that there were two remaining voyages; is that correct?

MR. MURPHY: I believe that that document would indicate only the next two trips; however, I think there has been testimony in the meantime indicating that those were the last two trips. But I don't think that document discloses it to be the last two trips.

CDR. LOOSMORE: 75, sir?
REAR ADMIRAL BARROW: Mark it 75 and it is admitted into evidence.

(Exhibit 75 marked for identification and made part of the record.)

MR. MURPHY: There also was requested information substantiating the Fitzgerald's trip immediately prior to the trip in question, particularly where she had unloaded her previous cargo and her voyage then from that unloading course to Superior prior to the loading of this particular cargo.

The company has furnished me with documentation consisting of two pages of messages, which has been described I think earlier as morning messages that the company receives on a daily basis.

Without attempting to read them, the first entry on the first page of the document indicates ON CO CLV, which is Oglebay-Norton Co., Cleveland, and LOR RAD, again which stands for Lorain Radio, November 6, Fitzgerald, Ashtabula, breakdown 1300-5, arrived dock 1400, start to unload, W 2100, estimate finished 0900-6.

Now, that is the first entry indicating, of course, that the port of prior unloading was Ashtabula. The balance of the document contains messages that
I, personally, haven't had an opportunity to examine, but they are messages received from the Fitzgerald from the time of her departure at Ashtabula on her trip from Ashtabula to Superior, arrival at Superior, and her departure, the entries covering the date of November 6th through November 10th, the date of the casualty; and I will offer that two-page document into evidence in response to the Board's request.

CAPT. ZABINSKI: Does that entry for November 10th, counselor, constitute the morning report from the Fitzgerald; would that be a fair statement?

MR. MURPHY: I think that is a fair statement. I think, as I look at that document, that would be a fair statement of containing all the messages received from the Fitzgerald from the time of her departure at Ashtabula through her arrival and departure from Superior up to the morning of the casualty.

CDR. LOOMIS: Are the initials in the upper right-hand side, "E.M.J.," are those Capt. Jacobsen's initials?

MR. MURPHY: Those are Capt. Jacobsen's initials, yes.

REAR ADMIRAL BARROW: Counselor, it is
indicated in the report here, November 7, "None" and then November 8, "None."

MR. MURPHY: It is my understanding that an inquiry was sent to Lorain County Radio to furnish Oglebay-Norton with all messages having been received, and the "None" refers that there were no messages covering that period.

REAR ADMIRAL BARROW: Is it customary to get on each morning report a message from the vessel?

MR. MURPHY: Would you give me a moment and I will find out.

REAR ADMIRAL BARROW: Off the record.

(Discussion off the record.)

REAR ADMIRAL BARROW: On the record.

MR. MURPHY: My understanding is, in conferring with Capt. Jacobsen, that there are two stations; one was Lorain and one was at Rodger City.

Where the "None" appears, it is a fact that that station had received "none" on that particular day, and that was the reason why the "None" was included in that.

This was done because the prior copies were illegible, and so Capt. Jacobsen requested that they be re-transcribed in such a manner that they would be
REAR ADMIRAL BARROW: Let's go off the record.

(Discussion off the record.)

REAR ADMIRAL BARROW: Back on the record.

CDR. LOOSMORE: My notes indicate this would be Exhibit 76-A and 76-B.

REAR ADMIRAL BARROW: Mark it 76-A and B and we will admit it into evidence.

(Exhibits 76-A and B marked for identification and made part of the record.)

MR. MURPHY: At the time of the testimony of Mr. Jeanquart of the American Bureau of Shipping, he testified that he did not have with him a copy of his report of the survey, the separate deck survey of October 31, 1975 at Toledo, Ohio, and the company had a Xerox copy of which I offer to the Board at this time.

CDR. LOOSMORE: That will be 77, sir.

REAR ADMIRAL BARROW: Mark the ABS spar deck examination 31 October 1975, Exhibit 77.

(Exhibit 77 marked for identification and made part of the record.)
MR. MURPHY: Also one of the subjects of information into which we were requested to inquire was to obtain a record of the fuel consumption of the Fitzgerald for the 1975 season through the period up to the date of the casualties.

I have been furnished with a handwritten memorandum prepared by one of the dispatchers in the company office entitled "SS Fitzgerald Fuel Consumption through 10-31-75," and I offer that as evidence to the total amount, the number of days operated and the amount used per day.

This was the information given to me and if it is not adequate for the Board's purposes, I will be happy to inquire and get additional information after the Board has had a chance to examine it.

REAR ADMIRAL BARROW: I believe that we have basically this information in direct testimony.

There would be no need for this particular exhibit.

MR. MURPHY: All right.

The Board also requested us to produce information with respect to the water levels in the channels of the rivers, which the evidence has disclosed was a restricting factor with respect to the depth to which the Fitzgerald was located on this occasion, and while I have not had an opportunity to examine
this document, Capt. Jacobsen handed me a publication
of the Department of Army, Detroit District Corps
of Engineers, Great Lakes and Connecting Water Levels
and Depths.

As I say, I have not personally had an oppor-
tunity to examine this document, but I would offer
this to the Board at this time as evidence of that
information.

REAR ADMIRAL BARROW: I think probably we
can take note of this specific exhibit without the
introduction of it, but let me see it.

(Discussion off the record.)

REAR ADMIRAL BARROW: Back on the record.

A note that this is a monthly bulletin of lake
vessels for September 1975, and the Board, of course,
would be interested in other monthly bulletins.

We will take notice of this and get the records
for additional months on our own. I don’t think
there is any need to introduce this into evidence
at this time.

MR. MURPHY: Thank you.

An additional request was that the service records
on the Fitzgerald’s radar be furnished, in addition
to the fact that some other period of time, at least
there was some question as to whether he had one or
two radars.

I have here a letter of correspondence from Sperry Marine Systems Division addressed to Oglebay-Norton, Capt. Jacobsen's attention, and it says:

"Gentlemen: Per your telephone request, attached are the service reports for the MK-3 and the MK-16 radars aboard the Steamer Fitzgerald.

"The period covered is from the time that the one scanner was separated and the second system installed," and that letter is dated November 14, 1975, and attached to it are copies of service records numbering 1, 2, 3 -- 19 pages in all for that and in response to that request.

(Document handed to the Board.)

REAR ADMIRAL BARROW: Off the record.

(Discussion off the record.)

REAR ADMIRAL BARROW: Back on the record.

CDR. LOOSMORE: Did you say there were 19 pages, Mr. Murphy?

MR. MURPHY: I counted 19. Would you recount them to make sure I am correct?

REAR ADMIRAL BARROW: Mark this 78-A and consecutively, please.

CDR. LOOSMORE: It will be A through T, sir.
REAR ADMIRAL BARROW: Exhibit 78-A through T will be admitted into evidence as an exhibit.

(Exhibit 78-A through T marked for identification and made part of the record.)

MR. MURPHY: Off the record a minute.

(Discussion off the record.)

MR. MURPHY: On the record.

One of the bills of lading was -- no, I will withdraw that. I thought this was a duplicate of the one that was already in evidence, so I will just introduce all of them.

Mr. Chairman, the other documentation that has been requested are bills of lading covering the Fitzgerald's cargoes for the 1975 navigation season. These bills of lading are for the most part on American Form 1942 Lake Bill of Lading for Bulk Cargoes other than Grain and Feed, and they are in the order of the last cargo carried.

Would you like them presented in that manner, the last cargo, going back to the beginning of the season?

REAR ADMIRAL BARROW: Yes, sir.

MR. MURPHY: Is that satisfactory?

REAR ADMIRAL BARROW: Yes, sir.
THE WITNESS: The first one is dated
November 3rd. The number on it is 10579 and in
each instance these are 1975.

I will read the complete date the next time.

This date was November 3, 1975.

Would you like them presented individually or as
a group?

REAR ADMIRAL BARROW: As a group would be fine.

MR. MURPHY: All right, sir, fine.

The second one is dated October 29, 1975,
and it is No. 10573, October 23.

CDR. LOOSMORE: Excuse me, Mr. Murphy.

Admiral, shall I mark these 79 and consecutively?

REAR ADMIRAL BARROW: Start with 79-A, as
they are admitted.

(Exhibit 79-A and B marked
for identification and made
part of the record.)

MR. MURPHY: October 23, 1975,

No. 10567; October 18, 1975, numbered 10560; October
13, 1975, numbered 10554; October 8, 1975, numbered
10543; October 1, 1975, numbered 10532; September 26,
1975, numbered 10525; September 20, 1975, numbered
10518; September 15, 1975, numbered 10511; September
10, 1975, numbered 10506; September 4, 1975,
numbered 10498;

August 30, 1975, numbered 10487; August 24, 1975, numbered 10476; August 18, 1975, numbered 10465; August 7, 1975, numbered 10446.

The next one is American Form 1942 Lake Bill of Lading for Bulk Cargo Other than Grain and Feed in different form, dated August 12, 1975, numbered 454.

The next one again is the American Form 1942, which was in the form of those previously read, August 1, 1975, No. 30; July 26, 1975, 10423; July 21, 1975, numbered 10412; July 16, 1975, numbered 10403; July 11, 1975, numbered 10387; July 5, 1975, 10378; June 25, 1975, numbered 10351; June 30, 1975, No. 38; June 19, 1975, numbered 10336; June 14, 1975, numbered 10324; June 9, 1975, numbered 10312; June 4, 1975, numbered 10301; May 30, 1975, numbered 107; May 24, 1975, numbered 10276; May 19, 1975, numbered 10265; May 14, 1975, numbered 10251; May 9, 1975, numbered 10240; May 3, 1975, numbered 10229; April 27, 1975, numbered 10217; April 21, 1975, numbered 10205; April 15, 1975, numbered 10197.

Now, there are still, Mr. Chairman, other bills of lading during the year 1975, which go from the last date of April 15th back to January 20th,
which, of course, the January 20 date would be the last trip of the Fitzgerald at the conclusion of the 1974 season extending into 1975.

If the Board would like those also, we will be happy to submit them to you.

I just want to make it clear that they do not cover her trade in the actual season but at the conclusion of the 1974 season.

REAR ADMIRAL BARROW: Off the record.

(Discussion off the record.)

REAR ADMIRAL BARROW: Back on the record. Counselor, would you furnish those also?

MR. MURPHY: Yes, certainly.

We have dated January 20, 1975, No. 10192; January 13, 1975, and it appears that there was a 4 with a 5 marked over it, but the date is very clearly January 13, 1975, 10187; the next one, being that the clerk made the same mistake and didn't correct it, dated January 7, 1974, but it has been furnished to me as being a trip made in early January of 1975. That is No. 10183, and the last one was January 2, 1975, the number on it being 2.

REAR ADMIRAL BARROW: Does this constitute the total then?

MR. MURPHY: The total of the documents
furnished to me as constituting the bills of lading for the Fitzgerald during the year 1975.

REAR ADMIRAL BARROW: What marking is this, Cdr. Loosmore?

CDR. LOOSMORE: That would be 79-A through 00, and we marked A and B already.

(Exhibits 79-C through 00 marked for identification and made part of the record.)

MR. MURPHY: While we have been off the record, I have had an opportunity to confer with Capt. Jacobsen, and I understand Mr. Feldtz is still in the process of gathering the information.

At this stage, this is the extent of the documentation which I am prepared to present to the Board at this time.

May I approach the bench off the record, please?

CDR. LOOSMORE: Did you introduce the Sperry record? That was 78-A through T.

REAR ADMIRAL BARROW: Yes. That was admitted into evidence. Off the record.

(Discussion off the record.)

REAR ADMIRAL BARROW: Back on the record.

MR. MURPHY: I have nothing to offer at this time.
CDR. LOOSMORE: The Board calls
Capt. Millradt, please.

REAR ADMIRAL BARROW: On starting our session,
I did not identify the fact that counsel for the party
in interest Oglebay-Norton is present, and no other
counsel for the parties in interest present.

CDR. LOOSMORE: Would you raise your
right hand, please?

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CHARLES A. MILLRADT

was called as a witness and, being first duly sworn, was
examined and testified as follows:

CDR. LOOSMORE: Please be seated.

EXAMINATION

By Cdr. Loosmore:

Q. Would you please be seated.
A. Do you want me to put this microphone on?
Q. Yes, sir.
A. Sir, would you please state your name, rank, organiza-
tion and duty station?
A. Capt. Charles A. Millradt, Commander, Coast Guard
Q. And your service number, sir?
Q. Sir, how long have you been Commanding Officer of Group, Sault Ste. Marie?

A. Since the 8th of August, 1975.

Q. How long have you been a commissioned officer in the Coast Guard?

A. About twenty and a half years.

Q. Do you hold a Coast Guard license or a Merchant Marine's license or document?

A. No, I do not.

Q. Sir, was your command involved in any of the incidents surrounding the loss of the Fitzgerald on the 10th of November, 1975?

A. Yes, we were involved in the rescue operations and also the operations for detection of any oil pollution.

Q. Would you summarize briefly the involvement as you know it, as far as the rescue, as you recall it, please?

A. Well, our involvement with the rescue operation started with the initial notification from the Steamer Anderson of the Fitzgerald's disappearance from his radar screen, our making initial inquiries over the radio to try and contact the Fitzgerald to see if we could establish communications with her, and then passing the information received from the Anderson and our inability to contact the Fitzgerald on to the rescue coordination center here at
Ninth District Office in Cleveland, and then thereby
from thereon taking direction from the Rescue Coordination
Center participating in the search effort with the facili-
ties that were available in Group Soo.
This involved primarily the Coast Guard Cutter
Naugatuck and a 40 foot utility boat stationed at Sault
Ste. Marie.

Q. Do you know when your command first received a call
that there might be a possible problem with the Fitzgerald?
A. Yes; according to our log, the call we received
from the Motor Vessel Anderson was at approximately 2025
Romeo on that evening.

CAPT. ZABINSKI: Is that Eastern Standard

Time, Captain?

THE WITNESS: Yes.

By Capt. Zabinski:

Q. Do you have a copy of that log available?
A. Yes, I do.

Do you want copies that were previously given to you
or do you want to use my copy?

Q. What documents do you have?
A. I have this one here. There is a log that is main-
tained in the Soo Control Center and then the Radio Room
maintenance air log.

This is a log from the Control Center. You should have
another one that was from the Radio Room.

Q. All right. Well, do you have copies there?

A. Yes, I do.

Q. Well, let's just work with those.

A. We have them for the 10th, 11th, 12th, 13th and 14th of November, and the particular initial call was received on the 11th of November, Zulu Time.

MR. MURPHY: Mr. Chairman, may we ask, for the benefit of those who are laymen --

REAR ADMIRAL BARROW: We will have it translated into Eastern Standard Time for you.

MR. MURPHY: Thank you.

THE WITNESS: Zulu, 2-u-1-u, also means Greenwich Mean Time. Our radio men are required to keep their logs on Greenwich Mean Time so they start five hours ahead of the rest of us in Eastern Standard Time zones.

REAR ADMIRAL BARROW: I think, as you give your testimony here, if you would, you can refer to the Greenwich time, but if you would translate for the benefit of counsel and the others into the time, Eastern Standard Time, that would be appreciated.

THE WITNESS: When I give any times in Greenwich times, to also give the local time?

REAR ADMIRAL BARROW: Yes.
THE WITNESS: All right.

By Cdr. Loosmore:

Q. Captain, you have handed me a seven-page document including the title page, dated the "Day: 11, Month: November, and the year: 1975, Edmund Fitzgerald's Sinking," and then six pages of a form, Department of Transportation, Coast Guard Form CG-2614-A, radio log.

Now, we are talking about the time --

A. How about if I read this entry?

Q. Well, sir, I was going to say, the time that you were talking about, is that the column on the right which begins with 0000-2?

A. Right.

Q. Is this the radio log from the group?

A. This is from the group radio station.

CDR. LOOSMORE: Sir, I would like that this be marked for identification as Exhibit 80-A through G, and this is the cover sheet and radio log, U. S. Coast Guard Group, Sault Ste. Marie, Michigan, for the 11th of November, 1975, Greenwich Mean Time.

REAR ADMIRAL BARROW: This exhibit is only for one 24-hour period.

CDR. LOOSMORE: Yes. As I understand it, the witness has radio logs for the following day or two.
REAR ADMIRAL BARROW: Why don't we include in this same exhibit number each of those which you plan to introduce.

THE WITNESS: I am not sure why we have the one here from the 10th.

By Cdr. Loosmore:

Q. Is there any information relative to the Fitzgerald on the 10th?

A. I don't think so. I would say no, so why don't you just take the ones from the 12th to the 15th.

Of course, this shows when storm warnings were broadcast and gale warnings and things like that, which preceded the sinking of the Fitzgerald.

Q. Does that radio log include any information on A to N, aid to navigation, with respect to the equipment which was malfunctioning, if any?

A. It would. I don't know if there is any in here, but there were probably some made.

When they broadcast about an aid to navigation notice, they just refer to the message number and reference it in the log, the radio log.

You don't actually type it in the whole text of the message.

REAR ADMIRAL BARROW: I think we would like to have the prior day also in the record, Cdr. Loosmore.
CDR. LOOMISMORE: Yes, sir. In that case, Exhibit 80 would consist of radio logs for the Coast Guard Group, Sault Ste. Marie, for the 10th, 11th and through the 15th of November, 1975, Zone Time, Greenwich Mean Time.

I believe I can number each individual page or make each day an individual exhibit.

REAR ADMIRAL BARROW: Give it the same exhibit number as for the radio logs and mark each page by number.

REAR ADMIRAL BARROW: All right. It would be Exhibit 80 according to my notes.

REAR ADMIRAL BARROW: Let's go off the record.

(Discussion off the record.)

REAR ADMIRAL BARROW: Back on the record.

CDR. LOOMISMORE: This has been marked 80-A through BB, radio logs from the Coast Guard Group, Sault Ste. Marie, from 10 November through 15 November 1975, Greenwich Mean Time.

REAR ADMIRAL BARROW: Marked so.

(Exhibits 80A through BB marked for identification and made part of the record.)

By Cdr. Loosmore:
Q. We were discussing the difference between Greenwich Time and Eastern Time.

What is the difference?

A. We are in Zone plus 5. All the Greenwich times are five hours later than the standard time, so when we say our radio logs started on the 11th of November, our 11 November starts at 1900 on the 10th of November.

In other words, it is 10 minutes prior to the estimated time of the sinking of the Fitzgerald.

REAR ADMIRAL BARROW: That is local time or Standard Time at 1900 when your radio log starts?

THE WITNESS: Yes; for the purpose of the logs, because all the times in the radio log are logged in Greenwich Mean Time.

By Cdr. Loosmore:

Q. What was the first entry that you had, that your log shows about difficulty with the Fitzgerald?

A. The first entry of any reference to the Fitzgerald follows an entry of which the time is logged at 0118 Greenwich Mean Time, which is the same thing as 19 -- correction -- 2018 Local Time.

That was a broadcast of a notice to mariners.

Following that entry, it says, "NOG," which is the call sign of the radio station, "This is the Arthur M. Anderson.

Over.
"This is NOG. Over.

"This is Arthur M. Anderson. I am very concerned with the welfare of the Steamer Edmund Fitzgerald. He was right in front of us experiencing a little difficulty.

"He was taking on a small amount of water, and none of the upbound ships have passed him, and I can see no lights as before and don't have him on radar. I just hope he didn't take a nosedive. Over.

"This is NOG. Roger. Thank you for info. We will try and contact him. Over.

"This is Anderson. Roger. Thank you, and also you might try WLC Rogers City. Have him ring his buzzer on a.m., and he might be able to contact him just to be sure that he is there. Over.

"This is NOG. Roger. We will try that. Over.

"This is Arthur Anderson. Roger.

"This is NOG. We'll get back to you. Out."

And the time of the completion of the transmission, and I assume after he finished logging it, is 0132 Zulu, which would be 2032 Local Time, so my original statement was that we were notified at approximately 2025 Local Time, assuming that that's when the transmission started from the Anderson.

Following that entry, there is an entry, the next minute from NOG where he tried to call the Fitzgerald three times
and received no reply.

The following minute, he tried again to call three times, and received no reply.

Do you want me to go any further?

Q. Yes, sir. Were attempts made as suggested by the Anderson to have other radio stations contact the Fitzgerald?

A. Yes. The very next entry, which is logged at minute 0140 Zulu, which would be 2040 Local Time, was with W.L.C. Rogers City: "This is NOG, over."

"This is NOG. Request you contact Steamer Edmund Fitzgerald on AM. Over."

"This is WLC. Roger."

And that is the end of the transmission.

Then, two minutes later, Rogers City came back and they said, "NOG, this is WLC. Something wrong with AM antennas. We'll go take a look and get back to you, over."

"This is NOG. Roger. Out." And that was it. That was at 0142 Zulu.

Q. Do you have any record to indicate whether WLC Rogers City ever attempted to contact the Fitzgerald and whether they were successful?

A. As far as I can see here, I don't see any further communications with Rogers City, but the Radio Soo tried to contact them several more times.
Q. What was the next step that Group Soo took, then?
A. Of course, the radio room watch notified our Group OD, and he, I guess, along with the radio operator, they tried several times to call.

Chronologically, our log indicates that the OD notified the Rescue Coordination Center in Cleveland.

REAR ADMIRAL BARROW: For the record, Captain, OD being the Officer of the Day?

THE WITNESS: Yes, sir.

Our log indicates that our OD notified the Ninth District Coordination Center in Cleveland at 2040 Romeo or Local Time, which would be 0140 Greenwich Mean Time, which was while the conversation was going on with WLC Rogers City.

By Cdr. Loosmore:

Q. Once the Group Rescue or the Rescue Coordination Center in Cleveland was notified, did your command have any further action in this?
A. According to the radio log here, we continued to try to call the Fitzgerald.

There is another transmission here that took place with the Arthur Anderson getting some work details of conforming the report.

Q. What was the time of that?
A. The time of that is at 0203 Greenwich Mean Time or
2103 Local Time.

This is about a third of a page conversation. Do you
want me to read that one?

Q It's on an exhibit, and as long as we have it identified,
I don't believe it will be necessary, unless it is important
for the understanding of the Board.

MR. MURPHY: Excuse me, Mr. Chairman.

I am going to ask that it be read at a later date.
It might be better to be read in context.

THE WITNESS: We don't have too many
more after that one that are definitively reported
in the log.

By Cdr. Loosmore:

Q Yes, sir. I think it will be helpful to read it.
A This is an entry, as I said, that took place, that was
logged upon completion at 0203 Greenwich Mean Time or 2103
Local Time, and it says:

"NOG, this is Anderson. Over."

"This is NOG. Go ahead."

In other words, the Anderson originated this call.

"This is Anderson. I have the mate here at this time.
He was the one up here when all this went on. Over."

"This is NOG. Roger. What was the last known position
of the Fitzgerald? Over."

"This is Anderson. Approximately 15 miles due north of
Crisp Point was the last I talked to him."

"NOG. Roger. And what time was that? Over."

"This is Anderson. Approximately 1900 Eastern Standard Time. Over."

"This is NOG. Roger. And did you alter your course in any way to look for the Fitzgerald? Over."

"This is Anderson. Negative. I am taking seas over my decks also and I am taking a beating. Over."

"This is NOG. Roger."

"This is Anderson. We are following at an approximate distance of 10 miles. We knew he was experiencing a little difficulty due to the fact he took seas over his deck and lost a couple of vents and was taking on a small amount of water and was listing. We asked him how he was doing and he said he was holding his own. Over."

"This is NOG. Roger. That's all for right now. We will get back to you. Thank you. Out."

Following that, four minutes later, at 2107 Local Time, there is another call recorded there of the calling of the Fitzgerald with negative response.

Q All right, sir.

Once you notified the Rescue Coordination Center in Cleveland, what further role did your command at Sault Ste. Marie play in this search?

A Well, after my Officer of the Day talked to RCC Cleveland,
he called me at home and informed me of the situation
and proceeded down to the station and arrived at the station
about 2100 Local Time.

After reviewing the situation, I directed him to con-
tinue contacting any vessels in the area to see if they had
seen anything of the Fitzgerald.

We tried to talk to the three upbound vessels. I
personally talked to the skipper of the Anderson.

Can I have a drink of water, please?

(Pause.)

I don't remember exactly what time it was, but I asked
the Anderson what his present position was.

Knowing that we didn't have anything else in the area
that would be able to get out there in the near future,
I asked the Anderson if he could turn his vessel around
and go back into the area and look for the Fitzgerald.

He thought about that one for a few minutes or a few
seconds, anyway, and he said that it would be extremely
hazardous.

I explained to him that he was the master of the
vessel, and it was his decision to make; that I was requesting
him to come around if he could, and if he was concerned
that it would not unduly hazard his vessel, to come around
and go back into the area and to search for the Fitzgerald
or any survivors.
Q. And did he inform you of what action he would take?

A. He said he would give it a try.

He was by that time down inside Whitefish Point, and I think he felt he had enough of a lee to come back down and head up into the sea. He thought he would be taking a beating.

We then called any other vessels in the area. We called the three saltwater vessels that were probably upbound and probably just past the last known position of the Fitzgerald.

Actually, I think the first ones were quite a ways past. The last one might not have been too far from it.

I asked them to come back and also search in the area, and they all stated that they didn't feel they could come back without creating a hazard to their vessels.

One of them was the Nanfri. He said that he would slow down and try to run some diagonal courses to the seas, thereby searching in the area where he was, to try to maintain a fairly constant position.

None of them, as far as I know, came about to search in the area.

Q. Did you log any of these conversations in the way in which the radio logs were logged?

A. We have no reported conversations of all these conversations.
At that point things were getting a little bit hectic in the Control Center and I was on the radio quite a bit talking to the various ships.

Q Did you plot the positions of the three upbound vessels?

A I don't believe we did.

Q What was the basis of the information that you had that one of them was beyond and one was very near, and so forth?

A We knew what time they had gone through the locks and about how far apart they would be, and how far they would proceed on up.

Judging from what the Anderson told us, he had passed him, and we kind of had a pretty good idea about where they were.

I think I may have asked him, but I don't remember at this time, exactly what their position was. I know the last one, the Nanfri, was pretty close to the last known position of the Fitzgerald.

He hadn't gotten too far to the westward yet.

We also had four vessels anchored inside of Whitefish Point to the south. We called all of them and asked them if they would get under way.

After some discussion with the masters, the William Clay Ford agreed that he would get under way from anchorage
and go out and get together with the Anderson, and the
two of them started a parallel track search for the Fitz-
gerald.

One of the other vessels, the Hindamar Jan, also
responded that he would get under way, and he got under way.
I think it was only about 20 or 30 minutes, and he decided
it was too rough. He turned around and went back to anchor.

The other two vessels felt it would unduly hazard
their vessels to get under way.

Q. In your conversations with any of these other three
vessels, the three upbound or the four that were anchored,
did you ask any of them if they had heard anything from
the Fitzgerald?

A. We were asking all vessels on a general broadcast
if they had seen anything of the Fitzgerald or if anybody had
any contact with the Fitzgerald.

I don't know that we specifically asked each one of
those if they had specifically seen the Fitzgerald.

Q. What is a general broadcast?

A. A general broadcast is that the Fitzgerald was reported
missing, and if anybody had any sights or anything concerning
the Fitzgerald to let us know.

Q. When was that made? Do your logs indicate that?

A. We probably made some informal ones before we got the
official message from the District that they sent out.
I don't see any particular time that those general broadcasts were made.

Q. Who initiated that general broadcast? Was it you?
A. We initiate our own first, and then we get a formal one from the District.

Q. Do your records indicate when your formal local one first went out?
A. I am trying to find the time here.

I have here at 1245 Romeo that we gave an urgent security on the Steamer Fitzgerald and again at 2200 Romeo I gave another urgent broadcast for the Fitzgerald.

Also, incidentally, at 2218 Romeo I requested assistance from the Benfri.

Now, these are in another log, which is our Soo Control radio log, which you probably will want to have introduced into evidence.

We had that also from the 10th through the 14th. The Soo Control Center controls the traffic in the St. Mary's River, keeps a separate log of traffic that they send back and forth to the vessels as they are transiting the river.

CDR. LOOSMORE: I have 10 pages, unit, CG, Base, Sault Ste. Marie, Michigan; Radio Log 10 November through 14 November.

It appears that this log is kept in Romeo Time.
By Cdr. Loosmore:

Q. Is that correct?

A. Yes. This is kept in Romeo Time.

The watches there that keep this log are not radio men, so they don't follow the same rules as they do, as the radio men. They are qualified radio operators, but they are not rated radio men.

CDR. LOOSMORE: I request this radio log be marked 81-A through J for identification.

REAR ADMIRAL BARROW: 81-A through J, mark it so for identification.

(Exhibits 81-A through J marked for identification and made part of the record.)

REAR ADMIRAL BARROW: Does that include the 15th or just through the 14th?

CDR. LOOSMORE: Through the 14th, sir.

REAR ADMIRAL BARROW: I believe we have the rest of the radio logs through the 15th. Do we have the one for the 14th there?

THE WITNESS: This is kept at Local Time, and they didn't go into the 15th very far, because the day would end at 1900 on the 14th, which was the last day of the search effort, I believe.

That was Friday, which is the last day of the
search effort.

REAR ADMIRAL BARRON: Would there be any entries for the 9th then, appropriate to this case?

THE WITNESS: No.

By Cdr. Loosmore:

Q. Where was it that you are referring to the urgent security on the Fitzgerald?

A. Right here, 2145.

Q. Pointing to Exhibit 81-C.

Mr. Murphy, do you want to see this?

MR. MURPHY: I beg your pardon?

CDR. LOOSMORE: Do you want to see this?

(Document handed to counsel.)

THE WITNESS: That should be attached to those papers. I think there were a couple of cover sheets that go with that that are not attached to that copy.

CDR. LOOSMORE: All right. Captain, what are the cover sheets to which you referred?

THE WITNESS: This is a summary of any major events that occurred during the watch including the traffic in the river, and they are attached. They should be attached to the log, and that comprises our daily log, and my signature is on the cover sheets.
I believe you have those on those copies that were forwarded to you previously.

Unfortunately, these copies did not have the cover sheets with them.

CDR. LOOSMORE: Is there any information on the cover sheets which is not contained in that log right there?

THE WITNESS: I don't know. I would have to look.

MR. MURPHY: I have a copy.

REAR ADMIRAL BARROW: Off the record momentarily.

(Discussion off the record.)

REAR ADMIRAL BARROW: Back on the record.

I think you better go back.

By Cdr. Loosmore:

Q Is there anything contained in the cover sheets which is not included in the radio logs themselves, Captain?

A It appears to me that everything in the radio log, everything on the cover sheet is already contained in the radio log.

Q Okay, sir.

REAR ADMIRAL BARROW: I think for the record here, we might point out that on the first cover sheet there is some information on daily traffic
summary for the specific date. The message is under remarks identical.

THE WITNESS: I think for the record, though, the cover sheet should be included in there because, like, if a vessel departs, one of our Coast Guard vessels departs to base, the time will be logged on that cover sheet.

I think there is a possibility that some things would be in there that wouldn't be in the log. I think it is just a matter of substituting one copy for the other copy.

REAR ADMIRAL BARRON: Off the record.

Let's take a five-minute recess, please.

(Recess had.)

REAR ADMIRAL BARRON: Let the record show we reconvened at 11:26.

Continue, Cdr. Loosmore.

CDR. LOOSMORE: Sir, I would like to change the exhibit concerning the Soo Control radio log and other information and take the information which we have marked Exhibit 81-A through 81-J and request that that be withdrawn and substitute in its place the Soo Control Daily Traffic Summaries for the 9th, 10th and 11th of November.

Each one of these consists of a summary sheet,
plus the radio log contained in the former information, plus logs of upbound and downbound vessels which the Captain has testified constitutes the log of the station.

These three, if numbered 81, would be marked 81-A through 81-BB.

REAR ADMIRAL BARROW: As I understand it, this constitutes the earlier logs plus additional information; is that correct?

CDR. LOOSMORE: Yes, sir. There appears to be some additional information, particularly on the number of vessels upbound and downbound and other information pertinent.

REAR ADMIRAL BARROW: The only thing a little bit confusing is, I think you indicated earlier that it covers a longer period of time for the radio logs.

CDR. LOOSMORE: We don't have the summary sheets for the 12th or a later date, which do relate to the search.

Perhaps the thing to do would be to take the five pages of the radio log for the 12th and 13th. We could either offer those as Exhibit 82 or we could have Capt. Millradt send us summaries of the copies of those.

Perhaps the latter is a better approach.
REAR ADMIRAL BARROW: We may need here today the logs that have been furnished. I would assume that we take the radio logs for the days that are missing and attach those to the exhibits.

Capt. Millradt can furnish the summaries to us at a later time.

Counselor, as soon as we get the summation here, we'll go over it again.

CDR. LOOSMORE: In summary, sir, the information from Soo Control would take the following form: For the 9th to the 11th, the 9th, 10th and 11th of November, we have a station log which consists of a summary sheet, a radio log, logs of upbound and downbound vessels, and for the 9th, two sheets which are marked "Complaint Form."

Those have been marked 81-A through 81-BB.

In addition, we have just the radio log without the summary sheets or upbound or downbound traffic summaries for the 12th, 13th and 14th of November, 1975.

These pages could be marked 81-CC through 81-GG. The total exhibit would be 81-A through 81-GG.

(Exhibits 81-A through J WITHDRAWN and re-marked 81-A through GG for
identification and made part of the record.)

REAR ADMIRAL BARROW: We are substituting this for 81-A through J; is that correct?

CDR. LOOMSDER: Yes, sir.

REAR ADMIRAL BARROW: What is missing from this, counselor, is the summary sheets for those extra days, the 12th, 13th and 14th.

MR. MURPHY: The sheet that is entitled "Daily Traffic Summary," is that the summary sheet?

CDR. LOOMSDER: Yes, that is correct.

MR. MURPHY: For what date, sir?

CDR. LOOMSDER: 12th, 13th, 14th of November.

REAR ADMIRAL BARROW: When the witness furnishes us with the cover sheets for those specific days, we will have what constitutes, as I understand it, the log for those specific days, the traffic summaries, the summarizations, the radio logs, entirely for those specific days.

MR. MURPHY: And the station log, both logs?

REAR ADMIRAL BARROW: Yes.

THE WITNESS: Yes, sir.

REAR ADMIRAL BARROW: Do you understand this
now, Mr. Murphy?

MR. MURPHY: I believe so; yes, sir.

Thank you.

REAR ADMIRAL BARROW: Would you like to see the specific exhibits which we have here before we go forward?

MR. MURPHY: Thank you.

(Document handed to counsel.)

REAR ADMIRAL BARROW: Off the record.

(Discussion off the record.)

REAR ADMIRAL BARROW: On the record.

CDR. LOOMSORE: I request to have these marked, sir.

REAR ADMIRAL BARROW: Would you explain for the record what you intend to do with the additional pages which we get?

Do we substitute part of what you have there?

CDR. LOOMSORE: Once the additional pages are received, in order to keep the record continuous, I will remove with your permission Exhibits 81-CC through 81-GG, which are the radio logs for Base Sault Ste. Marie for the 12th, 13th and 14th, November, 1975, and substitute the combined daily summary plus radio logs, plus upbound and downbound and whatever else which, as a unit, constitutes the radio log
for the days: 12 November, 13 November, and 14 November, 1975, numbering them continuously from 81-CC to whatever number and letter it finally reaches.

REAR ADMIRAL BARROW: Understood, counselor?
MR. MURPHY: Yes, sir. Thank you.
REAR ADMIRAL BARROW: Thank you very much, and mark them so.

CDR. LOOSMORE: Yes, sir.

By Cdr. Loosmore:

Q. Capt. Millradt, can you tell us or can you indicate, if you find them in your records, when the first Coast Guard vessels or aircraft got under way in the search? Do you have that information?

A. Yes, I believe I have the information. I might go back and start with the status of the Naugatuck of that day in question, on the day of the sinking.

The Naugatuck, which was the 110 foot harbor tug, was stationed at Sault Ste. Marie and was in a Charlie status.

REAR ADMIRAL BARROW: You might explain "Charlie status," please?

THE WITNESS: Yes, sir. It was a three weeksof no standby for maintenance purposes for the vessel, during which major machinery overhaul can be accomplished or other alterations to the vessel, and this particular time they were doing some
major alterations to the berthing spaces in which
all of the bunks of the ship were torn out of the
crew's living quarters.

However, there were no major machinery repairs
in process at the time, and at 1947 Local Time on
the evening of the sinking of the Fitzgerald, prior
to our being notified of the sinking, at my request
to the District, because I was down at the station
earlier in the evening and we had been having a lot
of storm damage, and I could see that the weather
conditions were very severe; and I wanted to improve
our SAR posture by upgrading the status of the
Naugatuck to Bravo 2.

The District concurred, the Rescue Coordination
Center concurred, and at 1947 Local Time the Naugatuck
assumed status of Bravo 2, two hours standby status.

After being informed of the sinking by the
Anderson, or the probable sinking, by the Anderson,
RCC, Rescue Coordination Center, directed at 2125
Romeo that we direct the Naugatuck to get under way
to proceed to the mouth of Whitefish Bay and stand by
to assist as weather conditions would permit.

Upon the Naugatuck recalling of the crew and
attempting to get under way, a lube oil line on one
of the main engines broke, and they had to secure the
engine to make repairs to that engine.

This subsequently developed into kind of a major problem. They had to braze the line, and the brazing failed the first time.

They had to call in some people from the base to attempt to do it again.

All in all, it worked, but by the time they got the line repaired, the Naugatuck wasn't able to get under way until 9:00 o'clock the next morning. That is Local Time.

In the meantime, you asked when the first vessel arrived on the scene, I believe?

Q Actually, I asked when the vessel -- when the first vessel or aircraft got under way.

A The first vessel or aircraft got under way at 2206 Local Time according to a copy of a message that I received from Air Station Traverse City.

It was a fixed wing HU 16 Albatross which departed the Traverse City Air Station at 2206 Local Time and arrived on scene at 2244 Local Time.

Q Sir, to come back to the Naugatuck a little bit, you said that they were on a three-week Charlie status. How long had they been on that status?

A This was the beginning of their third week. That was a Monday, so it was just the start of the third week.
Q. And when was the first time they would have, in the ordinary course of events, been expected to be able to get under way?

A. The following Monday they were due to go back to a standby status. That would have been the 17th of November.

Q. Is the Naugatuck your operational control as Group Commander?

A. Yes, except when it is in a Charlie status, then it is under the District Control. When it is on a standby status, it is under the Group Control; however, the District is the one that determines the standby schedule.

In other words, whether they are in Bravo 2 or Bravo 6, they coordinate with their entire district schedule to place the vessels on various standby statuses throughout the district; but technically speaking it is under my operational control.

Q. Sir, you mentioned the weather being severe. Do you have, or do any of the units in your group keep regular records of what the weather was on the afternoon or the evening of the 11th?

A. Do you have them with you?

Q. I have some weather reports that were transmitted.

A. Our station sends weather every two hours to the Weather Bureau, and I have a copy of the two-hour transmittal, teletype transmittals to the Weather Bureau of the weathers
at various stations, including Sault Ste. Marie, Grand Marais, and Lansing Shoals, which would be in Lake Michigan.

You are probably not interested in that, also North Manitou, St. Ignace in the Straits, and Thunder Bay and Marquette.

So the three stations would be Sault Ste. Marie, Grand Marais and Marquette, which would be the ones you are probably interested in, and some of these also have Whitefish Point.

Q. I believe I said the 11th of November and, of course, I meant the 10th.

A. These start from 1400 Greenwich Mean Time on the 10th, which would be 0900 Local Time on the 10th until 1600 Greenwich Mean Time on the 11th, which would be 11:00 a.m. on the 11th.

Q. Yes, sir. Did you say that these were weathers received by these stations or sent by these stations?

A. It was sent by those stations.

Q. Based upon observations?

A. Based upon observations at the stations.

REAR ADMIRAL BARROW: Off the record.

(Discussion off the record.)

REAR ADMIRAL BARROW: Back on the record.

CDR. LOOSMORE: Sir, I request these be marked Exhibits 82-A to whatever it works out to be.
REAR ADMIRAL BARROW: Mark them, starting at 82-A and the rest of them consecutively for identification.

CDR. LOOSMORE: These will be marked 82-A to 82-M.

REAR ADMIRAL BARROW: It is marked for identification.

(Exhibit 82-A through 82-M marked for identification and made part of the record.)

CAPT. ZABINSKI: What time period do these cover, please?

CDR. LOOSMORE: Yes, sir; just a minute.

These are weather reports, teletype copies of weather reports sent by Coast Guard Stations in the Great Lakes area from 1400 Zulu on the 10th through 1600 Zulu on the 11th, at approximately two-hour intervals.

They are exactly two-hour intervals, except that there is no entry for 2200 Zulu on the 10th.

MR. MURPHY: For what station, sir?

THE WITNESS: All of them.

CDR. LOOSMORE: Sault Ste. Marie -- there are one, two, three, four, five, six -- there are 10 stations listed. However, not every station
made a report. I will have to have the witness explain that.

By Cdr. Loosmore:

Q  Captain, could you explain how a form such as this, for example, look at 82-A, which is 1600 on the 11th; how is this read?

For example, what does that column under "ID" mean?

A  That is the station identification code.

Q  And the next column?

A  The next column I am not sure of. They are some Weather Bureau symbols, I think, indicating what kind of reporting station they are.

I believe some stations have different capabilities.

The next column indicates the wind direction and speed.

Q  In knots?

A  In miles per hour, I believe, and the next column indicates the wave height. The next column, the sea temperature, air temperature and pressure, and any remarks, and the station's name.

CAPT. ZABINSKI:  You say pressure.

You mean barometric pressure?

THE WITNESS:  Barometric pressure.

CAPT. ZABINSKI:  Is that in millibars?

THE WITNESS:  In inches.
In looking them over, I noticed there was a very intense low that came through. The lowest reading I noticed was below 29.00 inches. It is 28 point something inches.

By Cdr. Loosmore:

Q Did you say that this was sea temperature (pointing)?
A Yes.

Q Do you know what the "M" means?
A Missing.

Q Missing?

In cases where there is no information for a particular station, what does that mean?
A That means it is missing and they didn't get their report in for some reason.

Q I notice that there is no report from Stannard Rock. Do you know why that was?
A Probably because Stannard Rock, like Whitefish Point, are automatic recording stations. They are unmanned stations, and sometimes this equipment malfunctions and they don't get a report in for them.

For Whitefish Point, there are very few reports there for Whitefish Point because they had a malfunction with their telephone line out to Whitefish Point.

Q Were there any during the period of time we have been talking about on the afternoon of the 10th? Were there any
malfunctions or otherwise occasions of inoperation of
aids to navigation within the area of your command, sir?
A. Yes; to the best of our knowledge, we had a malfunction
with the Whitefish Point radio beacon fog signal and light.

This is an automatic operated light beacon and fog
signal, which is monitored from the Control Building at
Base Sault Ste. Marie, and our monitor equipment indicated
that there was a failure of the signal intermittently
during the evening of the 10th of November.

It was possibly partly due to the bad storm that we
were having, which caused the failure or might have caused
the failure of the monitor equipment and maybe the light
and radio beacon were actually operating, but we are not
exactly sure because the light is designed with an emergency
generator.

If there is any power failure, the emergency generator
comes on and the light should operate, but we did get a
report that it was inoperative and I have a statement here
from the radio watch... stander.
Q. The radio watch... stander?
A. At the Group Soo Radio Station.
Q. Not on the scene at Whitefish Point?
A. Well, no. Whitefish Point is an unmanned station
that we monitor from Soo Control from radio, from our
control building at the Soo.
I will read this statement from the radio man which pretty much sums up the situation.

"November 10, 1975, at approximately 1630 Romeo Group Soo received a call from Grand Marais Station requesting to know if Whitefish radio beacon was operative. I told Grand Marais to stand by until I had a chance and I would get back to them.

"Approximately 10 minutes later, I called Grand Marais back and told them that Whitefish Point was inoperative. The watchstander at Grand Marais inquired as to whether or not that was the entire light radio beacon and sound signals, and I replied that it was."

If I could divert for a moment from the statement, I don't have it with me, but we were getting a statement from the Grand Marais Coast Guard Station of the operator on watch there that said what prompted this inquiry was a radio call from the Fitzgerald asking if he could -- if the radio beacon at Whitefish Point was operative because he couldn't, apparently, pick it up.

So upon getting this information from the Soo, the Grand Marais watchstander called back the Fitzgerald at about 1630 Romeo or Local Time and advised them that the Whitefish Point radio beacon fog signal and light were inoperative.

Now, I will continue on with the statement.
"We were very busy that evening and when time permitted, I called the Rescue Coordination Center and informed them that the Whitefish Point light beacon and sound signal were inoperative. This was at approximately 1715 Local Time.

"I was told to initiate an informal safety broadcast due to the fact that ours, meaning Group Soo and RCC, "were very busy and it would take quite a while to get an official broadcast sent."

"At approximately 1730 Romeo, the officer in charge of the aids to navigation team from the Soo arrived and reset Whitefish Point radio beacon sound signal and light."

This could be done from the monitor.

"Approximately 10 minutes later, the monitor gear showed all systems were inoperative again. This operation repeated itself several times and at one point all systems were operative for longer than the rest, so I called the Radio Coordination Center and told them that Whitefish was once again operative.

"During the time I was on the phone to the Rescue Coordination Center, the Whitefish Point monitor equipment showed all inoperative again. While still on the phone, I informed the Rescue Coordination Center of the same and stated, even though we were trying to reset it, I will originate a broadcast due to the fact that I was not
staying operative for very long at a time. I then originated a broadcast and sent it when time permitted, signed RM-2,"radioman second class, "PM Branch."

The radio log will show the time that he initiated a broadcast on the beacon being inoperative.

REAR ADMIRAL BARROW: Excuse me. What were the circumstances under which these were prepared by the radio man?

THE WITNESS: When we found out the radio beacon was inoperative that evening, we had all people that were involved with it prepare a statement of the circumstances so we would have it for the record.

MR. MURPHY: May we ask that that be placed in the record and marked as an exhibit, please?

REAR ADMIRAL BARROW: Captain, what day was this prepared?

THE WITNESS: I believe it was either the 11th or 12th of November.

REAR ADMIRAL BARROW: I think it should be indicated on here, the date it was prepared, so the Board will have it for its purposes and annotate the date on the statement that it was prepared.

CDR. LOOSMORE: That would be Exhibit 93,
sir.

REAR ADMIRAL BARROW: This is the Radioman Second Class Branch; is that correct?

CDR. LOOSMORE: Yes, sir.

REAR ADMIRAL BARROW: It will be marked 83 for identification.

(Exhibit 83 marked for identification and made a part of the record.)

THE WITNESS: If I might add, the reason we were having the problems with the equipment and the remote control was due to the extreme storm conditions we were having that evening in the Soo.

Almost the entire City of Sault Ste. Marie experienced a power failure, and we had high winds which were blowing down antennas and trees and things like that.

The power failure was not one of those of short duration; it lasted from about 1900 Romeo until about 3:00 a.m. in the morning.

REAR ADMIRAL BARROW: Can you tell me where the power failure was? Was it in the Soo or at Whitefish Point, do you recall?

THE WITNESS: I believe it would have included Whitefish Point, and it included a great
portion of the City of Sault Ste. Marie, but it
did not include the base. We had power at the base.

REAR ADMIRAL BARROW: It is marked 83 for
identification and we intend to get it annotated
showing the date on which it was prepared.

MR. MURPHY: I have no objections.

Q. Is the station at Grand Marais part of your group, sir?
A. Yes, it is.

MR. MURPHY: Mr. Chairman, just for
purposes of simplicity, since that statement was
prepared under the direction of the witness,
if the witness would care to testify in his knowledge
as to when it was prepared, that is adequate for our
purposes.

REAR ADMIRAL BARROW: I think he indicated
that he couldn't recall precisely when it was pre-
pared, and I think he can furnish that for the
Board.

MR. MURPHY: Fine.

Q. I believe you indicated there was a local broadcast
on this outage. Do you have any records of broadcast
for any other outage?
A. I was looking at Exhibit 80-F and there is an entry
in the Group Review Radio Log.

At 1904 Local Time or 0004 Greenwich Mean Time,
the radio man at the Group Radio Station sent a Great Lakes
information broadcast that Whitefish Point radio beacon
and sound signal were imperative. He repeated that
broadcast — no. He sent it at that minute.

Q. What did you say initiated this call from Grand Marais?
A. The Steamer Fitzgerald called the station asking
if the radio beacon at Whitefish Point was operating
at about 1630 Local Time that afternoon.

Q. Once the Naugatuck was under way, which you testified
was about 9:00 o’clock Romeo Time the next morning, how
long did the search effort continue from that time?
A. I would have to check my records here to be certain
of that.

The active search continued through the 13th.

Q. Do you have a record which indicates when it was
ended as far as the group at Sault Ste. Marie was concerned?
A. Well, as I say, as far as the active search, we
were advised to have the Naugatuck return to base along
with our 40-footer on the late afternoon of the 13th of
November.

We did, of course, continue to keep any vessels that
were transiting the area alerted for sightings of any
survivors or wreckage, and specifically even to divert them
to transit inside the area between Pancake Shoals and Copper Mine Point, which would give them a direct route through the sinking and the debris area.

Otherwise, the normal upbound track would take them several miles south of the debris area.

We continued this until the 17th of November.

Q. Do you know whether any debris was recovered?
A. Yes. We recovered an extensive amount of debris.

Q. And what became of it?
A. Well, we had delivered the smaller items to Cleveland. There are two lifeboats and an aluminum lifeboat which is still at the base at the Soo. One is fairly intact; the other one has been torn in half.

We also have at the base at Soo two 25-man inflatable life rafts. As I say, the equipment was transferred to Cleveland on an invoice.

Q. Do you have a copy of that invoice?
A. Yes, I do. The major items here was there were about 20 life jackets and a dozen oars and about 10 life rings.

I think the search turned up just about every floatable object that came off the vessel between the search parties along the Canadian shore and the vessels and the aircraft transiting through the area.

CDR. LOOSMORE: I have a copy of Form DD 1149 from Cdr. U. S. Coast Guard Group,
Sault Ste. Marie, Michigan to Cdr. Ninth Coast Guard District, and the description is "Debris recovered from Steamer Edmund Fitzgerald as listed."

It goes from Items 1 through 28. Items 3 and 20, Item 3 indicating "Inflatable decks for life raft," and Item 20, "Inflation cylinder from life raft."

They are noted "Returned to Soo."

Do you know anything about that?

THE WITNESS: They were considered to be part of the inflatable lifeboat --

By Cdr. Loosmore:

Q Inflatable life rafts?

A Yes.

CDR. LOOSMORE: Sir, I would like to request that this be marked as 84-A and B for identification.

REAR ADMIRAL BARROW: Mark them so.

(Exhibits 84-A and B marked for identification and made a part of the record.)

THE WITNESS: If I might comment, I think the amount of debris recovered reflects great credibility on the thoroughness of the search units, because they certainly picked up everything
out there that was available.

CDR. LOOSMORE: Would you like to see

this, Mr. Murphy?

MR. MURPHY: No, thank you.

By Cdr. Loosmore:

Q. Captain, you mentioned the search by the Naugatuck

and a 40 footer.

Were those the only units your group used in the

search or were there others?

A. Those were the only units directly attached to my,

or under my command or group.

The 40 footer, incidentally, departed the station at

0820 on the morning of the 11th. We did have some shore

parties out from our group also.

The primary shore parties consisted of Canadians search-
ing along the Canadian shore line in the Copper Mine Point

area.

I would say the primary search units involved -- of

course, the first on scene were the aircraft, not only

the fixed wing aircraft, which was launched, as I said

before, at 2240 -- correction -- at 2206 Local Time,

and also a helicopter was launched at 2223 Local Time,

and a second one at 2249 Local Time.

So in the span of 43 minutes, three aircraft were

launched.
Q. Were those under the control of Group Soo or who?
A. No. Those were all from Air Station Traverse City and under the control of the District.

CDR. LOOSMORE: That's all I have, Admiral.
REAR ADMIRAL BARROW: Capt. Wilson?
CAPT. WILSON: Yes.

EXAMINATION

By Capt. Wilson:

Q. Captain, you mentioned once in your testimony that the Naugatuck went into a Bravo 2 status and I don't think we have ever indicated what that meant for the people that don't understand what a Bravo 2 status is.
A. A Bravo 2 status means that the vessel was ready to proceed within two hours and notification to get under way.
Q. There has been a great deal of testimony concerning the weather from the vessels in the area; and how long would it take the Naugatuck normally to get from its moorings to Whitefish?
A. You are speaking of Whitefish Bay or the entrance to Whitefish Bay, or are you talking about the scene of the last known position of the Fitzgerald?
Q. Just take it to Whitefish Point, normally.
A. That would take approximately two hours.
Did you say to Whitefish Point?

Q: Yes.

A: Well, that is further out. I was thinking to the entrance to Whitefish, which is approximately two hours. To Whitefish Point itself would be more on the order of three and a half hours.

To the actual last known position of the Fitzgerald, if I could add this, would be about four and a half hours.

Q: These times you gave me, were these under good weather conditions?

A: That is maximum speed under good weather conditions.

Q: When the Naugatuck got under way, what were the plans for the Naugatuck to do, assuming that she had not had the casualty?

A: Well, the plans as directed by the District were to proceed to the entrance of Whitefish Bay and then at that time an evaluation could be made of the weather conditions on the scene as to whether she could proceed further on out into Lake Superior, but she never arrived at that point where she didn't have to make that decision.

Q: You mentioned that the Fitzgerald called Grand Marais to check on Whitefish Point beacon.

To your knowledge, or to the records of the logs, did anyone else call any of the stations to verify the condition of any of the aids?
I have no knowledge, no direct knowledge of any other calls. I believe there may have been.

I remember hearing something that there might have been another call from one of the vessels that he wasn't able to pick up the radio beacon.

Q. Was this the beacon at Whitefish?

A. Yes.

Q. To your knowledge, were there any other queries or calls concerning any other aids to navigation at this time?

A. Well, there were a number of other aids in my group area that were blown, and the loosening of three buoys, for example, in the Straits of Mackinac that were reported adrift.

We had, I believe, one of the range lights in the river was out, so there were other casualties that night because it was an extreme and severe storm, and any time you have a storm, you are going to have some casualties in your aids to navigation system.

Q. You mentioned that among the gear still at the Soo there was a lifeboat torn in half.

Do you have both halves?

A. No, we just have one half that was recovered. The flotation tanks were ripped out of the boat, out of the half of the boat that we have, with the exception of, I think,
possibly one, and it is amazing that the boat remained afloat.

So I would suspect that if the flotation tanks were ripped out of the other tank, it possibly sunk or it still possibly may be attached to the vessel by means of the after falls.

The part of the boat that we have is the forward part, including almost the entire keel, which was still attached to the forward part of the boat.

Q. You also mentioned that quite a bit of gear was picked up by the shore parties.

Do you have any information as to the possibility that any souvenir hunters or any other people might have picked up gear before the shore parties got there?

A. I wouldn't believe so. I have no information to indicate that, and it is a rather rugged desolate area, and the gear that was turned over to us by the Canadian authorities were extremely well tagged. Every piece of gear from them, and maybe you have seen it, had a shipping tag on it with the signature of one of their representatives and the location where it was found; so they did an excellent job in the tagging of the equipment that was recovered.

Q. Based upon your experience, is the Naugatuck a good sea boat?

A. I would say it is not a good sea boat in rough weather,
particularly weather of this kind.

It was originally designed as a harbor tug and it has a rather low freeboard and we have an official commandant instruction on this class of vessel limiting its operation in high winds, and it doesn't say too much about the height of the sea but it does give a restriction on the amount of wind that you are supposed to operate the vessel in.

Q. Do you recall offhand what the limiting winds are?

A. Well, there are various limits given depending on the loading of the vessel, how much fuel or how much fuel capacity, or how much fuel it has aboard, which would help increase its stability; but they run from somewhere in the vicinity, I believe, of a range of 40 knots to 60 knots as a maximum, that it should be operated in, depending upon the loading of the vessel.

Q. Based upon your knowledge of the conditions of the Naugatuck on the day in question and your knowledge of the winds at the time, and your reports from the other vessels in the area, do you feel that the Naugatuck would have been able to go out of Whitefish Bay in the early hours?

A. Well, this would be a personal opinion on my part but one that I feel quite qualified to give because I have been on board a 180 foot buoy tender, which is in my opinion a much more -- seaworthier vessel in a storm very similar to this, on the night of the Morrell sinking, when she
broke in half on Lake Huron, and we were in seas of this
temperature of 20 foot and winds of this velocity, and I
would definitely say that a vessel of the Naugatuck's
class of 110 feet could not operate in that kind of weather
condition.

It would be extremely hazardous to the vessel.

CAPT. WILSON: Okay. That's all I have.

REAR ADMIRAL BARROW: Capt. Zabinski?

EXAMINATION

By Capt. Zabinski:

Q: Capt. Millradt, was that a consideration in not sending
the Naugatuck out to the scene, but to keep her within
Whitefish Bay?

A: I believe that it was. This decision was made by the
Rescue Coordination Center under the direction of the
District Commander, and I fully concurred in it and I think
I even recommended it to the Rescue Coordination Center
that we wouldn't send her out there until the seas were
to abate; but of course we were planning to get under way
to proceed out as far as she could go and stand by.

Q: Your group, Commander, the Soo, how big or how large
of an area does the group encompass?

A: It encompasses Marquette east to Sault Ste. Marie
and south into Lake Michigan and Lake Huron and the lower
-- the tip of the lower peninsula from a line across from
Traverse City to Alpena.

Q. How far out in Lake Superior would that be?

A. Marquette, about 175 miles to the west of Soo.

Q. This 40 footer, what was the number or identification on the 40 footer?

A. That would be 40573.

We used her the first day of the search, which was really the second day of the search, not counting the night before -- I mean, counting the night before which was the first day, and on the second day of the search on the 11th, we used the 40 footer the whole day out there because the weather calmed down considerably later on in the early hours of the morning and on through the day until about afternoon. It was considerably calmer out there.

Q. Out there, you mean on scene; is that what you are indicating?

A. Yes, sir.

Q. At the scene of the Fitzgerald's reported last position?

A. Yes, sir.

Q. Other than the Naugatuck and this 40 footer, these are the only two units in this command, in this area, that you could have used that night?

A. The only other -- well, the only other unit that could have been used would be the Grand Marais Station, which has a 36 foot motor lifeboat. We also have a 30 footer at
Group Soo, but that would be even less seaworthy than
the 40 footer.

Q. What was the disposition of the 36 footer at Grand
Marais?
A. It was in a Bravo 0, standby station status.

Q. Was it used in the search?
A. It was not used in the search.

Q. Why not?
A. I think the decision was primarily made by the Rescue
Coordination Center that the distance was too great to the
scene of the last known position of the Fitzgerald, approxi-
mately 45 miles, with the speed of the 36 footer of nine
knots, which would be about a five-hour run, and considering
the fatigue of the crew in those kind of seas, it would be,
again, extremely hazardous to send a boat that far out
in those seas, even though it was a 36 foot motor lifeboat,
and of course by the time she would have gotten there,
we had aircraft on scene and helicopters on scene searching.

Q. Would you describe briefly what the situation was,
as it developed?

We had a reported loss of a vessel. You try to
establish -- the first thing you do is try to establish
communications with that reported missing vessel. Is
that the nature of your testimony?

A. That is correct.
Q. And you indicated that you tried to reach the vessel
by radio several times, or the station did, and this was
Soo Radio or Soo Control?
A. I think it was a combination of both of them.
Q. Where is Soo Radio in relation to Soo Control and
where are they in relation to your headquarters?
A. It is like the front room and back room. They are
adjacent to each other with a sliding door in between.
Q. Do they have separate responsibilities?
A. Yes. The Soo Radio has communication responsibility
for the entire group area. They have five remote sites
throughout the group area and handle all of the teletype
communications and they handle radio traffic throughout
the group.

The Soo Control primarily handles the normal traffic in
the river and has river area control of the vessels in
the St. Mary's River.
Q. What plans or coordination is made in the event of a
disaster of this type to coordinate other forces that may
be in the area?

I notice you made reference to Canadian search teams.
Is there a plan, a joint agreement, or how does that work
out for this area?
A. There is a joint United States-Canadian SAR agreement
and the District was in contact with RCC Trenton,
and one of the earlier units on scene at 0225 Rome on the
morning of the 11th was a Canadian Rescue C-130 No. 320.
So they did have a Canadian aircraft out there
shortly after our initial three aircraft were on scene.

Q     Is this something — well, let's take the control.

You have mentioned, evidently, at the point at which
the RCC in Cleveland took over control of the search
and you were then a participating partner. Is that a
fair statement?

A     That is correct.

Well, they take control of almost all major searches,
almost immediately. The SAR mission coordinator.

Q     Is there a time when you relinquish control of RCC
in Cleveland, and when is that time?

A     Well, it is probably upon the first reporting to RCC
that we have a major case involving multi units, so as soon
as they direct Air Station Traverse City to send an aircraft,
we know that they've got the SAR mission coordinator and
the on-scene commander is usually designated in the first
unit on scene, which in this case was the aircraft; so
Group Soo is normally neither the on-scene commander nor
the SAR mission coordinator. They are not either the
on-scene commander or the SAR mission coordinator.

Q     So the dispatch of the aircraft which occurred was
done by RCC of Cleveland?

A     Yes, sir.
And how about coordination with the Canadian authorities? Did you do that, or was that done by RCC?

A The primary coordination was done through RCC.

We had some local coordination with shore parties there on the Canadian side at Sault Ste. Marie, Ontario.

They also used the Canadian Coast Guard cutter which is stationed at Sault Ste. Marie, the Verendrye and they proceeded out.

Q To the scene?

A Yes.

Q We have testimony before the Board that an attempt was made to -- not an attempt, but the Coast Guard was reached about the difficulties of the Fitzgerald by another vessel.

The master of the Anderson particularly indicated that he was advised to wait, or there was some delay of transmission because of a 16 foot missing boat which was in progress at that time.

... Can you refer to the logs and tell us what boat that was and what the nature of it was, the nature of the incident?

A Yes. We were working on the case of an overdue 16 foot boat in Whitefish Point near Tahquamenon Island.

Q What island?

A Tahquamenon Island. It was a case of two persons overdue in a 16 foot boat who had gone out before the storm hit
and were reported overdue.

We were pursuing that case at the time when the missing Fitzgerald came up.

Q  When did you receive this call for the 16 foot boat?

A  This was probably around 1800 Local Time.

It was 1835 Romeo, Local Time, according to the log here when the Anderson called in about the Fitzgerald.

He was informed that this 16 footer was overdue and he was to keep a lookout for it. He was coming down into Whitefish Bay.

Q  Do you know who called in or how you received information about this 16 foot boat?

A  Well, it was one of the relatives of one of the two people on board the boat that called.

Q  Was the boat recovered, or what was the final outcome of that search?

A  The people were located on Takwamenon Island the next morning by the sheriff. We were planning to send a boat out, but when we got involved in the Fitzgerald case, we sent our 40 footer on the Fitzgerald case instead of that, because we had the sheriff's department handling that. We felt they were adequate to handle that at that time.

Q  Do you have the names of those people who were involved in the 16 footer, the 16 foot boat incident?

A  I don't have any of the traffic on that case.
Q. But there was an incident and they were recovered?
A. That's true. There were four people on the island that were located the next morning, and I believe it was their boat that our 40 footer found on the way out in the morning, which was about 1000.

As it was proceeding out, one of the men refers to stopping and picking up a 14 foot boat to the Fitzgerald scene on the morning of the 11th of November.
Q. I would like to ask about the weather reporting by the various stations.

This is an exhibit for the Board, which is a teletype. Now, how does this weather get from the stations to Soo?
A. The stations call it in by voice radio to this Group Soo Radio Station.

He compiles the weather report and puts it on a teletype.
Q. At the stations, how is the weather taken? What are the procedures there, if you know?
A. It is a manual recording of the weather from observation by a person on the station for the manned stations.

There are some automatic recorders that send a signal back indicating what the weather is. Those are ones like Whitefish Point and Stannard Rock.
Q. Both of these automatic stations, Whitefish and Stannard, they would come in to Soo; is that correct?
A. I am not sure where those reports come in. I don't
know whether they come in to us or directly to the Weather Bureau; I am not too clear on that.

Q. And can it be activated or can a readout be gotten at Soo from these stations?

A. As far as I know, we have no readout at Soo Base for Whitefish Point.

I think that comes directly to the Weather Bureau in Sault Ste. Marie.

Q. How about Stannard Rock?

A. Again I am not sure on that one. It may come to possibly one of the stations up that way.

Q. Let's talk about manned stations a little bit.

What equipment do you have such as anemometers, or what equipment is there at the stations for compiling these weather reports?

A. They all have anemometers and wind direction indicators and barometers and thermometers for temperatures, of course.

The seas would have to be estimated by visual observation.

Q. These are shore stations generally, aren't they?

A. Yes. They are shore stations, and some of them are the off-shore light stations such as -- what was the one referred to before, Manitou Island, I guess, that has one? Lansing Shoals, Thunder Bay Island and some of these off-shore stations have the weather reporting.
Q. I am trying to get a handle on how a shore station can estimate the sea condition, report the sea condition, and see heights and so forth.

A. Like the station at Soo, the sea heights there are the heights in the harbor, which is rather meaningless, except we did have an awful lot of rough water in the harbor that night, because it was breaking over the dock.

Even then that would only be maybe three feet.

The station at Grand Marais, they look out their window at the breakwater and they see how high it is breaking, but probably farther out at sea it is breaking higher.

It is not very accurate.

Q. How about the anemometers; are they Coast Guard equipment or Weather Bureau equipment, or what is the situation?

A. I believe they are Coast Guard equipment calibrated by the Weather Bureau.

Q. Do you know when they were last calibrated?

A. I don't know, but I believe there is an annual requirement that they are to be calibrated annually.

Q. Whose requirement is that? Is it the Weather Bureau or the Coast Guard?

A. I believe it is a Weather Bureau requirement that the Coast Guard backs up and reinforces, let's say.

Q. How about personnel that take these weather reports or weather observations?
Are they trained? Do they receive special training, or what is the situation?

A. They receive a little bit of instruction on how to make up the reports and how to estimate the seas, I am sure, and various things. Otherwise it is merely a matter of how to read the instruments and reading the instruments. There is not too much training required.

Q. How about estimating the seas?

A. I would think there would be a little bit of instruction on how to estimate the seas at their particular station, wherever they estimate it from.

Like I say, at Grand Marais they are looking out and seeing how high the seas are breaking. I am sure they have developed a yardstick where, when it is over the top of the light station, then it is about 15 feet.

Q. Do you know if the Coast Guard does any training for weather?

A. I don't think so.

Q. We had Mr. Kennedy's testimony from the National Weather Service and he indicated that he goes along to the ships and does indoctrinations periodically. I wonder if he may have done the same thing for the Coast Guard stations?

A. I am sure it is possibly done periodically, but I am not familiar with it.
I am sure at our request they would be happy to provide any assistance we would need but like I say, it is not all that difficult to read the instruments.

Q. How about in the exhibit on the weather teletype sheets that we have?

You indicated there is no entry for 2200 hours on the 10th; is that correct?

A. That's correct.

Q. Nor any station?

A. That's missing, and I don't know why it is missing.

It could be that we maybe just didn't pick it up on the teletype or that the operator was too busy and didn't get that one sent, or it possibly just got lost and we don't have a copy of it.

Q. I wonder if you could check your records, Captain Millradt, and make every effort to locate and see if you don't have a teletype copy or what the conditions may be, because it is a critical time in the weather sequence for us.

MR. MURPHY: Captain, I am sorry, but my attention was misdirected. Can I ask the subject of that last inquiry? I apologize.

CAPT. ZABINSKI: Can we go off the record?

REAR ADMIRAL BARROW: Off the record.

(Discussion off the record.)
REAR ADMIRAL BARROW: Back on the record.

By Capt. Zabinski:

Q. Back onto that radio beacon at Whitefish Point.

As I understand it, this is an automatic station, a light, the fog signal and the radio beacon, as you indicated, are all automatically controlled.

To your knowledge, is there an emergency generator on site at Whitefish Point that comes on when there is a power failure?

A. Yes, there is. I tried to bring it out before but maybe I didn't make it clear.

It is primarily on-shore power, but it has a secondary power from an emergency generator that goes on automatically with a failure of the shore power to operate the station.

That's the way it is supposed to work, but we have had some difficulties with it in switching back and forth, and if a relay sticks open, then it won't work on either the shore power or the emergency generator.

Q. Do you know if the light, in fact, was operative on the night of the 10th?

A. I don't know; I would have to assume there were intermittent failures as well.

There is also a secondary light operated on battery power. Maybe if the switching system doesn't work, that might not come on either.
Q. You gave an indication that Soo has some type of a line which just monitors the general condition whether the light was on, whether the generator is on or the fog beacon is on; is that correct?

A. That's correct.

Q. And this is a telephone line?

A. It is handled over a telephone line; yes, sir.

Q. So the light, the radio beacon and so forth might be all right, but you might have a malfunction in your console or at the transmission system; is that correct?

A. That's correct.

Q. Have you made any checks on Whitefish Point since the 10th to see whether or not, in fact, the emergency generator does or does not switch on?

A. Yes. We checked it the following morning; a man went out to the light.

Q. What was his report?

A. Before he left, he found that it had switched back to primary, but that it still was not operating.

We went out there, and he found the emergency generator was warm and had been running; that a relay had stuck and when it went to switch back, it didn't switch, because of the stuck relay.

Q. Did you receive any reports on the evening of the 10th that the light at Whitefish Point was not operative?
1. Again, I don't remember that. There probably was one report that came in on either the light or the radio beacon.

2. There were vessels anchored near Whitefish Point there, and I would think that if they didn't see Whitefish Point light, they would have reported it.

3. Q. You do recall the one report from the Fitzgerald about the beacon being out; is that correct?

4. A. That's correct.

5. Q. Do you feel, in light of the research that you have done, that the beacon was, in fact, the radio beacon was, in fact, out at that time?

6. A. I feel it was part of the time, certainly.

7. Q. It may have been intermittent; is that your testimony?

8. A. That is right.

9. Q. You indicated, getting back to the search, that later in the day after the search, that later in the next day or two after the search, you had asked two ships going into Lake Superior to divert from their track and go up to Copper Mine Point and search in that area or pass through that area; is that correct?

10. A. Yes.

11. Q. How is this done? Was it by radio, or did you notify them as they passed through the locks?

12. A. We notified them by radio as they were leaving the
river system, which is the end of our control system;
that they were requested to search in this area for any
debris or survivors from the Fitzgerald.

Q. But you indicated they would divert from their tracks.

Did you actually tell them to divert from their track
or go into this area, or how was that handled?

A. We would request them, and most all of them would
cooperate, either on that 100 per cent to divert.

Q. Did you receive any reports back from any ships that
you diverted in that manner about finding something or
seeing anything?

A. Well, we have very limited reports on the later days
towards the end of the week.

Occasionally we might get a report on a light sheen
of oil or something of that nature.

On the 11th of November -- actually I had some ships
not only pass through the area but I had a number of ships
go around in circles and make search patterns in the area.

They found or sighted a considerable amount of debris
and equipment that we recovered.

One of the vessels was the William Rosch which picked
up the half lifeboat, and then later they delivered it back
to the Soo when they came downbound towards the end of the
week.

Q. You mentioned that some vessels had indicated some
oil pollution.

How were the pollution aspects of this casualty handled?

Who handled them?

A. The District Commander invoked a joint Canadian-U.S. response team to handle the possibility of a major oil spill in the area, since the vessel was carrying approximately 75,000 gallons of Bunker C and some diesel fuel for their bow thruster and generators and that we had a potential oil spill here.

The response team was established and helped to survey the area. We have got very good cooperation from the people from Michigan State and people from Canada and their Department of Coast Guard Operations.

So it was an excellent joint effort, but we didn't find any major oil spills.

There were a few minor oil spills the first day, and we concluded, or I should say the response team concluded that there was some oil spilled initially, but the bulk of the oil was probably still in the wreck.

Q. Who coordinated that effort? Did you coordinate it or did someone else?

A. Well, the Captain of Ports is responsible to coordinate the effort with the assistance of his joint response team. We had Cdr. Corbett from the District staff as the Acting Chairman of the joint response team and Group Cdr. Soo
also wears the hat of a Captain of the Port. So it was
my coordination on that also.

CAPT. ZABINSKI: That's all I have,
Admiral.

REAR ADMIRAL BARROW: I have a few questions.

EXAMINATION

By Rear Admiral Barrow:

Q Capt. Millradt, in looking at the winds reported on
the teletype messages there, what was the maximum wind
that was reported at the Soo for the 10th in the afternoon?

A The maximum I have here was, I believe, 35 knots on
these reports, but I know that we have had higher winds
reported higher than that at the airport in the Soo
and there were gusts up to 65.

It was reported in the newspaper that there were gusts
to 65 miles per hour that night and extensive storm damage.

Q Do you have any records which would indicate higher
winds?

A These are the only records that we have and I have no
records to indicate; no written records that indicate any
higher winds, although I remember the watch stander saying
that he saw the anemometer go up to 67 miles per hour
at one time.

Q Did you see it yourself?

A I did not see it myself.
Q: What is the period, the two-hour period, that is not included in the reports there?

A: It's 10-2200 Zulu, which would be about 1700 Local Time.

Q: Are you using the miles per hour? What is this report, do you know?

A: I believe these are all miles per hour.

Q: And what does your anemometer read out?

A: At the base?

Q: Yes. Is that in miles per hour?

A: Yes, sir.

Q: I think it is important that we get the additional readings from there and I would ask you again to search your records and see if you can find the additional readings. You don't get any reports from the airport in terms of observed weather, do you, or do you not?

A: No, I don't believe so unless we had specially requested it. There is a Weather Bureau at Sault Ste. Marie that would probably have more complete records on the weather system and the recorded winds and everything.

Q: That is at the airport, is it?

A: Yes, sir.

Q: You mentioned a little while ago the Canadian buoy tender, I think, that was assigned at Sault Ste. Marie.

A: Yes, sir.
Q. What size vessel was that?
A. I believe it is a 125 foot, not any larger than that.
Q. Who approached them and asked them for assistance?
A. I believe the District is the one that, I believe, sent that to RCC Trenton and asked for their assistance.
Q. They got under way and this would be on the morning of the 11th?
A. Yes, sir.
Q. Did they actually go north of Whitefish Point and participate in the search?
A. They had the in-shore area inside of Pancake Shoals up around Copper Mine Point area and they primarily searched in that area there.
Q. Who organized the shore parties, Captain?
A. The Canadian authorities organized the shore parties on their side.
They have an organization called -- sort of a search and rescue organization in the Soo. It's kind of a civilian volunteer unit and they primarily organize it over there.
Q. You testified that you asked the ships, I believe, some of them saltwater ships, and the Anderson, to participate in the search effort there.
Did you get any reports back from any of these subsequently as to the results of their particular efforts?
A. Well, we had a number of sightings by the vessels,
and the first sighting of any debris was made by the
Anderson at 0432, I believe. 0432 on the first morning,
while the aircrafts were on scene there, the aircraft,
the first aircraft got on scene.

I directed him to get in touch with the Anderson be-
cause he could give them a good reference point, and he
worked together with the Anderson and that was our initial
effort there.

The Anderson was back in the area about 2:00 o'clock
in the morning along with the Ford and I really feel
that that was our best line of attack right there, having
those two large lakers there who could survive in those
kind of seas and with the aircraft trying to illuminate
for them and to search the area around where they were.

Q. The aircraft was then in direct communications with
the Anderson?

A. Yes, sir, he was.

Q. What was it that the Anderson sighted first, do
you recall?

A. Pieces of a lifeboat, life-saving devices and oars.

Q. Say that again.

A. Pieces of lifeboats, life-saving devices and oars,
boat oars. This was in a position 258 degrees true,
eight miles from Copper Mine Point.

At 0925 Greenwich Mean time or 0425 Local Time.
Q. Is there an entrance in your log concerning the river closing during the 10th or 11th?

A. Yes, sir. This was due to the high winds and the lockmaster closed the locks.

At 1800 Romeo on the 10th and at 1825 Romeo, I closed the entire river because I felt it was too hazardous for the ships to navigate in.

Q. What is the particular hazard there that caused the closing? What is the hazard; was it from the wind or from the sea or what?

A. Primarily from the high winds. It is a very narrow channel in some sections of the river and there was quite a strong current, so it would be rather hard for some of the vessels to maneuver in.

I am not sure what guidance the lockmaster uses in closing the locks, but of course, if they close the locks, we have to close the river because they can't go through the locks anyway.

Q. Is this a fairly common occurrence? I believe you stated you have been there since August.

Do you have any knowledge of their having occurred very often in the past or not?

A. I asked on that and they said, the people I talked to, it was about the first time in two years that they knew that the river was closed due to high winds.
Q. Is there a monitoring of the radio beacon at Whitefish? Do you have a monitoring station that monitors the transmissions and monitors the radio beacon station?

A. We have a monitor at Group Soo. It is one of these moor gear equipments. They call it moor gear monitor systems that we were using for monitoring all of our offshore lights and automated lights, and this monitors it at the Soo.

You don't actually hear the signal by listening to a radio receiver, but a light lights up on the panel if the signal isn't being put out.

Q. Captain, I was wondering if there is anyone assigned the responsibility of actually listening to the radio beacon signal and telling whether it is transmitting or not?

A. The watch stander at Soo Control has this monitor right in the watch room there and there is an alarm on the monitor that should go off if the system fails. This is if the radio beacon fails or the light or the fog signal.

REAR ADMIRAL BARROW: Counselor?

MR. MURPHY: Yes; thank you, Mr. Chairman. I would like to say to the Board and for the record and on behalf of everyone for Oglebay-Norton Co. that much, the company and all its personnel appreciated the extreme cooperation and assistance received from Capt. Millradt and his staff during
the period immediately succeeding or following the
notice of the sinking of the vessel or that the
vessel might be lost and the treatment that they re-
ceived up there. Their cooperation was just beyond
the call of duty and for the record I would like to
thank the captain on behalf of the entire company,
you and your entire staff, Captain.

EXAMINATION

By Mr. Murphy:

Q. I have a few questions. I will try to keep them to a
minimum.

I am concerned about the automatic weather transmission
from both Stannard Rock and Whitefish, Whitefish Point.

Even though the power went out at Whitefish Point,
was the equipment that was still located there in a position
where it could still have been recording the winds or weather,
weather readings being received, but not transmitting them?

In other words, could there be any record of those
transmissions still on the scene that would have been made
at the time of the storm, but since the power was out,
those readings would not have been transmitted to your
station?

A. I don't think there is a recording device out there
that records it. It is transmitted back over a telephone
line to a recording device either at the Weather Bureau or
at the base. I believe it is at the Weather Bureau,
so if their telephone line goes out or if they have trouble
with the telephone line, they get a "fail" on the readings.
Q    I see. Also, I understand from what you have just
said that the readings transmitted by the automatic
equipment, apparently, go directly to the Weather Bureau
to Soo, which is located at the airport; is that your
understanding?
A    I believe so.
Q    Is that also true of the readings transmitted by the
automatic equipment at Stannard Rock?
A    I am not sure whether that goes to some other point
or back to the Soo.
Q    When you say back to the Soo, you mean back to the
Weather Bureau?
A    I am sure it doesn't come to the Coast Guard Station
from Stannard Rock, but it could possibly come to the nearest
Coast Guard Station to Stannard Rock.
Q    I see. From Stannard Rock to the station to the
Weather Bureau at the Soo, and that would be the line of
transmission, if you are correct?
A    Possibly, right. I am not really up to speed on which
method they are using there.
Q    Of course, what I am directing my question towards is
where those readings might be obtained, and you certainly
did not receive any of those readings at your base; is that correct?
A. That is correct.
Q. You mentioned that there had been an inquiry made of the Grand Marais Coast Guard Station with respect to whether or not the beacon at Whitefish Point was operating. Is that a fair statement of your comment?
A. That is correct.
Q. Do you know whether or not the Coast Guard Station at Grand Marais received any radio telephone communication from the Fitzgerald other than that particular communication?
A. As far as I know, that is the only communication that they had.
Q. Did you make any inquiry of the Grand Marais Station to determine whether or not any further communication was received from the Fitzgerald other than that one?
A. It should have been already made out. I don't have it yet, but it was requested of them to submit a statement from their watch tower along with their log so that we can ascertain whether there was any other communication and have a permanent record or written record of this particular communication.
Q. Do you know whether or not at that station, radio communications are taped?
A. No, they are not.
Q. So that any report that they might have received or did receive would have been based upon the records made by the watch stander?
A. That is correct.
Q. Do I understand that you are attempting to obtain a report to that effect?
A. Yes.
Q. And that report, may that report be submitted to the Board when it is obtained, please?
A. I would be glad to send it to the Board.
MR. MURPHY: If you would, please,
Mr. Chairman.
REAR ADMIRAL BARROW: Yes.

By Mr. Murphy:
Q. Do I understand in your testimony that even though some of the electricity in the City of Sault Ste. Marie was out due to the storm, that at no time was the radio at your base out of commission? Was it always in operation during the storm?
A. As far as I know, we had no trouble with the radio at the base. The Grand Marais station had an antenna casualty. One of their radios later on that afternoon, from what they call their "high level site" and it was a casualty to their radio antenna.
Q. I see. You mentioned the pieces picked up, the
1936

various items picked up from the vessel that were delivered to the base at the Soo and I think that you mentioned that you had made an inventory of all equipment.

Other than the equipment which is specifically identified as having been part of the Fitzgerald by markings or otherwise, is it possible that some of those pieces may not have come from the Fitzgerald?

A. I would think there were some items that didn't have Fitzgerald’s name on it that certainly could have come from other sources or washed off of other ships.

In fact, one life frard was washed off of the Anderson, which we returned to them, but a great many of the life jackets and life rings and oars had the Fitzgerald’s name on it, which were the majority of the items.

Q. Speaking of specifically items that may not have been marked with identification from the Fitzgerald.

A. Certainly this is possible.

Q. You mentioned that there still are two life rafts at your base. Those have been identified as having come from the Fitzgerald, have they?

A. Yes, we had the serial numbers from Oglebay-Norton that were matched with the serial numbers on the life rafts as being the same as those that were reported to be on the Fitzgerald.

Q. Have you personally had an opportunity to examine
either one of those rafts to the extent that you would be in
a position to render an opinion as to whether or not either
had ever shown any sign of occupancy?
A. I did not examine them myself in detail. I looked
at them sort of casually, I guess you would have to say.
As it appeared to me from just a casual observation,
that none of the equipment on the life rafts was used
and that I would say without having examined them in detail,
I didn't think they were used.

Now, an examination was made yesterday by a marine
underwriter from Canada, and in conjunction with Cdr. Mania,
they examined the life rafts in detail, indoors, and
they inflated them at the U. S. Steel Ship Store there
in the Soo.
Q. I would like to ask you this question, Captain.
It is just simply for one purpose, Captain, and let me
tell you what that purpose is.
In connection with this Board's investigation, there
have been two pieces removed from two of the life rings
for examination and I am personally not familiar with it.
These are water lights, I believe.

I am not that familiar with them and I am not familiar
with how they work and I am not familiar with what might
be the findings; but I would like to ask you if, from the
time this equipment arrived at your base until the time
that it was placed under absolute security, if there was any or could there have been any opportunity for any of this equipment to have been tampered with?

A. Well, I would say yes. First of all, the stuff was brought in by various units and there was an opportunity for the people that found the equipment to have tampered with it, even before it arrived at the base.

Secondly, we didn't have a locked area initially to store the equipment in and, as you know, having seen it up there, I guess it was the morning of the 11th or it was the morning of the 12th, when we started to accumulate the debris that had been brought in, and there were some items that the reporters were looking at and had access to the debris that was brought in, and it is possible that something could have been tampered with.

Thereafter, we locked up all of the loose equipment in a locked room, which they kept under lock and key with the exception of the lifeboats and the life rafts.

Q. Thank you. Would you tell us, please, what gear the Canadian authorities picked up and returned?

A. You mean the Canadian shore party?

Q. Well, you mentioned, according to my notes, that the Canadian authorities turned over gear to you that was nicely marked and clearly marked, and you thought, or you were very complimentary about the manner in which
they did it.

A. Yes, sir.

Q. Does your inventory indicate which came from the Canadian authorities?

A. No, but I have a listing here of what did. It is fairly short if you want me to read it.

Q. Yes.

A. The debris that we got from the Canadian shore party from Copper Mine Point was a monkey line, seven and a half foot stepladder, one of the inflatable life rafts picked up by a shore party, one broken oar, one boat cover, four -- each small, flotation tanks, one rudder from a small boat, three life jackets, one empty boat box, one inflation cylinder for a rubber life raft, one bag of garbage and one piece of life ring.

Q. Thank you, Captain.

We have had some testimony earlier that there have been some sonar examinations made to determine the location of the wreck and so forth, and I believe the vessel, the name of the vessel was the Woodrush.

Is that a vessel stationed at your base?

A. No, that is a Coast Guard 180 footer buoy tender stationed at Duluth, Minnesota, and she was involved in the search and subsequently stayed at the base and proceeded in the sonar search.
Q. I see.

A. For the record, you might note that she was under way directly to proceed to the scene and was under way Duluth at 0008 Local Time on the morning of the 11th of November, and arrived on scene at 2300 Local Time on the 11th of November.

MR. MURPHY: Thank you, sir.

REAR ADMIRAL BARROW: Off the record momentarily.

(Discussion off the record.)

REAR ADMIRAL BARROW: Back on the record.

By Mr. Murphy:

Q. Captain, do you know whether or not there is any monitoring of radio communications between vessels monitoring in the sense of recording of radio telephone communications between vessels occurring either on AM or FM on Lake Superior?

A. Not to my knowledge unless one of the commercial radio stations like when we were talking about WLYC Rogers City, unless they have a recording type of device that they use, but I don't know of our Coast Guard stations having recorders in their radio rooms.

Q. And that is also true of your Coast Guard stations as to monitoring of communications between the station and vessels; is that correct?

A. That is correct.
Q. So that there isn't, to the best of your knowledge, any monitoring equipment either between vessels, of communications, or between vessels and shore installations operated or under the control of the Coast Guard?
A. That's correct.

Q. Had there been any prior history of the Whitefish Point radio beacon being disabled in the past or within the past few years or within the past few months?
A. Yes. We have had several failures of the system. Actually, this light was automated in the recent past. I don't know the exact date. I would say maybe -- I have been there only since August, but I think in the last two years it has been there. This equipment still is giving us some trouble, and it hasn't been quite ironed out yet, as to some failures which we have been having.

It is primarily the relays back and forth from the remote side.

Q. This is referring to the period since the installation of the automation of the equipment or installation of it?
A. Yes.

Q. When did that take place?
A. Two years ago.

Q. And that includes the beacon and the light; is that true?
A. That's correct.
Referring to your records, and I am referring now to your record of your log, your traffic summary on November 10th which is Exhibit --

MR. MURPHY: Have these been marked, Commander?

THE WITNESS: Exhibit 81-H.

Q 81-H, and I am referring to the entry under 2228.
A This would be 81-L.
Q There has been testimony here earlier with respect to communications from the vessel Benfri.

Can you tell me when that record indicates a communication from the Benfri and, if so, what is it?
A At 2218 Romeo we requested assistance from the Benfri according to the log here. That is 2218 Local Time.

At 2218 Local Time, he reported he remembered seeing a vessel's lights at approximately 1900 Rome or Local Time off his starboard side.

The vessel's name was unknown. I believe that's the only entry we have here from the Benfri.

MR. MURPHY: I have no further questions, Admiral, but I would like to make the request that the weather records be obtained from the weather station, the Weather Bureau station at the Soo Airport.

I think they will become very important in this
testimony this morning.

REAR ADMIRAL BARROW: We can get those from Sault Ste. Marie.

MR. MURPHY: And those include the receipts of weather recordings from the automated stations at Stannard Rock and at Whitefish Point if, in fact, that's where they are received.

REAR ADMIRAL BARROW: If that's where they were received; yes, sir.

MR. MURPHY: Thank you. I have no further questions.

REAR ADMIRAL BARROW: I am going to stop in five minutes for lunch. Do we have any further questions by the Board?

EXAMINATION

By Capt. Zabinski:

Q. Capt. Millradt, in your direct testimony you indicated there were blackouts in the Soo, in the City of Soo or the community; is that correct?

A. That's correct.

Q. And you indicated that there was no interruption in the services, electrical services, as far as the Coast Guard Station was concerned.

Is that correct?

A. That's correct.
Q. Now, were you on emergency generator power because of local blackouts?
A. We were on commercial power. We have an emergency generator at the station, but that downtown part of town that we are located in did not have a power failure.
Q. So there was no interruption in the power to the Soo Station; there was no interruption in electrical power to the Soo Station; is that correct?
A. That's correct.

CAPT. ZABINSKI: I have nothing further.
REAR ADMIRAL BARROW: Thank you very much, Captain.

I am going to ask you now if there is anything that you can recall concerning the events which took place on the afternoon or the early evening or during the night of the 10th, which our questioning has not brought out, but which might bear on our purposes here in finding out what happened to the Fitzgerald.

I will ask you if you will give us anything, Admiral.

THE WITNESS: I really have no additional information that hasn't been brought out.
I think everything has pretty well been covered as to the part we played in it, and the information
that we had from various communication contacts
with the Anderson and the other search units.

I would like just also for the record to commend
the Anderson and the Henry Clay Ford for the outstanding
attempt that they played in the rescue attempts
and likewise to our own search and rescue attempts.

The aircraft involved were, of course, searching under hazardous conditions for an aircraft to
be searching on a night like that.

REAR ADMIRAL BARROW: Thank you very much.

Just one clarification for the record.

I don't think I am asking this witness to get
the weather reports from the Soo. We can get those
reports directly through the National Weather Service.

MR. MURPHY: That's understandable.

REAR ADMIRAL BARROW: You are excused, and
you are cautioned not to discuss your testimony
with anyone other than counsel until the conclusion
of the investigation.

You are excused, and we'll recess now until
1415. Captain Woodard will be the next witness.

(At 1:30 p.m., the luncheon recess was taken
to reconvene at 2:15 p.m. this date.)
AFTERNOON SESSION
2:27 p.m.

REAR ADMIRAL BARROW: Good afternoon, ladies and gentlemen.

Let the record show we reconvened at 1427.

Counsel for parties in interest for the Oglebay-Norton Co. present.

Cdr. Loosmore, call your next witness.

CDR. LOOSMORE: The Board calls Capt. Woodard.

CEDRIC WOODARD called as a witness, being first duly sworn, was examined and testified as follows:

MR. CAMBRONNE: I would like to introduce myself. I am Karl L. Cambronne with the law firm of Chestnut, Brooks & Burkard from Minneapolis, Minnesota, attorneys for Upper Great Lakes Pilots, Inc. and attorneys for Mr. Woodard.

REAR ADMIRAL BARROW: From your last appearance, you recall that the responsibilities are the privileges of the witness, do you not?

MR. CAMBRONNE: Yes.

EXAMINATION

By Cdr. Loosmore:

Q Captain, we are required to make a verbatim transcript
record of these proceedings, and in order to assist us in
that, I would request that you speak as slowly and as
clearly and as loudly as possible.

Now, would you state your name, address and occupation?

A. Cedric C. Woodard. My address is 4215 London Road,
Duluth, Minnesota.

Q. And your occupation, sir?

A. Well, I am retired really. I am a retired skipper
and pilot.

Q. Do you hold a Coast Guard license or document?

A. Yes, sir.

Q. Could you describe that, please?

A. I have an unlimited master's license, Duluth, Gary,
Buffalo and Capt Vincent.

Q. And how long have you held such a license?

A. I have had the master's license since 1942.

Q. When did you receive your first license?

A. 1938.

Q. You said you were retired. How long did you sail
actively?

A. Oh, actively, I sailed when I was 14, till I -- I
was active until two years ago.

Q. And are you completely retired now?

A. Well, I go out once in a while as a pilot, to help the
pilots, not very often.
Q. When was the last time you were out?
A. The 10th of November.
Q. As I believe you know, this Marine Board of Investigation is looking into the loss of the Edmund Fitzgerald, which took place on the 10th of November in the eastern end of Lake Superior, and the purpose of asking you to testify is to see what additional information you can offer.

You said "that particular day," in answer to my question about the last time.

Where were you on the 10th of November of this year?
A. Well, I came in to Detour at about 7:00 o'clock that morning, Detour, Michigan, and I left the Soo Locks at approximately 1:00 o'clock, 1300 that afternoon.
Q. What vessel were you on?
A. The Avaforse, A-v-a-f-o-r-s-e.
Q. And where were you bound?
A. Duluth.

REAR ADMIRAL BARROW: Sorry, would you spell Avaforse, please?
THE WITNESS: Well, maybe I spelled it wrong. I think it is A-v-a-f-o-r-s-e, I think it is.
By Cdr. Loosmore:
Q. What nationality is the Avaforse?
A. Swedish.
Q. And how big a ship is it?
A. It's 490 feet long, 64 foot beam, and 42 foot, the keel.
Q. If you left the Soo Looks at 1300, approximately
what time were you at Whitefish Point?
A. Approximately at 4:00 o'clock, 1600.
Q. And then what did you do from there?
A. Well, we proceeded on toward Manitou Island or
up Lake Superior for Duluth.
Q. Did you at any time have any communications with
the Fitzgerald?
A. Yes.
Q. Could you describe those, please?
A. Well, when I was just a little past or abreast of
Whitefish, the Fitzgerald called for any ship in the
vicinity of Whitefish Point, and nobody answered, so we
answered them and we wanted to know if the beacon was
working or the light was on.
Q. And what did you reply?
A. I replied then that I couldn't see no light, and we
couldn't get the beacon. It may have been on, but I
couldn't get it.
I could see between the snow storms the tower or
structure of the light house.
Q. Was there anything else to that conversation?
A. No. I don't think the first one there was. I
called him back later. Just what time that was, I don't
know, but I told him the light was on, and we could see it
good between the snow squalls.

Then we talked about the weather a little.

Q. Yes, sir. Could you recount as completely as you can
recall everything that took place in that, the second conver-
sation?

A. I just asked him how the weather was up there.

He said it was one of the worst he had ever seen.

He did tell me he had a list.

Through the information I heard him say something --
he was not talking to me but someone else; he said, "Don't
allow nobody on deck."

Q. Did he, meaning the Fitzgerald, discuss with you
anything else about possible problems that the vessel
might be having?

A. No. The only thing he told me was that he had a list
and his radars were out.

Q. Did he use the plural, radars?

A. He said he had two and both were out. I asked him,
I said, "You got two radars?" and he said, "Yes, and
they are both out."

Q. Did he say anything else about any other condition
on the vessel?

A. No, not to me.
Q. Did he ask you to do anything?
A. No, he didn't.
Q. Did he tell you where he was?
A. Well, he didn't tell me but I heard the Anderson tell him. I heard the Anderson tell him about where he was.
Q. And do you recall where that was?
A. When the Anderson called him, I heard him twice. The last position he was about 20 miles, he said, above Whitefish as near as he could tell.
Q. Did he say that, as near as he could tell?
A. Yes. He said as near as he could tell, and I heard say, "I am 10 miles, about 10 miles behind you and gaining about a mile and a half an hour on you."
The Anderson said he was 10 miles from him, and he said that he was gaining about a mile and a half an hour on him.
Q. That's the second conversation you had with the Fitzgerald.
Did you have more; did you talk with him just twice?
A. That's all.
Q. Do you know what time the first conversation took place?
A. No. I couldn't say exactly. One was not too long after 4:00 o'clock, 4:00 or 4:30, but I would say a little past Whitefish.
What the time was, I don't know. It was not marked down.
Was the vessel keeping a navigational plot?

Was there a chart?

This vessel, do you mean the Swedish vessel?

Yes.

Do they keep plots?

Yes.

What bearings we could get — we couldn't get any correct bearings. Our radar was out. We were getting Caribou and Michipicoten, but it was very poor.

You were getting those as radar bearings?

No, no; a direction finder.

So how were you navigating then?

Just by our compass and the bearings that we were getting.

What was the visibility like?

Well, at times you couldn't see at all, and again, you could see for miles.

Whitefish would come out plain and then it would be lost.

Why?

Because of the snowstorms.

What time of day was this, 4:00 o'clock?

From 4:00 o'clock on until 7:00 we had a lot of snow and even later than that; but that was the hardest snow.

MR. MURPHY: Pardon me. May we establish what time this man was operating, please?
CDR. LOOMISMORE: I will.

Q. Captain, what time did it get dark that afternoon; do you recall?

A. Well, I wouldn't say clear dark, but it was quite dark at 4:30. It was because of the snowstorm.

Q. Captain, do you know who on the Fitzgerald it was that you talked to?

A. I asked. I talked to the captain. That was Capt. McSorley.

Q. Did you know Capt. McSorley?

A. Yes, to speak to.

Q. How long had you known him?

A. Well, I had known him to talk to him for probably 15 years.

Q. Were these long conversations that you had?

A. No, no.

Q. Could you detect anything in either what he said or in the way he said it, that gave you any concern about this situation that they were in?

A. Well, he stammered, -- I didn't recognize his voice at first and I asked him who I was talking to, and he said, "Capt. McSorley."

Q. Why was it that you didn't recognize his voice?

What was it?

A. Well, it sounded like he had a cold or he was weary,
he had been up a long time, I didn't know which. It
just wasn't his voice.
Q. Did you identify yourself?
A. No, I didn't. I didn't tell him -- I think I -- no,
I am not sure of that, if I told him, "This is Woodard,"
or not. I don't remember if I told him my name or not,
but I told him the name of the ship that I was on when
I answered him.
Q. Where were you, where was your vessel, when the
second conversation took place?
A. I would say I was about three miles, on 300 degrees.
We were steering from Whitefish Point, well, I would say
we steered 300 degrees from Whitefish Point, two miles out.
We had no good positions. To tell you exactly where
we were at, we had no positions, really.
Q. Well, let's go back to your transit up Whitefish Bay
and around the corner.
Do you think you recall what you did well enough or
do you have notes from which you could construct a rough
course line and tell us approximately where you were?
A. At what time?
Q. Well, from, -- you said you passed Whitefish Point at
approximately 1600?
A. Yes.
Q. Do you have any information from then on for the next
several hours, which would allow you to construct a rough
plot of where you were on the chart?
A. Well, the Benfri gave me a plot on his radar and
that's the first good point we had.
Q. And what time was that?
A. I would say that was around 5:30, 6:00 o'clock.
Q. Do you know what that position was?
A. According to him, we were about three miles on that
300 course, heading for Thunder Bay, that direction.
That is the course you steer for Thunder Bay, and we
were about on that course, and he said, as nearly as he
could tell, the position he gave us, we were just about
on the Thunder Bay course.
Q. Who were you talking to on the Benfri?
A. O'Brien. He was the pilot there.
Q. Do you think you could take a chart and draw a rough
course line of where you were that afternoon from 1600 on?
A. Well, I can tell you later where I was when we got
to Crisp Point, then we got cross-bearings and we had good
positions.
Q. What time was that?
A. Well, that, I didn't check the time either, but
I would say from 6:00 and 6:30 on we were getting cross-
bearings on Crisp Point and Whitefish Point.
Q. Do you know what that position was or would you
recognize it?

A. Well, close. I couldn't tell you to pinpoint it, but -- I didn't take the position; it was taken by the officers on the --

Q. Which chart were you navigating with?

A. The regular white Lake Superior chart.

Q. No. 9?

A. Yes.

CDR. LOOSMORE: Can we have a moment to ask the witness to as best he can reconstruct his position?

REAR ADMIRAL BARROW: You can ask on the record and then we'll go off and recess a few minutes.

By Cdr. Loosmore:

Q. Capt. Woodard, I have a copy of Lake Survey Chart No. 9 and I would like to ask you to draw on this chart to the best of your knowledge the positions of the Avaforse from the time you passed Whitefish Point through the rest of that evening, if you will, please, on the 10th.

REAR ADMIRAL BARROW: Now, we will recess for about five minutes while the witness reconstructs his course.

(Recess taken.)
REAR ADMIRAL BARROW: Back on the record.

By Cdr. Loosmore:

Q. Have you completed making your sketch, Capt. Woodard?
A. Yes. I wouldn't say that was accurate.

Q. Would you repeat that, sir?
A. I wouldn't say that was accurate, but it is close.

Q. Does this sketch represent your best estimate of the positions of the Avaforse on the 10th of November?
A. Yes, sir.

CDR. LOOSMORE: Sir, I have a copy of Lake Survey Chart No. 9, September 14, 1973 with positions indicated in the vicinity of Whitefish Point signed by Cedric C. Woodard, today's date, 11-26-75, that I would like to request be marked Exhibit 85 for identification.

REAR ADMIRAL BARROW: Exhibit 85 will be marked for identification.

(Exhibit 85 marked for identification and made a part of the record.)

(Document handed to Mr. Murphy.)

CDR. LOOSMORE: The exhibit has been marked No. 85 for identification.

Let me put it up here.

By Cdr. Loosmore:
Q. Captain, on this sketch that you have made, which you have stated is, I believe, -- how did you describe your accuracy here?
A. I said it was not accurate but as near as I could tell. I didn't take the bearings; it was taken by the chief officer.
Q. All right. You have indicated a cross in the vicinity of Whitefish Point and you have marked the time "1600" on that?
A. Yes.
Q. What time zone is that?
A. You mean what zone were we in? What time zone?
Q. What time zone were you keeping on the ship?
A. It's the same as that Port Huron time we started out. It was Eastern Standard, I think it would be.
Q. Is that the same time as you had at home at Duluth?
A. No. It's one hour ahead.
Q. One hour ahead?
A. Yes, because we set our clocks back one hour the next day.
Q. Now, sir, there is a line indicated here from Whitefish Point in a generally northwesterly direction. What does that line indicate?
A. Well, that indicates as near as I can, the course we were on, steering 300.
Q. 300?
A. Yes.
Q. And almost on top of the 85th meridian there is an X. What is the significance of that X?
A. Well, that's where we were for about two hours that we didn't go ahead, make any headway. That is the plot that O'Brien give me as near as I can recall.
Q. All right. And the other position on this is marked "1400"?
A. Yes. That is abreast of Crisp Point.
Q. How did you determine that position?
A. You could see the light. You could see Crisp Point and you would also see Whitefish at times.
Q. And did you determine this position by visual bearings?
A. Yes.
Q. Did you actually take visual bearings from it?
A. Not myself, but the officers did.
Q. Now, on this chart, can you indicate where you thought the Fitzgerald was when you first talked to it at 1600?
A. Well, I didn't ask him. The only idea I had as to where he was was by listening to the Anderson.
He didn't give me any idea where he was. All I heard was when the Anderson was giving him about how far to run from Whitefish Point.
Q. Was that before or after you talked to him the first
time?

A. Both of them was before.

Q. Both of them? I don't understand.

A. I heard the Anderson talk to him twice, and I don't remember exactly the time, but it was between or before the time that I talked to him the last time.

I talked to the Fitzgerald twice.

Once was right at Whitefish, and I don't know, I would say the next one was maybe 45 minutes or an hour later.

I called to tell him the light was on.

Q. And he replied?

A. He replied, yes. I listened in then on the Anderson, the positions he was giving.

That's the only thing that I knew as to where the Fitzgerald was.

Q. Okay. Were the conversations between the Fitzgerald and the Anderson that you overheard before you first talked to the Fitzgerald?

A. No. It was after the first time I talked to him.

Q. Before the second time?

A. Yes.

Q. So it was between the time of your first conversation with the Fitzgerald, which was about 1600?

A. Yes, maybe a few minutes after.

Q. Approximately 1600?
Q. And before the second time, the second conversation, which was, as best you can recall, was when?
A. I would say about 1700 or approximately.
Q. Now, I am not sure of this, but it was around 1700.
Q. Did you at any time during these conversations have any radar contact with the Fitzgerald?
A. Radar? No. Our radar was out.
Q. How many radars did the ship have?
A. One.
Q. And was it completely inoperative?
A. Completely inoperative. The scope was going, but no picture.
Q. Did you have any visual contact with the Fitzgerald at all?
A. No.
Q. Did you have any visual contact with any other vessel?
A. We thought we seen a light seven degrees on our starboard bow, but it never proved out to be a light. We never met it.
Q. Were there other vessels in the area?
A. The only one I knew was the Anderson.
Q. How about the two vessels you described astern?
A. I could see the one astern; I couldn't see the second one, but I could see the Benfri. I saw him when he came
around Whitefish.

At times the snowstorm shut him out, but most of the
time I could see him.

Q: How far astern was he of you?

A: I would say when he came around the point there, about
three miles. I am just guessing. I had no radar, nothing
to know for sure as to how far he was.

Q: Were you familiar with that ship, the Benfri? Had
you seen it before?

A: Not the Benfri; the Nanfri, I had been on, but not the
Benfri.

Q: Are those sister ships?

A: Practically. They are practically the same size and
power.

Q: What was the weather like once you got around, after
1600?

A: It was very severe. There were big seas and everything
and strong winds.

Q: Okay. By big seas, could you describe as best you
can the height of them?

A: Well, I don't know how you measure seas, and I never
did; but it was one of the biggest and wildest seas I
have been in, I mean fast.

Q: What do you mean by fast?

A: Well, the tops were blowing off them, and there was
white water. Then the blue water would come, and then there was white water.

The sea was straight up and down and a lot of them were coming at you. It was not like big rollers.

Q. Could you estimate how far it was from the bottom of one to the top of the next one as it was coming toward you?

A. I would hate to say what it was.

I have no idea how they measure them, but it was a big sea. To say how far, I couldn't.

Q. Well, do you know how much freeboard the vessel you were on had?

A. Well, we were 42 foot and we were drawing 19, 20, so that give us, you can tell how much freeboard we had.

Q. About 23 feet, give or take a little bit?

A. Yes. That's on the stern.

On the bow we had more. We were drawing 14 and there was times that she put her bow right in under, and that's a forecastle on top of that again, eight feet on top of the 42.

Q. Where is the pilothouse on the Avaforse?

A. Aft. Everything is aft.

Q. And you testified it was 400 and some feet long?

A. 490.

Q. 500 feet, for all practical purposes?

A. Yes.
Q. Could you tell, can you tell me or can you think about it a minute and estimate, in this wild sea, how many waves along the length of your 500 foot ship there were at any one time?

A. That would be very hard to estimate but I don't think there was ever more than one at a time.

Q. One amidships?

A. Well, I would say if one hit the bow, by the time it got down to the stern there would be probably another one just about ready at the bow. That is, to say exactly how far, I don't know.

Q. How much was your vessel pitching? A lot?

A. That, I couldn't say either, but plenty.

Q. Were you rolling much?

A. No -- well, we went around in the trough once and we rolled terrible, but most of the time we were just pitching.

Q. Can you estimate how much you were pitching?

A. I don't know how you would estimate it.

Q. Degrees, maybe?

A. I would hate to say. I know it's the worst pitching I think, or one of the worst I have been in, but to say how much, that is hard to say.

Q. Were you pitching enough that the hold forward would come into the water as you pitched up?
A. Well, I think we did several times, but she never
hammered, pounded, what we call it. She never slapped
the water like that.
Q. You didn't have any slamming effect, then?
A. No. We got no slamming, but I would say our bow
come out of the water a good many times, but to prove that,
I couldn't.
Q. Do you know how fast the wind was blowing?
A. Well, I had somebody call me twice -- who it was, I
think it was the William Clay Ford, but it just said
"Ced, it's blowing 82 knots with gales up to 84."
He called me twice just over the air on 16, but
who it was, I don't know.
Q. You mean he called you but didn't identify himself?
A. He didn't identify himself. He just said, "Ced."
Q. Oh, Ced?
A. Ced. That is my first name.
He called me twice and said it's -- he just come on 16
and that's all he said. He said, "We have got steady 72
knots, with gales up to 84."
Q. What makes you think that was the Ford?
A. Well, I thought it was his voice. I knew Erickson
on there and I thought it was, but it could have been anybody
else. It could have been.
I was with the, oh, what is that? That Canadian --
oh, what is that?

MR. MURPHY: Hildamar Jan?


A. (Continuing) He called several times, too. It could have been him, too.

Q. Do you know the master on that ship, too?

A. No, I don't know him but I talked to him quite a bit that day.

Q. Where was he?

A. He went to anchor behind Whitefish.

Q. Do you recall what channel all of this communications with Anderson and Fitzgerald was on?

A. Well, it came in on 16 and I think they went to 6 each time, but I couldn't for sure say that, but it seems to me they went to 6, but I can't for sure say that.

Q. What were you listening on?

A. Well, I went, whatever channel they went through, I went to. We were listening on 16 for, to get the channel, but they say where to go, 6, 8, 10, 12, 11, like when I talked to O'Brien, it was always 11.

Q. What listening capability did the Avaforse have, or were you using ship's radios or your own?

A. Ship's.

Q. The ship's. Did they have any other radio telephone available on the bridge?
A. Not that I know of.
Q. Just the one?
A. Just the one.
Q. Did they have an anemometer?
A. No.
Q. What direction was the wind from?
A. Well, it was just about 290, continuous, between 290 and 300, practically 290, as near as you could tell.
Q. Did it change direction at all?
A. Very, very little.
Q. Over the whole eight-hour period you plotted there?
A. It was just about, when we headed 290, 300, we were practically directly into it.
Q. How long did it hold up as heavy as you have described, big seas?
A. Well, I would say by 10:00 o'clock it had started diminishing. That's 2200.
Q. What kind of speed were you able to make in the Avaforse?
A. Well, at a time we made no speed; I think there was times that we went backwards, but it took us practically eight hours to go 12 miles, so you know what kind of speed we were making.
Q. You said you got around, or you went around in the trough once. What happened then?
A. We couldn't get our bearings, and I was scared that we
were getting close to Pancake Shoal. According to the
bearings, we were getting Caribou and Michipicoten,
which showed us further to the north. We dropped off to
290. She went good, and we went to 280.

Then I said, "Go to 270," and when we went to 270,
she went right on to 225. It took us about 20 or 25 minutes
to get her back to 300.

Q. What speed were you turning when all this was going on?
A. When we were in the trough and looked at the turning
of the wheel, it was between 80 and 50 revolutions, 50
and 80; but her max was about 118.

They had throttled her down.

Q. What speed through the water were you turning for 50?
A. I would say maybe six or seven knots.
Q. And at 80?
A. At 80 it was probably nine.

I am guessing because I don't know for sure. I am
just thinking that it would be about that.

Q. You said it took you 20 or 25 minutes to turn around.
What was happening at that time?
A. We had to get more engine to get her back. We would
come back 10 and lose five and come back 10 and lose five.

For a while we didn't gain anything. She just stayed
in the trough until we got more revolutions.

Q. Was she rolling?
A. At times our deck touched the water.
Q. At any time were the seas breaking over the deck?
A. No. We were taking seas over the bow once in a
while, but once she rolled and got in the trough, the
spray came over, but not the sea.
When it hit her, it drove her up on the side, but
there was no sea coming over.
Q. Did you know this weather was coming?
A. Yes. Well, I never expected anything like that, but
they had gale warnings.
I advised the captain not to go out, and he said,
"This is only a lake." He said, "We'll keep going."
Q. What did he say after that, the next day?
A. The next day he said, "This is a pretty big lake,
ain't it?"
(Laughter.)
Q. Did you talk to the Anderson at all, anybody on the
Anderson?
A. No. Do you mean the Steamer Anderson?
Q. Yes.
A. No, I never talked to him at any time.
Q. Did you have any communications with anyone other
than the Fitzgerald?
A. With Bob O'Brien aboard the Benfri and Jacovetti
on the Nanfri, and communications with William Clay Ford.
I had communications with the Hildamar Jan.

Q. When did you first learn that there was a serious problem with the Fitzgerald?

A. I tell you, I didn't really ever know. The last time I talked to him he told me he had a bad list, but I never knew he was in any trouble.

The last time I talked to O'Brien by phone was on the 11th, and it stayed that way for two hours, so we weren't getting the conversations.

It was not going over the air.

Q. You said the captain of the Fitzgerald said he had a bad list?

A. He said, "We have a bad list."

Q. Were those his exact words?

A. I think it was; yes.

Q. Which conversation was that?

A. I think that was the last one.

Q. Did he tell you or do you have any other indication of which way the vessel was listing?

A. No, he never said.

Q. Did he say anything else?

A. No. He didn't say anything else to me. He told me it was one of the worst seas he had ever been in.

Q. Did he tell you what he was doing about the bad list?

A. No. I didn't ask him, and I didn't say. I figured he
was busy.

Q. What did you reply when he said, "We have a bad list"?

Didn't you reply to that?

A. No, I didn't say anything.

Q. What other damage did he describe?

A. He didn't describe no other damage to me. I heard him talk to somebody on the phone, and he spoke to somebody on the ship. I suppose he spoke to somebody and told them to allow nobody on the deck.

In the conversation, I heard something about a vent, but I didn't know if he was opening a vent, closing a vent, or whether it was broke.

He didn't say; he just said, "Keep everybody off the deck."

Q. Who started that conversation?

A. What do you mean now?

Q. Did you call him?

A. I called to tell him that the light at Whitefish Point was on, but he called me first to see if the beacon was on, and when I did see him, I called and told him the light was on. The beacon we couldn't get. But the light was on.

Q. All right. Now, in that conversation, how did the list come up?

A. Well, I asked him how the weather was out there, and he said it was one of the worst he has seen.
I said, "How is she riding?"

He said, "I have got a bad list." That's all what was said about it.

Q. And didn't you acknowledge that you had even heard that?

A. Yes. I talked to him, that he had a bad list, but which way or what caused the list, I had no idea.

Q. Captain, obviously we are grasping at anything we can to understand what happened to the Fitzgerald, and I think it would help if you could reconstruct that entire conversation as much as you possibly can.

About 1700 you are under way, and you just testified you were not getting anywhere and that it was snow-stormy and kind of snow-squally, and the weather was pretty lousy.

You suddenly realized you could see the Whitefish Light, and you must have thought something like, "I better call the Fitzgerald"?

A. I thought I better let him know that the light was on; that it would be of a help for him to know it was on.

I said that it was on, and we could see it good between squalls, but we didn't get the beacon.

Q. What channel were you on?

A. I think I called him on 16. I called him on 16, and I went to 6.
Q. And then did you identify yourself?
A. I told him it was the Avaforse, the same ship that
talked to him before.
Q. Did you ask to speak to the captain or whoever was
listening?
A. I talked to the same guy both times.
Q. Did you recognize the voice?
A. No. I asked him the first time, I said, "Who am I
talking to?"
    He said, "This is the captain."
Q. Did he say, "This is the captain," or "This is Capt.
McSorley"?
A. He said, "This is Capt. McSorley," and I said, "I
didn't recognize your voice."
Q. Did he recognize yours?
A. I don't think so. If he did, he didn't say anything.
Q. He didn't acknowledge it?
A. No.
Q. And then you told him what, that you could see Whitefish
Point Light?
A. Yes.
Q. And what did he say?
A. He was glad to see it was on, or something like that.
    He said, "Are you getting a beacon?"
    I said, "No," but it could have been our set or direction
I don't know if the beacon was on or not, but we couldn't get it. We could pick up Caribou and Michipicoten, so we should have been able to pick up Whitefish, but we didn't.

Q: All right. Now, you just told him that you couldn't pick up the beacon but you thought that it was your --
A: I said I didn't know. The light was on, but we didn't get the radio beacon.

Q: And what did he say to that?
A: He said he couldn't get it either. Later I heard him call Soo Control and then Grand Marais.

Q: You heard him call both?
A: Both Soo Control, and as far as I know, he got no answer.

They could have answered him, but I didn't hear him. Then he called Grand Marais, and I didn't hear no answer there.

He could have gotten an answer, but I didn't hear none.

Q: And what channel were you listening on when you heard him call?
A: 16.

Q: That was not the time when you were on 11?
A: What?

Q: You said you were listening on 11 for a while?
1975

1. I didn't say that; I said when I talked to O'Brien my phone was up high. I had to put my glasses on and put a flashlight on it and stand on my tiptoes to see the channels. When I hung up with O'Brien, I left it on 11. My phone was there a couple of hours, so I didn't get no more.

2. Q. So you were really listening on Channel 11?
3. A. Yes, but if nobody went to 11, I didn't get anything. I was not on the open channels.

4. Q. If anybody talked on 11 --
5. A. Then I would have heard it.

6. Q. With respect to Capt. McSorley, you told him the light was on, and he said that he was glad to hear it? He asked about the beacon, and he said, "I can't get it," and you said, "I haven't got it either."

7. Then what did he say?
8. A. I don't remember if there was anything else said besides that.

9. Q. You just told us there was a discussion about part of his job?
10. A. Well, when I asked him how the weather was out there, he said that it was a terrible sea.

11. Q. When did you do that; was it right after the conversation about the beacon?
12. A. Just before it. I only talked to him about a minute, which was all together, and I would say that there was not
too much conversation.
He said it was a big sea, one of the worst he had seen.
He said he had a list, a bad list, and he didn't say no more about the ship or how it handled or nothing or what caused the list.
There was nothing said about that.
Q  Did he say what he was doing about it?
A   No, he didn't.
Q  What did you reply to that?
A   I didn't reply nothing, because I figured he had as much experience as I had. Why should I tell him what to do?
Q  Didn't you even wish him good luck?
A   Well, no. I never dreamed that he was in that much danger, or maybe I would have. But I never had any idea that the Fitzgerald was going down.
Q  Well, no, of course not; but is it at all common for vessels like the Fitzgerald to have a list?
A   It was not common at all; it could happen, but I don't say it is common, no.
Q  You have been going to sea for quite some time, Capt. Woodard, and has most of it been on the lakes?
A   Yes, all of it.
Q  All of it?
A   Yes.
Q  Are you pretty familiar with lake vessels?
Well, I would think so.
Sure. I would, too.

How many of them in your almost 40 years of experience have you seen come in with a list?

Very few.

Yes, very few.

Generally they don't, they will straighten them with water or do something to counteract that. I have seen very few ships come in with a list.

Generally they will do what?

Well, you can straighten them with water or ballast in the banks, so I have seen very few ships come in with any list to amount to anything.

Have you seen very many of them in the open lake with a list?

No.

Didn't, when he said "list" then didn't it raise some kind of a question?

Well, it did to me but, I mean, what would I say to him?

Well, I think the question is, what did you say to him?

I didn't say nothing about the list.

Yes. When you said, "Straighten them with water," what do you mean?

Well, put water on the opposite side of the list.

Is that common?
A. Well, I know it is for small lists, like if you, say, you are loading at the dock, you get a list and you want to get water out of the other side, you run the water in and straighten them out until you can get them out because your suction pipes are in the middle, and the only way to get your water out is if you have them straight or listed the other way from the side you want to get it out of.

Q. On the ships that you have been involved with, both foreign and U. S. flag, who controls that kind of thing?

A. The captain. The captain.

Q. The captains that you know, and I am asking for your opinion in this, based upon your experience, would the captains that operate on the lakes and the ones that you know, if they had a two or three-degree list, what do you think of the first thing they would think of about getting that list off would be, if you know?

A. I don't.

Q. Do you think they would take on a little more ballast water to try to balance it up?

A. I would think so, if you want to get it out.

Q. To get the list out?

A. To get the list out, and get the water out that's caused the list or what they were, causing it. It could be a shift of cargo causing the list, too.

Q. Yes. It could be. Have you ever heard of that
happening?
A. Well, yes, I have had it happen with grain.
Q. Have you ever had it happen with taconite?
A. No. It could happen, but I have had it happen with
grain.
Q. Have you ever heard of it happening with taconite?
A. No, I haven't.
Q. Have you ever had any discussions with any of the other
pilots about cargo shifting, taconite cargo shifting?
A. No. We never -- you see, as pilots, you never carry
taconite, very seldom. You may carry a little silver
concentrate or something but we never carry ore.
I say never; once in a while you get a few ton.
Q. Sir, I didn't understand your answer to my question
about when you found out the Fitzgerald had a problem.
When did you find out?
A. I think it was the last conversation when he told me he
had a list, when I asked him how the weather was up there
and the seas, and he said the seas were some of the biggest
he had seen and the worst weather and that he had a bad list.
Q. When did you find out that the Fitzgerald was in serious
trouble?
A. When I found out she was in serious trouble was about
10:30 at night when she was gone.
Q. How did you find that out?
Well, I happened to go up and check my radio thinking I, funny I wasn't hearing nothing, and I found it on Channel 11 and then I heard this "Pam, pam, pam," Coast Guard warning anything to look for the Fitzgerald or any wreckage, they thought she was gone down. They had lost contact.

Q. What did you do after you heard that?

A. Well, we just kept a lookout. There was nothing much we could do. We were having all we could do to keep in the sea or keep her going, and the skipper wouldn't never let you try to turn around if I did want to, and I don't think I could have.

Q. Did you talk it over with him?

A. No, I never did. The skipper wasn't on the bridge then.

Q. Did you talk to the Coast Guard at all after that?

A. No, no.

Q. Did you talk to any of the other ships that were in that general area then?

A. After that?

Q. Well, after 10:30 or so when you found it out.

A. No. I didn't talk to no more ships.

Q. You didn't talk to either of the other pilots on the ships astern?

A. Not that I can -- I called the, the Benfri, and they told me O'Brien was in bed, so I just said, "Forget it."
Q. You didn't talk to O'Brien later that evening?
A. No. I -- along toward morning I did again, then he called me and he said he had been trying to call me, when he got the call from the Coast Guard, that she had disappeared or they didn't have no more contact, and that's when my phone was on 11, he never got me.
Q. What did he want to talk about?
A. Who?
Q. O'Brien.
A. I didn't -- he didn't say. He just wanted to let me know that he thought the Fitzgerald had gone down.
Q. You didn't have a conversation with him then?
A. No, not until morning.
Q. Do you have a son that goes to sea?
A. Yes, I have two sons.
Q. They both go to sea?
A. Yes.
Q. Didn't Capt. O'Brien mention something to you about one of them?
A. Well, he asked me where my son was. He knew, I guess, he had been on the Fitzgerald.
Q. Was that right? Had he been on the Fitzgerald?
A. Yes. The fall before he laid her up as a boatswain and then he got called back in the spring and he went out wheeling.
1. Q. Where is he now, sir?
2. A. He is on the, on another one of the same ship company ships.
3. 
4. MR. MURPHY: Sylvania?
5. A. (Continuing) He is on the Sylvania.
6. Q. Have you had a chance to talk to him since the accident?
7. A. Yes, several times. He called me yesterday morning.
8. Q. When was it that you and Capt. O'Brien talked about your son not being on the Fitzgerald any more?
9. A. Well, I think it was when he called in the morning and when we talked about, that we, that they thought she was lost. That is when I said, "I am sure glad my son wasn't on it any more."
10. Q. When you go aboard a vessel like the Avaforse, do you look around to see what kind of radio communications capabilities it has?
11. A. We generally try them out, yes, because as soon as you get out, you have got to report your next point, like when you leave Port Huron, why, that's our station, we call Port Huron and tell them what our ETA Detour is, that's our pilot state, to let them know if we are going to change positions or something. So you generally try out the phone within a few minutes.
12. Q. What about if there's more than one phone?
1. Do you try them all out?
2. A. I have never seen one that had more than one phone.
3. There might be two phones but it's in the radio room, and
4. we don't get in there. They generally have an AM phone
5. in there, but very few any more have AM on the bridge;
6. they have it in the radio room, wireless room.
7. Q. Did the Avaforse have an AM radio up there?
8. A. She could have had it in the wireless room. I didn't
9. see it if she did, but I think most of them do.
10. Q. It's on the bridge?
11. A. She didn't have none on the bridge. Well, the wireless
12. room is right off of the bridge, the same as your chart
13. room, but what he had in there, I don't know.
14. Q. They didn't have an extra speaker on the bridge
15. or anything, did they?
16. A. No, no, no.

CDR. LOOSMORE: All right.
REAR ADMIRAL BARROW: Capt. Wilson?

EXAMINATION

By Capt. Wilson:

Q. Captain, you said that you had been on the Lakes most
of your life. Before you became a pilot, what company did
you work for?

A. I worked 30 years for Hutchison & Company.

Q. What was the last ship you were on with Hutch?
A. The Buckeye Monitor.

Q. When was that, sir?

A. 1968.

Q. You were master on the Buckeye Monitor?

A. Yes.

Q. That was 1968, you said?

A. Yes, '68.

Q. You said that when you left the Soo your radar was out. You just had no picture?

A. I didn't say when I left the Soo. I said at Whitefish Point.

Q. At Whitefish Point?

A. Yes.

Q. Did you get any, did you get good targets in Whitefish? Was it performing?

A. Coming up, we did; we had very good.

Q. Lost it?

A. We lost it right abreast of Whitefish Point.

Q. Was that when you made the turn at Whitefish or -- ?

A. Well, I don't know if it was just as we made the turn, but I know I went to look at it and the captain was standing there and he said, "No more picture," what they call picture, no more target.

Q. When you talked to the Fitzgerald, you believed it was Capt. McSorley but you thought he sounded different, I
think you said?
A   Yes, sir.
Q   How were the transmissions, how were radio trans-
missions? Were they clear?
A   Good, good. Yes.
Q   So the radio itself seemed to be working satisfactorily?
A   I would say yes, working good.
Q   You also mentioned that you thought you saw a light
seven degrees on the starboard bow. Where were you then,
where were you located, where was the position of the ship?
A   Where was our ship?
Q   Yes.
A   I would say in the 300 course, about three miles above
Whitefish.
Q   About three miles above Whitefish?
A   Yes.
Q   What speed were you turning then?
A   What speed?
Q   How many turns did you have on?
A:   Well, sometimes it was 50, sometimes 80, sometimes a
hundred. It just depends on what they were doing down in
the engine room.
Q   Were you making any way?
A   We made no way there for I would say close to two hours,
we didn't do nothing.
Q. And about what time was this that you thought you saw the light?
A. Oh, I would say 5:00 o'clock, 5:30. We thought we seen a light there several times but I don't know for sure if we did.
Q. Was that before you talked to the Fitzgerald for the last time?
A. No. That was, I think that was between, but I think we thought we seen it after we talked to her, too, but I think with the snow squall and the sky light and the lightning and all, but the captain said, "No. I seen a light." But we did, we looked, I looked with the binoculars several times and I couldn't really identify a light.
Q. What kind of a light did he think he saw? White? Green? Red?
A. It just looked like illumination in the snow, you know, in the sky. It looked like, you know, you would look into lights coming, you couldn't say, detect no certain light, but it looked like a flare of lights, that's what I thought I was seeing, like several lights in the distance.
Q. What do you think the captain on the Fitzgerald thought when he said he had a bad list? What would you consider a bad list?
A. I wouldn't know what he would consider a ship that
size, a bad list, what he would consider a bad list.

Q. What would you consider to be a bad list?

A. Well, I think over five or six degrees on a ship that size, but what list he had, I had no idea.

Q. You mentioned that if you had a list that it could be straightened with water.

How would you ballast? Would you ballast all in one tank?

A. I wouldn't think so. It would depend on how bad a list or how much it took.

You wouldn't want to put a strain too much in one spot, but it just depends on how much tonnage it took to straighten that list.

Q. What would be the usual practice?

A. Well, I would say several tanks.

Q. Not to press any tank?

A. No, but I don't know what anybody else would do. That's what I would do.

Q. What was your weather like from 7:00 until 11:00?

Did it stay bad from 7:00 p. m. to 11:00?

A. From 7:00 p. m. to 11:00?

Q. Yes, sir.

A. I would say around 10:30 we started -- it started to become moderate. Maybe it was before that, because I went to lay down a couple of times.
Q. You said you had two sons that were sailing now?
A. Yes.
Q. Where is the other one sailing?
A. He is on the Cliff Victory.

CAPT. WILSON: That's all I have.

EXAMINATION

By Capt. Zabinski:
Q. Capt. Woodard, how old a man are you?
A. 67.
Q. Are you in good health, sir?
A. I think fairly good.
Q. Captain, you indicated you have sailed for 30 years for Hutchison & Company.
Did you sail as a mate for them?
A. I was always a licensed man; third mate, mate and captain.
Q. And during the years you sailed as mate, you have had to log like they do on any other ship the weather, and so forth, every three or four hours or every two hours or every one hour, whatever the master wanted?
A. Yes, sir.
Q. So you are not a novice in this business? You have observed weather many times over many years and have had to put it down.

You have had to put your observations down in a log book;
is that correct?
A. That's correct.
Q. All right. You had to estimate the wind as it was when you -- when you rounded Whitefish Point, what would you say the wind velocity was?
A. Well, to say what the velocity was, it was one of the strongest winds I have ever been in, but I know what the ship told me.
Q. Did he have an anemometer?
A. Yes. I think it was the William Clay Ford, but he didn't say who he was.
Q. How about the Avaforse? Did it have an anemometer?
A. No.
Q. So outside of this radio conversation that you heard, or message that you heard and your own estimate, was that about the same or do you think it was about the same?
A. I didn't think it was blowing quite as hard as they said it was, but it was blowing hard.
Q. You indicated that the gale warnings were up?
A. The gale warnings, yes.
Q. When a Weather Bureau describes weather conditions, what are the different degrees of warnings that they put up, Captain?
A. Do you mean small craft or gale warnings or whole gale?
Q. Well, do they put up whole gale warnings?
A. They used to, but I don't know what they put up any more.

It is storm warnings and gale warnings now.

Q. Which is worse; storm or gale?
A. The gale.

Q. That is your best recollection?
A. Yes.

Q. If it was the other way around, would you be surprised?
A. It could be the other way around.

Q. You haven't looked at that in a number of years?
A. No.

Q. But you know the wind was blowing pretty good?
A. I tell you: Most of the time in these saltwater ships, no weather report means nothing.

They tell you you are on the lakes, and you just go because they say go. They are the boss. I recommended to go to the anchor, and he said, "No, pilot, we go."

I also called O'Brien and told him that he shouldn't come out. He had the same orders I did. The captain had said no.

Q. Did you specifically advise that master that you considered it unsafe to proceed?
A. I said I didn't think we could make any headway.

Q. Well, that is one thing. But did you indicate that it
was unsafe to proceed?

A. I don't know if I said unsafe or not. I don't think I said that.

I said, "We have no business out here."

Q. What did you mean that you had no business out there?

A. He was talking about conserving fuel all the way up the river. He wanted heavy fuel and not heavy diesel fuel.

He said, "We're burning too much expensive fuel," and I said, "Here we are going out in the storm, and you are going no place with your fuel."

Q. Did you personally consider it unsafe on the Avaforse to proceed past Whitefish Point?

A. I didn't think it was really too unsafe, but I didn't think we could go any place with that ship.

Q. You couldn't make any headway, as you indicated?

A. Yes.

Q. Captain, you have been sailing on Lake Superior, I imagine, many years; is that right?

A. Yes.

Q. I would like for you to describe to me, say, you were bound from Superior to going toward the Soo, and you experienced and had weather forecasts or weather warnings that the wind was going to prevail from the northeast, the north or northeast.
What type of a track -- would you follow the normal track laid down on the charts, or would you deviate from that?

A. Most of the times you would deviate. You would try to go up the shore.

Q. What shore?

A. The north shore. Easterly it wouldn't do you no good.

Q. How about northeast, would it help you then?

A. It might. It depends on what part of the lake you were in.

If you were far enough down northeast, you could get shelter; but if you were starting out of Duluth, no.

Q. It wouldn't help you?

A. Very little.

Q. But up around the --

A. Up around the Isle Royale, from there on.

Q. If you could direct your attention to the area between Michipicoten and Caribou, have you been through that area, Captain?

A. Yes.

Q. How many times would you say you have been through the area?

A. I couldn't say how many, but many.

Q. Do you recall when the last time was you may have been through there, sir?
A. To go between the islands?
Q. Yes.
A. I haven't been between the islands since I think in about '52 or '53.
Q. Would you have any reservations? Would you go between the two islands, Captain, on a loaded ship?
A. You could easily, but the last time I went through there we were towing a barge, and we went up and ran back and forth behind Michipicoten to keep out of the weather. That is the last time I went through there.
Q. Are there any shoals between Michipicoten and Caribou, do you know?
A. There are shoals sticking out off Caribou.
Q. How about any other shoal areas besides those?
A. Not that sticks out too far. They are close in, but not out too far.
Q. How about Chummy Bank; are you familiar with Chummy Bank?
A. Yes, but we never get that close.
Q. Well, Chummy Bank is close to what, Michipicoten or Caribou?
A. What are you talking about now?
Q. Chummy Bank.
A. Off Caribou?
Q. Yes. Look at the chart.
A. Well, this doesn't give --  
Q. I think it lists Chummy Bank.  
A. I don't think it does. Way up here, well, if I was  
going for shelter or anything, I would be way north of  
Chummy Bank.  
   In nice weather, you can go through there.  
Q. You can go through where, Captain, between the two  
islands?  
A. Or even over Chummy Bank.  
   Like sometimes we would be taking a ship up to Marathon  
and go between the islands in nice weather.  
Q. You say nice weather.  
   Would you do it during rough weather?  
A. I wouldn't try to get over Chummy Bank.  
Q. Why not? What is the problem if you go over a shoal?  
A. Evidently, when you go over a shoal, you get worse  
sea, the same when you go over Caribou.  
   If you get into too shallow water, you get sharper seas.  
Q. It peaks up more; is that your testimony?  
A. Yes.  
Q. So if you have a bad sea condition, is it your testimony  
that if you are in the vicinity of a shoal, it would be  
rougher to some degree?  
A. Yes.  
Q. How about undertow's
We have had people describe it as undertows or sets.

Do you have any experience, and I am referring to rough weather, when you came close to a shoal?

Do you experience anything like that or have you ever experienced anything like that?

A. Have I experienced anything like that?

Q. Yes.

A. Undertows?

Q. Undertows and shoals.

A. Well, the most undertow I had ever seen was between Manitou Island and the point.

I seen us hold up there as high as 40 degrees with the current and undertow, but up around the islands, I have never seen nothing like that.

Q. You haven't?

A. I have also seen quite an undertow around Isle Royale, between Passage Island and Isle Royale.

Q. But down below Caribou, we have Southwest Shoal, Southwest Bank and Southeast Bank in a couple of areas, and do you have any experience around those shoals?

A. I know once we were going up through there, and we got into a much worse sea right over the Southeast Bank, and as soon as we got by them, it was much better.

I wouldn't say there was too much undertow, but the sea was worse.
Q. Do you have any idea, let's say we're going along and the weather is fairly rough. There is a nine fathom shoal.

A. We take a rough sea, let's say 20 or 25 foot seas --

Q. I would say in that vicinity, maybe not 20 foot.

A. Well, what I want to ask is: Do you think it would be closer to the shoal, a nine fathom shoal?

A. It would be worse, yes.

Q. But would there be any danger of grounding on the shoal, the nine fathom shoal?

A. I wouldn't think so, not in any ship I have been on.

Q. Fully loaded?

A. Well, maybe some of these salties go down to 26 feet, but I am talking about lakers that are 22 footers and ships like I sail on.

Q. 27 feet might be getting close?

A. Well, it could; yes.

Q. Did you call the master and advise him that there was a ship in trouble after you found out -- that was around 10:30 when you found out?

A. No. I didn't call the master. When I found out, we were having pretty good weather.

The third mate was on, and I told him that as far as they know the Fitzgerald had gone down, and he didn't believe it.
If he told the master, I don't know. The master never talked. I would tell him something, and he wouldn't answer it.

Q. You would assist him for what?
A. I didn't say that; I said that anything you recommended to him, he wouldn't give you an answer.

Q. Did you tell the master or did anyone inform the master that their ship was in trouble in that area?
A. He knew there was a ship with a list coming down. That he knew, but I don't think he ever knew until morning that it had disappeared.

Q. You say about 10:30 is when you found out that the Fitzgerald was lost?
A. 2230 at night. That's when I knew it. The Coast Guard came out with a pam, pam, pam. That's the first I knew it.

Q. Actually, Captain, from what I understand from your testimony, and correct me, but perhaps I misunderstood you, but as I see it, you had a conversation with the Fitzgerald. You spoke to him, I believe on Channel 6?
A. Yes.

Q. You made some conversation to talk on Channel 11. Who did you talk to then?
A. O'Brien on the Benfri.

Q. And you indicated that you left the radio set on Channel
11?

Q. And it stayed on Channel 11?

A. I would say it stayed on Channel 11 for two hours or better.

Q. So, although there were probably safety broadcasts or broadcasts to indicate the Fitzgerald was in trouble, is it your testimony that you didn't know about anything going on?

A. No, I didn't.

I didn't know it until around 10:30 when I put the channel back onto 16.

Q. What are the ground rules, the FCC ground rules for a vessel proceeding?

What kind of communications are you supposed to be monitoring by Federal law?

A. Well, you listen on 16; that's the open channel, but you are supposed to go to other channels, but not to communicate on 16 unless it is an emergency.

Q. But you are supposed to maintain a guard on Channel 16?

A. Yes.

Q. Why do you do that? Why is that important?

A. Why?

Q. Why does FCC tell you to monitor Channel 16?

A. I think it is for safety reasons.

Maybe somebody wants to get you.
Q. Was there any set on the Avafors, any station that was
tuned to Channel 16 to pick up an emergency situation?
A. Not that I know of, but there could have been in the
wireless room. I don't know, because I didn't go in the
wireless room.

Q. The radio didn't come on and say that the Coast Guard
determined that a vessel just sank?
A. No. Most of them don't understand that.

Q. Is there a language barrier?
A. Yes, and they don't seem to understand that.
The captain talked good English and so did the chief
mate, but when something comes over the air, they don't
listen.

I would say 80 per cent of those ships, most of them,
they turn it off. They have a hard time keeping the phone
on.

Q. The officer on the bridge that was with you, would you
know what nationality he was?
A. The chief mate was Norwegian. What the other two were,
I don't know.

They were Swedish or Norwegian, because they talked back
and forth; but what they were, I don't know.

Q. On this response to Capt. Wilson, one of Capt. Wilson's
questions, about the light, you saw it on your starboard
bow.
Do you think it could have been a light of a life raft, Captain?

A. No. It was something bigger than that.

I don't think it was that; I think it was an illumination or something behind a snowstorm.

Q. Do you think it could have been a flare from a plane?

A. I don't think so, because what we were seeing is -- when we were staying 300, it seemed to stay six or seven degrees on our starboard bow.

Several times I thought I was seeing something, but when I looked with binoculars, I couldn't see anything different.

Q. You indicate also that you could see it at different times and not see it at different times, because of the snow?

A. That's correct.

Q. Was the light actually out at a period, or didn't you see it for a period because of snow or rain or whatever may have existed?

A. Well, earlier in the evening, the light wasn't on, because I could see the structure. If it was supposed to be on, I don't know, but it was not too late then.

Q. Did you call the Coast Guard or notify them that the light was out, Captain?

A. No, I didn't.

Q. Is this a normal practice amongst pilots in an aid to
navigation to advise them so they could get a broadcast out?

A. No, it isn't.

Q. It isn't?

A. Normally when you find a light out, you report it.

Q. Have you ever reported any lights out?

A. I reported buoys out and stuff like that in the river.

Q. Do you think it is prudent of a pilot if he passes an important point like Whitefish Point to let other mariners know that this light is out?

A. Like I say, I don't know if it was supposed to be on any sooner than that.

It was around 5:00 when I had seen the light.

It could have been on before that, but I couldn't see it.

When I went by the light, there was no light there.

Q. Was it dark then, Captain?

A. It was just getting dark through the snow. It was not really dark, but you could see the structures.

Q. There are some lights controlled by one of these photo-electric cells that goes on when it gets dark?

A. Yes.

Q. You think Whitefish Point is one of those lights?

A. I think it is. I don't think there are any men there any more. I don't think Whitefish Point is manned any more.
Q: You have passed it many times?
A: Many times, yes.
Q: Do you recall passing it during daylight hours, Captain?
A: Oh, yes.
Q: Is that light on during daylight hours?
A: I have seen it on in a dark day.
Q: On a dark day?
A: Yes.
Q: Darker than it was, or lighter than it was on the 10th when you passed it?
A: I would say yes, I think I have seen it on when it was better light than that.
Q: But in your opinion, the light was out?
A: My opinion is the light was out, but I don't know. I know when I went by it was out, because if it was on, I could have seen it.
Q: Was the flash on that light, Captain?
A: That, I don't know. They change that so much that I -- you mean the length of the flash?
Q: Yes.
A: A white flash, but how long, I don't know.
Q: What kind of structure is on there? What is the structure, Captain?
A: The tower?
Q: The tower, yes.
I would say it's concrete or --
Round or square?
Round.
It's a round structure?
I would say round, yes.
Is it painted any color?
White.
Painted white?
It was, anyways.
Was it painted white that night?
Well, you couldn't see the white; you could just see it in the dim structure.
I started off and I neglected to ask you about a,
I tried to check; you have been a sails mate and you have recorded, logged the wind and weather and so forth; how about the sea conditions? You as a sea mate, you have logged the sea conditions many times, haven't you?
What do you mean, logged? How high it is?
How high.
We never log how high a sea is. We estimate wind, what we thought, 20 miles, 30 miles or something like that, but we never estimated --
Sea conditions?
-- sea height. That's just been in the last few, well,
I would say the, well, few, the last several years that
this height of the sea has come in, and how they measure it, I don't know.

Q. So you don't consider yourself any kind of a real judge of the size of sea?

A. I would say it was a bad sea but if I were to say 30 feet or 20 or --

Q. Ten?

A. -- or 15.

Q. Or five?

A. Well, I know it was over five.

Q. Sir?

A. I knew it was over five, but to say 30, I don't know how they measure sea.

Q. Well, I will ask you this; never mind how they measure them, I will say to you, was it five feet high?

A. Oh, over five feet.

Q. Would you say it was 10 feet high?

A. I would say over that, but --

Q. Would you say it was 15?

A. Well, I would say in the vicinity of 20 feet, or 25, somewhere in there.

Q. Were all of the seas about the same height, Captain?

A. Well, some are bigger than others.

Q. And a 20 would be the highest, about the average, or the smallest?
A. I would say maybe the average. I think maybe there were
some a little bigger and some a little smaller, but --
Q. Was the Avaforse shipping any water, Captain?
A. She was taking water over the bow.
Q. Green water?
A. Once in a while, not too much green water but some.
Q. Heavy spray?
A. It moved a few lines up there, didn't shove them off
of the deck. It moved, shoved the ladder back off of the
deck and stuff like that.
Q. How many turns were you making, what speed were you
making by propeller, if you know?
A. Well, the propeller was turning several times,
as I looked at it, 50 to 80.
Q. 50 to 80?
A. Until we got in the trough and I called for more and
they got her once in a while up to 120, but she didn't
hold that, and when we got back on our 300 course, she
was holding between 50 and 80, back and forth like that.
Q. Could you hold up fairly well with 50 to 80?
A. Yes, as long as we kept her right into the sea,
she went nice.
Q. But if you fell off, you really had trouble?
A. If you fell off you were, -- we couldn't do much.
Q. Would you say, 'Captain, this is the worst storm you
have ever been in?

A. I would say maybe the wildest storm, or, the way I put it. The sea was tearing tops off and turning white and stuff like that. I have been in, I think, bigger rollers before, but I never was in one that came up that quick, I don't believe, to go out into it.

I have been in seas that come up quick but we went for shelter.

Q. But were the seas coming from one direction, Captain, or more than one direction?

A. Well, pretty much so. There was quite a backwash off of the point for a while, but she was mostly, if we kept her 300, 290, 300, we were pretty directly into it.

Q. Coming up ahead?

A. Yes.

Q. When you say wild sea, were any coming from the beam, Captain?

A. Well, that is what I say. Once in a while it seemed: to be coming from both directions and I think that had a lot to do with close to the Whitefish Point.

Q. Whitefish Point?

A. Yes.

Q. Have you experienced that before, coming around the point?

A. Yes. If you get too close to Whitefish, you get a bad
backwash.

Q. Did you do any searching out there, Captain?
A. Well, after we heard that, we kept lookout. There was about three men on the bridge at all times but we seen nothing.

Q. Seen nothing?
A. No.

Q. If you did see someone in the water, Captain, could you have helped them with the sea conditions?
A. I don't know how we could. About the only thing we could have done, if we could have got above them and put oil in and calmed it till somebody could have helped, but as far as, we couldn't maneuver to help because every time we got off our course we were in trouble.

Q. How about launching a boat?
A. You couldn't have launched a boat.

Q. Sir?
A. You couldn't have launched a boat.

Q. Why not?
A. The sea. I don't think you had any chance to. In a boat, I don't think you could have launched it or if you could have launched it, nobody could have got into it or did anything.

Q. It was that bad, huh?
A. I would say yes.
Q. Captain, you indicated that the Fitzgerald had reported to you that they had a bad list?

A. Yes.

Q. Did you ever dream that the Fitzgerald was going to sink with all of this loss of lives?

A. Not never. Never. Never entered my mind that he was going to sink.

Q. You figured he could take care of whatever the problem was?

A. I thought he could, yes.

Q. Did you think that if he was in trouble he would have told you he was in trouble?

A. Well, I don't know the man that well, if he would have told me or not, if he would have broadcast that he was in trouble, but I think if he thought he needed help, I think he would have.

Q. Captain, we have a sad situation here: Loss of a ship, 29 people, with the search for survivors, bad sea conditions. You were there, you know what it was, and what the wind was like.

The Coast Guard requires lifeboats, life rafts, they had life jackets, life rings, many of which was recovered. Here it is, a ship is lost, they haven't located a survivor, not any survivor, they haven't located to date any victims of this tragic accident.
What in your opinion went wrong, could have happened
to cause that condition that we have, neither survivors nor
anything up to this time?
A. Well, in my opinion, that don't mean anything, what
I thought, she may have capsized with the list, two or
three big seas and she went over. That was my opinion,
but you didn't find anything and she went so quick nobody
had a chance, but I could be a hundred per cent wrong.
Q. Well, the ship was in trouble, evidently, before the
tragic accident; wouldn't you wonder why anybody wasn't in,
prepared to abandon ship, and if they couldn't, at least
you would think they would have been trying to, you know,
it's one thing being in trouble and another thing trying
to do something about it.

Do you think it was that sudden, that they --
A. I think it was, or I think they would have -- I don't
know, haven't had too much experience with these rubber
life rafts, but they claim they are good and I thought if
anybody would be found, it would be somebody in one of them.
Q. Captain, you have been faced with the same situations,
a master for many years, obviously have been leading a clean
life, you are in good health, the good shape that you are.

If you were faced with the same situation, and if
you were the master of a vessel, had a list, bad storm,
what preparations would you have made or could you have
made, let's say first of all, could you have made to try to
save your crew?
A. The only one I would say is with the rubber life raft,
I would have put it on the deck and put the men in it.
Q. How about the life jackets?
A. Well, sure, they would have life jackets on, but
I have never been in one of them positions.
Q. Glad you haven't.
A. I am, too.
Q. We are not second-guessing anyone here. Our purpose
here is, you have got experience in this same water, many
years of experience, and I want, the Board wants the benefit
of your experience, how can we prevent something like this
from happening again?
A. Well, it's hard to say. I wouldn't know what to --
Q. How to answer that?
A. How to answer that, myself, I wouldn't really know.
. The Coast Guard have got the ring buoys, the life
preservers, the rubber rafts, the lifeboats, they are all
inspected every year, and that's about all I could say.
Q. Well, we found all that equipment, now, but we haven't
found any people.
A. Yes.
Q. That is the problem.
EXAMINATION

By Rear Admiral Barrow:

Q. Captain, when you turned on Whitefish Point, how far off did you say, about two miles?
A. About two miles.

Q. Did you make your course change when you were in beam with Whitefish Point?
A. Yes.

Q. And came over to 300, about that?
A. That is correct.

Q. Approximately what time was it when you indicated that you thought you saw a white light off on your starboard side?
A. I didn’t check that, but we thought we seen it several times, but like I say, to me it never turned out to be a light.

Q. Yes, but --
A. I would say from 5:00 until 6:30.

Q. From 5:00 until 6:30?
A. Yes. After that, it got quite clear at times, that we could see for miles.

Q. And when did you turn at Whitefish Point?
A. Right around 4:00 o’clock, 1600.

Q. Can you relate this time when you thought you saw the white light, to your radio-telephone conversations with the
Fitzgerald? Was it before or was it after?

A. I think it was after we talked to the Fitzgerald.

Q. It was after your conversation?

A. Yes.

Q. Your first one or your second?

A. Both of them. I think it was after both of them.

Q. After both of those, you thought you saw a white light?

A. Yes.

REAR ADMIRAL BARROW: Cdr. Loosmore, would you hand me that exhibit, please?

By Rear Admiral Barrow:

Q. Did you talk with anybody in the wheelhouse on the Avaforse about the light? Did you discuss that with anyone?

A. No, not with the Avaforse.

Oh, you mean about the light we thought we seen?

Q. Yes, sir.

A. Oh, yes. The captain was, everybody was looking with binoculars, thinking we seen a light, but it never, as far as we know, we never proved out to be a light.

The captain said once, said, "I'm pretty sure that's a light," and I said, "Well, we have seen it so long off and on, that I think it was just a lume."

Q. Can you recall how far astern of you at that time the Benfri was?

A. I would say roughly three miles.
Q. About three miles astern?
A. Yes.
Q. But you came to the conclusion that you weren't actually seeing anything in the way of --
A. Well, that's what I came to the conclusion, that -- I thought it was just the bright lights, stars and the moon, on the snow squalls, that they loom up every once in a while pretty much like a light in a distance.
Q. In your conversation with the Fitzgerald in which you overheard the comment, "Don't let anybody out on deck," could you hear any other part of that conversation?
A. No. That's all I heard. There was something said about a vent, but I didn't get it.

There was something about, "Don't let nobody out on deck." I don't know whether it was to close a vent or open one or what it was, but he said, "Don't allow nobody on that deck."

REAR ADMIRAL BARROW: Counselor, you may question.

EXAMINATION

By Mr. Murphy:
Q. Captain, I am a little bit confused. If you recall, that on the 13th of November, Capt. Jacobsen and I met with you and talked to you about this, and I took a statement from you, and I understood you to say at that time that
you were operating on Central Standard Time rather than
Eastern Daylight Savings Time.
A Well, I don't know what Standard Time it was on.
We were on whatever Port Huron and Detour was on.
Q I understood you to say that the time was an hour
different than Eastern Standard Time.
A It was an hour different at Duluth, and which was which,
all I know is, Duluth is an hour behind us.
Q I see.
A But what time they are operating on, I wouldn't say
if it was Eastern Standard or what.
Q Well, is it your best recollection now that it was an
hour different than Eastern Standard Time or that it was
Eastern Standard Time?
A I am saying again, who has got Eastern Standard Time?
Has Port Huron or Detour got Eastern Standard?
Q Frankly, I don't know.
A I don't know. But that's the time we were on.
Q What was the port that you had departed?
A With my ship?
Q Yes.
A Port Huron.
Q I see. And then I think you said you got on the ship at
that point, did you?
A At Port Huron, yes.
Q. And you were on Port Huron time or were you on the time
that your own watch was on at home in Duluth?
A. I was on Port Huron time.
Q. Not your own time in Duluth?
A. Not the time in Duluth, no.
Q. So that your recollection now would be that you were
not on Central Standard Time but that you were on Eastern
Time; is that correct?
A. Well, whatever Port Huron is on, that's what I was on.
Q. All right. Well, let me ask you this:
You have indicated to me that about somewhere around
5:00 o'clock our time, you had your first contact with the
Fitzgerald?
A. I think that -- I am not, I didn't mark down no times.
That I told you?
Q. Yes.
A. I was at Whitefish at 4:00, and I was just about at
Whitefish when he called for any ship in the vicinity of
Whitefish and I answered.
Q. And that's when the Fitzgerald called for ships in
the vicinity and that's when you answered?
A. Yes.
Q. And that, as you say, was somewhere around 5:00 o'clock
your time? Is that the correct statement?
A. That was 4:00 o'clock my time, the first time I would
say, in the vicinity of 4:00 o'clock, when I was right
about Whitefish when he called, anybody in the vicinity
of Whitefish, and then is when I answered him.

Q. Well, Captain, you have seen this statement, of course,
since we talked about it?
A. Yes.

Q. I have given you a copy and your counsel has looked
at it.

It says, "Somewhere around 5:00 o'clock our time I
had my first contact with the Fitzgerald."

Is that incorrect?

A. Well, if you say which time I was on, now, it depends
on which time you are going by.

My first contact with him, I would say, the time we
were using was closer to 4:00 o'clock.

Q. I see. That is your best recollection at this time?
A. My best recollection. Like I say, I marked no time
down, only Whitefish Point.

Q. And you have no recollection of telling me at that time
that the time that you were operating was the same time
that your watch was on and we were in Duluth at that time,
you were --

MR. CAMBRONNE: For the record, the
captain has testified that it was approximately
4:00 p.m., according to the captain's time.
I think that has been said approximately seven times on the record here.

MR. MURPHY: It is not my intention in any way to determine anything more than whether the captain was mistaken when he informed me what he informed me, and that is all I am trying to find out, sir.

I was not in any way trying to suggest that he has changed his testimony or anything like that. I just want to see if I improperly misunderstood him or if I misunderstood him previously.

(Continuing) Well, I told you when you took the hearing, I marked no times on the radio log, like when you do in American ships, you mark down all your calls, here where there was nothing marked down.

All right, sir. Well, I was just trying to find the facts and I will ask you no more questions on that.

During the course, Captain, of the time that you were in this storm that you have described, did you have occasion to go out on the bridge of your vessel?

Yes, I did.

And could you describe the wind for us in terms of how hard it was blowing and whether or not it was noisy?

It was the worst noise I have heard on a bridge, I would say. It was loud.
Q. Would you also say it was --

A. It was up in the superstructure, it was really howling.

Q. Would you also say it was blowing harder than you had ever seen it before?

A. Oh, I wouldn't say harder, but I would say as bad as anything I have seen, or about approximately. It's pretty hard to tell whether it was the worst you have seen or heard, but I know it's the worst noise I have heard.

Q. All right, sir. And with respect to the size of the seas, would you say that you had never seen them that large before?

A. I don't think I said that. I said I never seen them that wild. I think I have seen seas probably that high before, but more of a rolling sea.

You know, it was a steady wind where it builds up for a couple of days. I have never seen a sharper sea than this.

Q. I understand. I am just trying to determine again whether I properly understood you before.

I understood you to say, "I can't estimate the size of the seas, but I have never seen them that large before, nor have I ever seen the seas that wild."

Is that what you told me then?

A. I am pretty sure, yes.

Q. Is that your testimony now?
A. Yes.

Q. Did I understand you to say that when you talked to the captain of the Fitzgerald, when you called him back to tell him that the Whitefish light was on that he had also said that that was the worst of his experience in all the years that he had sailed?

A. Did he tell you that?

A. He told me that was one of the worst storms he ever had seen.

Q. Did he tell you it was one of the worst or the worst?

A. I don't remember if it was the worst, but one of the worst he had seen. I think that's how he worded it.

Q. Did he also say it was one of the biggest seas he had ever seen?

A. I don't remember if he came right out and said that specifically; that it was the biggest.

Q. Captain, you were asked some questions with respect to the nine fathom shoals —

MR. MURPHY: May I see the chart, please?

Q. This is Exhibit 85, Captain, the chart on which you have made your notations, and the questions that were put to you previously having relation to the Chummy Bank area. Do you recall that?

A. Yes.
Now, I will ask you to make reference to the areas in the vicinity of Caribou Island.

The questions that you were asked were something like this: If a vessel had a draft of approximately 27 feet and she were to find herself in the area of Chummy Bank, would you have an opinion as to whether or not there would be a danger of grounding?

Now, I will ask you to call your attention to those two areas in the vicinity of Caribou Island, one of which is sixth fathoms or both of which are six fathoms.

Do you see those areas there?

A. Yes, I see them.

Q. And I will ask you the same question that the Coast Guard captain asked you:

Do you think that if such a vessel, under the conditions that night that you described, do you think if such a vessel were to get into the vicinity of a six fathom area she would be in danger of grounding or striking?

A. Ground is one thing; striking is --

Q. Well, you tell me.

A. I would say she could possibly strike, but grounding to me is stopping.

I wouldn't say she would stop, but I would say maybe she could go up and down enough to hit a ship loaded with 27 feet, which could raise and fall enough to strike her,
but I have never seen it. It could.

I am not saying it is impossible.

Q As the Coast Guard explained it to you, Captain, the only purpose of this investigation is to see if we can determine what occurred here.

Oglebay-Norton is just as interested in determining that as anyone else is. That's why I am asking the same question, sir.

A I understand.

Q You also talked in terms, in your opinion, of what might have happened, and you indicated the possibility of a sudden capsizing with a heavy list, or however you described the list having been relayed to you.

Now, you heard somebody aboard the Fitzgerald say the words that no one should go out on deck, whoever he was saying those, but you wouldn't be able to tell.

Would you expect in the seas you were describing, and would you expect a vessel with as bad a list as you have described it, would you expect a vessel like that to be pretty tightly buttoned upon, the doors closed tightly and so forth?

A I would think so, especially the hatches.

Q I am talking now about the cabins, the places where the people are.

A If he said he was taking blue water, heavy water,
you would think everything was being secured.

Q. Did he say he was taking heavy seas over the deck?
A. Yes.

Q. Captain, if she were under those conditions and if she were to take the sudden capsize that you described, would that be an explanation as to why no one had been found?

You were asked if you knew of any explanation why there had been no sign of any survivors. Would that be an explanation?
A. I would say it could be; yes.

REAR ADMIRAL BARROW: Let's go off the record.

(Discussion off the record.)

REAR ADMIRAL BARROW: Back on the record.

Q. Capt. Woodard, would you be good enough to tell us who was on the bridge of your vessel at the time that you had the two telephone conversations that you had with the Fitzgerald?
A. I can't tell you the names; I can tell you the officers.

Q. Fine. That would be fine, sir.
A. There was the chief mate and the captain, and quite a bit of the time the third mate was on, because they were all working on the radar trying to get it back, so he -- I think all three officers, if they were listening.

I don't know.
Q. Let's take the first conversation. What's your recollection as to who was there at that time?
A. I would say the chief mate and the captain.
Q. All right. And what's your recollection as to who was present at the time of the second conversation?
A. I know the third mate, the chief mate and the captain, because they were all working on the radar.
Q. How did you found out the Fitzgerald's radar were out?
A. He told me, he asked me, and I said, "I have no radar, so I can't tell you."

He said, "We have none either."
I said, "Well, you have two of them," and he said, "They are both out."

MR. MURPHY: No further questions.
REAR ADMIRAL BARROW: Questions by the Board?

EXAMINATION

By Cdr. Loosmore:

Q. Captain, what does the term "undertow" mean to you?
A. It is a current coming back from a point or over a shoal.
That's what I would call an undertow.

Q. Does it cause a strain problem?
A. Sometimes. It might cause you to hold up. I wouldn't say it would cause you to keep on your course, but you might have to haul up to keep on your course.
Q. You said you had an undertow as much as 40 degrees?
A. I said once between Manitou Island and Keweenaw Point that we had an undercurrent, and we were towing a barge, and we had to steer a 40 degree different course to hold up.
Q. Is there a difference in the way you use the term, between an undertow and a current?
A. Well, I would say yes. There could be an undertow between the islands. Again, there the water is rushing through.

I think that has something to do with it, which was between the island and the mainland. There was very little wind, so it would have to be current or undertow.
Q. Are you talking about the day of the Fitzgerald being lost?
A. No, not that day; I am talking about up at Manitou and Keweenaw Island.

We changed our course 40 degrees to stay on our regular course to be so far over of Copper Harbor. And I was mate then, and I called the captain and told him what I was doing, and it was hard for him to believe it.
Q. Do you have currents in the lakes that you have to be concerned with?
A. Not too much, but sometimes about Keweenaw and Manitou there you have currents.

Along Lake Michigan, you have a lot of currents.
Q. These aren't tidal currents?
A. No, no. It is like if you are around an island or stuff like that, you can get quite a bit of current at times.
Q. During your conversations with the Fitzgerald, you just a moment ago said that Capt. McSorley said he was taking heavy seas over the deck.
    During which of the conversations did that come up?
You said you had two.
A. I couldn't say for sure, but I think it was the second one. I don't remember talking too much about the weather in the first one, but it could have been the first.
    It was one of them.
    He told me he was taking heavy water over the deck.
Q. Did he say that before or after he told you he had a bad list?
A. That I couldn't say for sure, whether it was before or after.
Q. Do you remember anything about it, thinking there was any connection between the bad list and the water on the deck?
A. I don't think the water going over the deck would have had anything to do with the list myself.
Q. When he described it, how did you picture it? Did you picture the water coming aboard or over the stern or from ahead?
A. I think it must have been coming from astern and going up the bow.

Q. Is that common?

A. In a sea that large, yes, it will ride right over.

Q. Is it green water over the deck?

A. At times, yes.

Q. You said he used the phrase "heavy seas."

Since you didn't ask him about it --

A. I asked him what kind of water he had up there, and that's when he told me.

Q. And what exactly did he tell you?

A. He said, if I remember right, it was some of the worst he had ever seen. He said they were some of the biggest seas and some of the worst weather he had ever seen.

Q. Then how did this business about the heavy seas over the deck come up?

A. He said he was taking heavy seas over the deck when I asked him how he was going and how the weather was up there.

He said he was taking heavy seas over the deck, and he said he did have a bad list.

Q. How did the radars come up?

A. I don't know. I think I told him that I didn't have no radar, and he said, "I don't have any either."

I said, "You have got two if I am right," and he said,
"They are both out."

Q. How did that conversation come up? Did he ask you for a position?
A. No. He didn't ask me for a position. I just told him I didn't have no radar either.

Q. How did you know he had two?
A. How did I know?
Q. Yes, sir.
A. I have seen the ship several times. I was sure, but not positive, but I was quite sure he had two radars. I had been on the ship.

Q. When was the last time you were on the ship?
A. 1974. I took my son up there once when they were loading.

Q. When he said that his radars were out, did you ask him how he was navigating?
A. No.
Q. Didn't it occur to you?
A. No.
Q. It did not?
A. His direction finder, that's what he was trying to find out, if Whitefish Point was broadcasting or it was working from the direction finder.

Q. Are there direction finder stations anywhere north of where he was?
A. There is Caribou and Michipicoten and stuff like that, and then way behind him is Manitou.

Q. How about on his port side on the beach over there (indicating)?

A. On his port side? There is nothing there. He was past Caribou and Michipicoten, so everything was behind him practically.

Q. How do you know he was past Caribou and Michipicoten?

A. By what the Anderson said. He said, "You are approximately 20 miles to Michipicoten," which is the last thing I heard him say."

Q. Why would he have been talking about anybody being out on the deck?

A. Don't ask me. He was talking to me, and somebody must have asked him something. That's all I thought.

He said, "Don't allow nobody on that deck."

Q. Was your ship all buttoned up?

A. Well, yes. I don't know that much about what my ship was. I know on the forecastle deck there was a door open.

Q. There must have been one on the bridge deck?

A. There is nothing there you can button up.

There are just two sliding doors, but you are 40 or 50 feet above water. If you are going to get down there, you might as well go the rest of the way.

(Laughter.)
Q. How about on a ship like the Fitzgerald; do you think the whole bridge area up there was buttoned up?
A. That would be beyond me.
What was going on up there, I have no idea. I imagine it would, but I couldn't swear to anything like that.
I wasn't there.
You would think it would be.

EXAMINATION

By Capt. Wilson:

Q. Captain, how many receivers were there on your ship?
A. One.
Q. Just one?
A. As far as I know. There was one on the bridge.
There could have been some in the radio room.
Q. But to your knowledge that was the only receiver on the ship?
A. The only one I know.
Q. Captain, when did you start as a pilot?
A. '63. I piloted one year, and I got a leave of absence from Hutchison.
I was back to third mate, and I got a leave of absence and went piloting.
Q. 1963?
A. Then '64 I went back for Hutchison again.
Q. I was wondering, you mentioned that if you had a list,
that you would have to take on water to correct the list.

How could you do it?

A. How could I do it?

Q. If you were loaded.

A. By pumping water in the tanks, in the water tanks, the ballast tanks.

Q. Don't you have to open the vents on the deck?

A. Well, if the vents were closed tight, you would have a hard time pumping anything in, yes.

Q. Is there any way you could do it without opening those vents?

A. Not if they were closed tight.

I don't think you could really pump in. You might get a little in, but nothing big.

You would pump a pressure, and that would be it.

Q. Isn't it normal practice to keep those closed when you are loaded?

A. Yes.

Q. So you would have to send somebody out on deck to open them?

A. Yes.

Q. When the Fitzgerald said "heavy seas over the deck," what did you consider heavy? Don't you always take some water over the deck?

A. Always.
Q. I mean in heavy or bad weather?
A. It takes a lot to take the sea over a deck like the Fitzgerald because she had a high side. It takes a fairly good sea to go over the deck, to get the blue water, as you call it, to go over the deck.
Q. How much water do you think would be on deck?
A. How much?
Q. If someone said "heavy seas," how much do you picture in your mind, in your own mind?
A. I would say six feet or something going over your deck. That's not steady, but you would take blue water four to six feet; but what he was doing, I have no idea.
Q. It would be higher than your hatch combings?
A. Yes.

CAPT. WILSON: That's all I have.
CAPT. ZABINSKI: No questions.
MR. MURPHY: No questions.

EXAMINATION

By Rear Admiral Barrow:

Q. Capt. Woodard, we spent quite a bit of time with you, and I think we have been repetitious to a certain extent in asking you to repeat things that you had already said before in different ways, but I think one of the current concerns that we have here is that you, plus two or three other ships, were the only ones who can give us much of an
indication of what went on on the Fitzgerald for the last
two or three hours of its existence.

So we plowed and reploved the ground, trying to find
out what words were said, the context in which they were
said, to give us a little bit of a clue as to what
happened to this vessel at some time between 15 and 16
hundred initially, and then subsequently around 1900,
1915, when the vessel apparently sank.

Thus far we have heard some five or six days of
testimony from people who spoke to the Fitzgerald in
the afternoon.

None of those people who spoke to the Fitzgerald
apparently asked the seriousness of the difficulty that
the vessel was having.

Each one that has testified to us said generally that
we accepted what the Fitzgerald said; that they had a
couple of vents gone or fence rail that was pushed over.

Nobody apparently asked where he was taking water
and how serious it was.

I think I have had a little trouble sitting and under-
standing this. I think that's why we keep coming back
and asking the same questions over and over again; to see
if somewhere in this questioning we could find out or get
a clue as to the seriousness, or why the master of the
Fitzgerald apparently didn't recognize the seriousness
of it.

I am not going to ask you any further questions; I think we have gone over this thing sufficiently with you.

I will ask you now at this time, having been questioned at some length, to search your memory and mind and bring to us now, if you have anything, anything further that was said that you heard or any knowledge that you may have had about this casualty which might assist us in determining this cause.

Do you have anything, sir?

A. I don't think so. When you say "his vents were gone," and "the fence was down," I never knew that. He never mentioned that to me.

The only thing he told me was a list, and he was taking heavy water. There was nothing said that the vents were gone or the fence rail was gone.

I never knew that until I heard it later.

Q. Would your actions have been any different if you had known that?

A. Well, I don't know whether I would have done anything or said anything, to my knowledge. The only thing is that I thought to myself on the bridge, if he had a bad list, why doesn't he try to straighten it with water.

But I felt that he knew what he was doing more than I did, and if he was in trouble, he would do the best he could.
I thought to myself, "Why doesn't he straighten her with water," but to call him and tell him -- probably he had more experience than I had, especially with that ship.

REAR ADMIRAL BARROW: Fine. Thank you very much, sir. You are excused.

You are cautioned not to discuss your testimony with anyone other than counsel, until the conclusion of this investigation.

Thank you, sir.

(Witness excused.)

(Recess had.)

REAR ADMIRAL BARROW: Let the record show we reconvened at 1705.

Cdr. Loosmore.

CDR. LOOSMORE: We have Exhibits 80 to 85 to admit.

REAR ADMIRAL BARROW: And those are -- ?

CDR. LOOSMORE: 80-A through BB are the radio logs from the Coast Guard group Sault Ste. Marie.

81-A through GG are the logs for Soo Control.

82-A through M are the weather from the Coast Guard station to the Group Soo.

83 is a statement by RM 2 Branch.

84-A and B are the DB 1149 Inventory of the debris from the Fitzgerald.
And 85 is the Lake Survey chart with the annotations by Capt. Woodard.

REAR ADMIRAL BARROW: Without objection, entered into evidence.

(Exhibits 80-A through BB; 81-A through GG; 82-A through M; 83; 84-A and B; and 85 were received in evidence.)

REAR ADMIRAL BARROW: Call your next witness.

CDR. LOOSSHORE: The Board calls Mr. Robert Kutzleb, please.
ROBERT KUTZLEB

was called as a witness and, being first duly sworn, was
examined and testified as follows:

EXAMINATION

By Cdr. Loosmore:

Q. Will you please state your name, address and occupation?
A. My name is Bob Kutzleb. My address is 6269 Leesburg
Pike, Falls Church, Virginia. My name is spelled
K-u-t-z-l-e-b.
My occupation is Ocean Engineering.

Q. Mr. Kutzleb, do you hold a Coast Guard license or docu-
ment?
A. I do not.

Q. You do not. Are you presently employed as an Ocean
Engineer?
A. Yes, sir.

Q. With what firm?
A. A firm called Seaward, S-e-a-w-a-r-d, Inc.

Q. Where, sir?
A. Falls Church, Virginia.

Q. What do your duties with Seaward include?
A. I am the vice president and in charge of operations.
My duties include deep ocean search and recovery,
tanker cargo transfer, salvage, and conduct of diving
operations.
Q. How long have you been involved in these activities?

A. Well, I went to sea when I was 15, spent 24 years in the Navy, and then I have been actively involved since I left the Navy, so about 36 years.

Q. How long specifically involved in the search and recovery aspects?

A. About 12, 15 years, I would say.

Q. Did you and your Seaward organization participate in any of the underwater search for the remains of the Fitzgerald?

A. Yes. We did.

Q. Would you tell us what part your organization played?

A. Yes. We worked, we were under contract to the United States Navy Supervisor of Salvage as their commercial contractor for the conduct of search and recovery operations.

They were contacted by the U.S. Coast Guard and assistance requested, and after an analysis and discussions of the background in the case, we brought to Sault Ste. Marie a towed side-scanning sonar and operators.

We utilized the Coast Guard Buoy Tender Woodrush, and also their navigational line-of-sight system, which was made available to us for precise positioning.

We arrived in Soo and had to stand down because of a fairly heavy storm for a day or two, departed for the scene on last Saturday, commenced our search Saturday evening,
and searched almost continuously through Monday afternoon,
at which time we returned to port.

Q. Did you observe any results of your search, as far
as the Fitzgerald is concerned?

A. Yes. We feel that we did.

Q. And what did you conclude as a result of that search?
Were you able to find the Fitzgerald?

A. Yes, sir, short of seeing the name; yes, sir.

Q. Do you have available the location of what you think
are the remains of the Fitzgerald?

A. Yes, and I hope you have them, because I don't have it
with me right at this moment.

Q. All right. Fine.

MR. MURPHY: Sir, I didn't hear that
answer.

CDR. LOOSMORE: He does not have it
with him at this moment.

THE WITNESS: It is down in my briefcase.

By Cdr. Loosmore:

Q. Mr. Kutzleb, other than the conclusion that you feel
that you found the Fitzgerald, what other conclusions
have you been able to reach so far, as a result of your
search?

A. The conclusions that we have come to are that the
Fitzgerald lies on the bottom in two pieces, perhaps three.
She is broken cleanly apart between the two major sections.

She is essentially lying upright, and when I say
"essentially," I mean she could have, at this moment, five
or 10 degrees list, but no more, I don't think.

Q. You said, you used words like "perhaps" and "at this
moment."

Does that indicate some question with the results?

A. No. What it indicates is that we make approximately
80 sonar runs involving some 300 fixes and we come back
with a great mass of data which, because of, one, the
weather on the scene, which was still marginal, and, two,
the immense bulk of wreckage and cargo on the bottom
that provided reflections everywhere, we feel we must
further analyze to pick out and be more definitive as
to more precise details.

We haven't had the time as yet.

Q. Then, will you attempt to characterize your conclusions
that you have just mentioned? Are they preliminary or
are they firm, or are they both?

A. The results are firm. That is, the ship is in two
pieces, essentially upright.

Q. Yes?

A. Some of our conclusions, though, need further modifica-
tion or further study.

We believe there may be another section torn away.
We need to really go back and look some more at our records.

Q. When you say "look some more at our records," you don't mean to imply that, or do you mean that there be further sonar operations?

A. That's not for me to say.

Q. Or do you mean --

A. I don't think -- I think we will get enough data from the sheets that we have now, to hopefully support whatever questions you may have, and unless we had superb weather out there and made some modifications to the sonar, I don't see that we would gain too much more by further sonar.

Q. You talked about an immense mass of data. Are you able to provide to show the Board a sample of what the results look like now?

Do you have a copy of that with you now?

A. Yes, sir.

Q. Could you show that to us, sir?

A. Yes, sir. (Handing)

CDR. LOOSMORE: Let me get this marked.

I have a photograph which has the numerals 246 and 247 listed on it which I --

Q. Mr. Kutzleb, how many photographs were you able to bring?

A. About, basically two.
CDR. LOOSMORE: Which I would request
to be marked Exhibit 86-A for identification.

REAR ADMIRAL BARROW: Mark it 86-A for iden-
tification.

(Exhibit 86-A marked for
identification and made a
part of the record.)

By Cdr. Loosmore:

Q. Do you have more than one copy of each of these, Mr.
Kutzleb?

A. Yes, I do.

CDR. LOOSMORE: Exhibit 86-A is the
photograph with the numerals 246 and 247 on it.

Q. Now, Mr. Kutzleb, referring to the photograph which
has been marked 86-A for identification, could you explain
what this is a photograph of?

A. That is a photograph of a sonar trace which, directly
above 246, shows the forward house of the Fitzgerald and
the deck leading aft of the break. It also shows the
cargo which was spilled in and around the bow section.

Q. Now, Exhibit 86-A, could you point to the section
which you referred to as the forward house?

A. Yes. This is the shadow from the forward house right
here (indicating).

Q. Pointing to the light section immediately above the line
marked 246?

A. And we can see the deck coming aft at an angle, coming back to 247.

You can also see the hatch combings on the back edge of the shadow.

Q. In what depth of water was this trace obtained?

A. 530 feet.

Q. From what you described, this appears to be an oblique view of the forward part of the ship?

A. That's correct.

Q. Is it possible, through your analysis techniques, to determine the length of the forward part of the ship, which is viewed here?

A. Yes, sir.

Q. Have you been able to calculate that at all?

A. Just grossly.

Q. Can you estimate what it is?

A. Yes, sir, 239 feet.

Q. Do you have any other traces or photographs of traces which you are able to provide us with?

A. This is the second one here.

CDR. LOOSMORE: Sir, I have another photograph, which is marked -- which is unmarked, bearing the numerals 181, 182, 183, 184 and 185, and the letters EOL, which I would request be marked
86-B, sir.

REAR ADMIRAL BARROW: Mark it 86-B for identification.

(Exhibit 86-B marked for identification and made part of the record.)

Q. Would you describe what you interpret the marks on that photograph to mean, sir?

A. Yes, sir. We passed directly over the north body of the Fitzgerald, and between fix numbers 183 and 184 you can make out the radar antenna, the top of the Texas deck, the next deck down, on the lower portion just below those two numbers.

Q. Perhaps it would be clearer --

REAR ADMIRAL BARROW: Which numbers, 183 and 184?

THE WITNESS: Yes, sir. Just between 183 and 184. If you will drop down --

Q. Down from the center of the picture?

A. From the center of the picture to the mark coming out here, you will see the house (indicating).

You are looking straight down with the radar to the next down and the bow section is right under here --

Q. Directly over here (indicating)?

A. Below the center and --
Q. And leading over here, meaning above the center of the picture?
A. Correct.

We made this run, so we would then get a look at the stern section, which is between fix 182 to 184.3 and above the numbers.

The large wide shadowy area is a reflection of the stern section and again illuminates the hatch combings.

Q. Mr. Kutzleb, in both of these pictures there seems to be a large area of black surrounded by some white lights, and you have been pointing to white lights and describing what you interpret to be sections of the ship or the remains of the ship.

Is there any significance to the black area surrounding that?

A. The black area immediately before the white shadow is, in fact, the ship and the white shadow is the section behind the section, which cannot be seen by the sonar, because it bounces off the ship, but it acts as an excellent flashlight reflector.

An excellent example of that is a picture right here with the sunlight, the shadow behind the ship showing the bow and the house, and that's exactly what the sonar does.

Q. I have here a photograph of six ships in ice in some undetermined location, which illustrates the sun shining on
the ships' hulls and the shadow behind it.

A. And that shadow is black, but the shadow in ours would be white.

The sonar will just transmit to the hull and back, and the area behind the hull will be a mirror image of what the sonar is, but white, because there is no sonar there.

CDR. LOOSMORE: Thank you very much,

Mr. Kutzleb. I don't think we'll offer this in evidence, but I think that's an excellent explanation.

REAR ADMIRAL BARROW: Yes.

THE WITNESS: That's why we brought it, to show the shadow.

REAR ADMIRAL BARROW: Perhaps you were going to ask him about this on 86-B, but it appears to be an excellent one for judging the beam.

Would that be true?

THE WITNESS: Yes, sir; we measure the beam.

REAR ADMIRAL BARROW: And what was the beam?

THE WITNESS: We got, and again, our guesstimate on a quick analysis was approximately 73 feet.

MR. MURPHY: I would like the witness to point out for me on the photograph, please --

THE WITNESS: Right here (indicating).
CDR. LOOMIS: Indicating on Exhibit 86-A a direction generally in the lower left to the upper right direction of the photograph.

CAPT. ZABINSKI: Show us that, please, Commander.

CDR. LOOMIS: Yes.

EXAMINATION

By Rear Admiral Barrow:

Q. Have you been able to estimate any other dimensions of this?

A. Yes, sir. Of that section?

Q. Of this wreck?

A. Yes, sir.

Q. To support your conclusions that it was, in fact, the Fitzgerald?

A. We went to the after section and measured it as near as we could on a first-look basis.

The after section, excluding the portion we think that is broken, we came out with an average of measurements between 335 to 350 feet.

Then the midship section, that is the other section, which we think rolled away, which makes up the difference.

Our overall dimensions, when we added them up, came out to be 720 on one analysis and 739, I think, on the second one.
We also counted hatch covers to try and nail it down, hatch combings, I should say.

Q Hatch combings?

A Right.

Q Now, you had described earlier on both exhibits while you were pointing to what I think I can fairly describe as a rather saw-toothed or stepped marking in the white areas, as hatch combings?

A Yes, sir. And we did have a reduced size of the general arrangement, which is, in fact, a very faithful reproduction.

You can see the hatch combing squares, and in here we were a little lively on the sonar, so we were sort of rounding them off a little bit, but they are, in fact, the hatch combings.

Q Mr. Kutzleb, what does this area, this dark area surrounding the light, again referring to 86-A, which surrounds the light section, what does that represent to you in your analysis?

A We believe that area to be cargo, taconite.

Q Is that based upon a prior dealing with a sonar sighting of the taconite?

A No; it is based on similar bottom conditions, knowing this cargo, and the fact that in the sonar trace, if you would roll the whole trace out, prior to the contact
area and immediately after the contact area, we have a
very smooth clean bottom, except for that area.

The large black mass also provided a very disturbing
influence on the sonar signal, since it was an excellent
reflector, and we would judge it to be iron ore pellets.

Q In your experience, is anything like this combination
of this big black blob, which you said is the cargo,
plus the white reflection, could that occur naturally
in the area that you were searching?

A Not in the area we were searching. Off the top
of my head, you would have to have a giant area of a rock,
which we don't see.

Q You have no doubts then in your mind that what we
are saying here -- that based on your experience and
based on your judgment that what we have here is the Fitz-
egerald; is that correct?

A That is correct, sir.

Q I don't know whether your background and talents
include mechanical drawing, but if we gave you say five
minutes, could you sketch out the orientation of the pieces
that you have portrayed here?

A Do you want it on the blackboard, Admiral?

REAR ADMIRAL BARROW: A piece of paper.

I think we would like to have it. We are not all
experts in interpretation of these traces, but I
think it would be useful if you could sketch out what you see along down at the ship with directions indicated, and suppose we go off the record and take whatever time is necessary to produce this.

(Recess had.)

REAR ADMIRAL BARROW: Back on the record, please.

CDR. LOOMIDGE: Sir, I have a sketch which is untitled; I suppose it would be fair to write "Edmund Fitzgerald" on the top of that, wouldn't it?

(Handing to witness.)

THE WITNESS: (Marking.)

CDR. LOOMIDGE: Thank you. Which is now entitled "Conception of Wreckage Pattern, MV Edmund Fitzgerald," and it is signed and dated today, which I would request be marked 87, sir.

REAR ADMIRAL BARROW: Mark it 87 for identification.

I think it would be useful if you can put in estimated lengths of each one of these pieces.

Now, I understand that it is an estimate, as you have indicated.

THE WITNESS: Yes. I can give you an approximation on the hatch combings.
MR. MURPHY: Would you put that in the evidence first, sir? That is a question you haven't been asked yet.

Would you describe your estimates on that before you mark the sketch, please?

REAR ADMIRAL BARROW: On distances?

MR. MURPHY: No. He said the estimate on the number of hatch combings, he could also do, to which he has not testified yet. I would like to see that in the record.

CDR. LOOSMORE: The exhibit has been marked Exhibit 87.

(Exhibit 87 was marked for identification and made a part of the record.)

REAR ADMIRAL BARROW: All right.

CDR. LOOSMORE: One more question.

By Cdr. Loosmore:

Q Mr. Kutzleb, I am handing you Exhibit 86 again and I notice that it is divided top and bottom by a white line, a white band. What is that white band?

A The white center band within which we write the numbers is a mechanical reproduction of the helix blades on the sonar recorder.

There is no functional use on this record.
Q. All right.

A. Each of the lines, counting from the first one out, represent line spacing of 50 feet each.

If we will take from the bottom center line and count out one, two, three, plus a little, that represents about 165 to -70 feet of sonar altitude off of the bottom, that is the water column height of the sonar.

The ground immediately beneath the sonar and then leading off to both starboard and port is displayed graphically on the record.

MR. MURPHY: Can you illustrate that?

THE WITNESS: Yes, sir. 50 feet, 100, 150 feet, 165 or -70 feet. The sonar is in fact, if you would fold this to show the altitude, then the ground would come together right under the sonar. That is your signal going out.

By Cdr. Loosmore:

Q. Mr. Kutzleb, there also seems to be some sort of symmetry around this white band which divides that picture horizontally. Is that something which actually exists, that you are traveling over, or is that something of the mechanism itself?

A. No. What we are seeing, because of the long cable length and the closeness of the leads, is a mirror image or cross-talk of the sonar signal, and in the 246-247
example, 86-A, the port side is the real side of the contact, that is, the side looking down to the left, and on the other is really a reflection of the strong signal coming back up through the lines.

Q. If the picture is held horizontally so that the figures 246 and 247 are readable right side up, then would the port side be top or bottom?

A. The port side would be top.

Q. Would be top?

A. Yes.

REAR ADMIRAL BARROW: I notice on the after section which you have portrayed here, you have a series of X's there.

What would that be?

THE WITNESS: We believe that to be the deck crane.

REAR ADMIRAL BARROW: Could you give me the indication of the horizontal lines that you have on here, Mr. Kutzleb?

THE WITNESS: I just drew in the hatch combings there.

REAR ADMIRAL BARROW: Yes, sir.

Counselor?

MR. MURPHY: I would like to ask some questions but whenever the Board is finished.
CAPT. ZABINSKI: I have no questions.

CDR. LOOSMORE: No.

REAR ADMIRAL BARROW: Capt. Wilson?

CAPT. WILSON: No, sir; I have no questions.

EXAMINATION

By Mr. Murphy:

Q. Mr. Kutzleb, just for my own personal edification, would you show me on the two exhibits the sections other than the bow section? I think I understand the bow section as appearing on 86-A; am I correct?

A. That is correct.

Q. And that this is what you believe to be the deck crane here?

A. No, sir.

Q. No, sir?

A. No, sir. We believe the deck crane to be aft.

Q. Aft? All right, sir.

Now then, --

REAR ADMIRAL BARROW: Counselor, we can't hear you. We can't hear what you are pointing to. We need some description in the record.

MR. MURPHY: I am sorry. I was pointing to what I understand to be the bow section and I thought the deck crane was in the bow section
and he said no.

Q. Would you show me then, please, on the Exhibit 86-B, what you believe to be the outline of the stern section and the deck crane?

A. Yes, sir. There is the top of the deckhouse bow section, the bow section being right through here (indicating). This section, as you see here, is the stern section with the athouse. This little section going down here is the one we are having troubles with, and we will have to go back and review everything to make sure of its orientation, whether it is still connected or bent or broken.

Q. And that is on your sketch -- that's on your sketch, which is this section of 140 feet; is that correct?

A. Yes, sir.

Q. So this, actually orienting the sketch to the exhibit, this would be the stern section here (indicating)?

A. Yes, sir; right here (indicating).

Q. And there is the broken section here and the bow section --

A. From here through here.

Q. Through the white part?

A. Actually, now, that's only altitude. The picture is truly from here.

If you raised it up to show the altitude of the sonar, then you would bring these right into here (indicating).
Q. And you would show what is in that area here, from here to here, what appears on Exhibit 86-A; is that correct?
A. Yes, sir.
Q. Thank you.
Would you tell me approximately how many hatches you believe you have been able to count in each of these -- well, at least in the two major sections?
A. It has been very difficult to go and count the combings. I have not counted hatches.
Q. I understand.
A. We approximate seven forward, aft the forward house, somewhere between six and eight.
We believe we can see seven to nine, probably eight aft, from the aft house forward.
Q. And in the remaining --
A. The remaining broken section, I am not sure of.
Q. You are not sure of?
A. No.
Q. Would you explain to me why it is on Exhibit 86-A the forward end appears to be well outlined in white, am I correct?
A. The shadow?
Q. The shadow, yes, sir.
A. Yes.
Q. And in 86-B, the actual outline that denotes the
vessel is in black.

Am I right, or is part of it in dark?

A The forward section there is the ship, the black ship right here (indicating).

What we are seeing again is a shadow cast behind it. This is aft section, aft section, and what baffles us is that this is rolled down, or something; but this is the aft section from the house with your combings.

CDR. LOOSMORE: Pointing to that saw-tooth in the upper part?

THE WITNESS: Yes, sir.

By Mr. Murphy:

Q This black house indicates the stack and --

A You can't see the stack, but the house and part of it. It is laying at an angle. In fact, it is not a true representation.

REAR ADMIRAL BARROW: I don't think any of this is getting on the record. May we label this as an instruction?

MR. MURPHY: Yes. Instruction of counsel. Thank you.

(Laughter.)

REAR ADMIRAL BARROW: I think that's fine. I think we have basically a man here who is having to interpret for all of us what the ordinary man has
some difficulty interpreting.

MR. MURPHY: I think that clarifies it to date, as far as those photographs are concerned.

By Mr. Murphy:

Q. Can you tell approximately how far apart the forward and the after sections are from the Exhibits 86-A and 86-B?

A. It is very hard, sir, right at the moment.

What we need to do is plot several points along the forward section, then plot points along the aft section, and to get an axis in measurement, we have not had time to do that.

Q. A prior witness who testified with respect to the prior sonar, he made some comment about a projection from one of the sections which was described, to my recollection, either as something floating free from one of the sections or the possibility of a discharge of oil.

Do you have any comments on that? Was there anything similar disclosed by your findings?

A. There was nothing similar disclosed by our search.

It is entirely possible it could have been a discharge of oil.

It could have also been a fish schooling.

Q. Were there any disclosures which you would characterize as discharges in your findings?

A. No.
Q. Were your findings such that if there had been any discharging, it would have been disclosed?
A. We would have expected to see it in any volume.
Q. But based on your experience and knowledge, do you have any knowledge as to whether there is an oil discharging taking place from any of those sections at this time?
A. I cannot say.

MR. MURPHY: I would like to ask a few more questions. I don't know if the Board was giving an opportunity to ask questions just on those photographs, but may I continue with my examination?

REAR ADMIRAL BARROW: Yes.

By Mr. Murphy:
Q. You mentioned that it appeared to you as though there was approximately a five to 10-degree list. Were you referring to one or the other of the sections or to both of them?
A. I was specifically referring to the bow section, which appears to be rotated five degrees to starboard, by a quick look.
Q. Is there any evidence to you of cargo spillage in the vicinity of the after section, such as you described as the shadow area around the forward section?
A. Absolutely.
Q. In both instances there is?

A. The entire area, we believe all of this area to be essentially cargo.

Q. I see.

A. On both sections.

REAR ADMIRAL BARROW: Is this all of the area around the light?

THE WITNESS: Yes, sir, where we are getting all these very hard reflectors here.

We think that's what it is, sir.

By Mr. Murphy:

Q. I would like to ask you some questions which may or may not be within your field of expertise. If not, you will say so.

In your opinion, do you have an opinion as to whether or not it would be possible to raise either one or two of the three pieces that are down there?

A. You want my opinion?

Q. If you can give one, yes.

A. It is possible to raise it if you have enough time and enough money.

Q. But there are facilities by which this could be done, to your knowledge?

A. I think that would depend really on the condition of the ship, which you could only find out from a thorough
visual survey.

Q That's my next question: What further explorations would seem to be in order based on your knowledge and experience, first to ascertain with certainty that this is the Fitzgerald.

As I understand it, you have not observed or been able to, with your equipment, to see a name.

Is that true?

A That is correct.

Q Well, let me ask you this: What is your conclusion, that you are relatively certain, or whatever your degree of certainty is, upon what that is based as to this being the Fitzgerald?

A One, it is quite close to the track and the position given by the Anderson, the motor vessel, the Anderson; two, the earlier search which was conducted some time before I got here, revealed the visual presence of oil; three, the combings apparently match the same number that were in the Fitzgerald;

Four, the approximate lengths match the Fitzgerald; five the radar antenna, the disposition of what we believe to be the air whistle, a searchlight and perhaps an RDF antenna.

Q All right, sir. Thank you.

Now, to go back to my earlier question, what further
explorations would be in order and feasible to determine
with certainty that it is the Fitzgerald?
A. To go down and take a picture of the bow.
Q. And this could be done with underwater photographic
equipment that is in existence; is that correct?
A. Yes, sir.
Q. Would it be possible for divers to operate in that area?
A. It is possible.
Q. Feasible?
A. Are you asking my opinion?
Q. Only your opinion, yes, if you have one.
A. This could be done — it depends on what you want to
have done.
A photographic visual survey of whatever you want
to look at can be done without divers.
Q. I understand that; but I am thinking about the possi-
bilities of a diver going to the area and making personal
explorations.
Would that be feasible in that depth?
Is there equipment available that would enable a diver
to do that?
A. There is equipment available. I am not sure how feas-
ible it is.
To ask a diver to go inside the deckhouse and up and
down ladders of a wrecked ship at 530 feet, I don't know.
It is extremely dangerous.

Q. All right. Are you saying that --
A. It's extremely dangerous.
Q. -- that it's not within your field of expertise?
A. No.
Q. You are saying it is not within your field of expertise?
A. I did not say that.
Q. I am sorry. What did you say?
A. I said I don't think it is a wise choice.
Q. I see. What further explorations would be contemplated
to determine with greater certainty the presence and/or
the existence of the third section, what you believe to be
the third section, and whether or not it still is connected
to one or the other of the two sections, I believe you said
the stern section?
A. Well, I sort of feel like you are asking me questions
that are really not in my purview.

REAR ADMIRAL BARRON: I think you used the
word "contemplated," and I don't think that that is
something which is his prerogative.

MR. MURPHY: All right. I understand.
I misstated myself.

By Mr. Murphy:
Q. Again, I am relying upon your opinions, if you have an
opinion.
A    Yes, sir.
Q    Do you have an opinion as to whether there are other
     actions that might be taken to accomplish those purposes?
A    What was your question again, sir?
Q    To determine with greater certainty whether that
     unidentified section is in fact what it is suggested to be,
     and to determine whether it is still connected partially
     or wholly with another of the other two sections?
A    Yes, sir. There are ways to do that, remotely.
Q    Would you describe those, please?
A    Well, there are submersibles, there are tethered
     vehicles available commercially, tethered vehicles commer-
     cially available.
Q    Would that be a photographic type vehicle?
A    Yes. Some of them have videotape, some of them have
     videotape and still camera.
Q    I see. Based upon your experience, do you have an
     opinion whether the use of underwater photography would be
     productive at that depth? Would it?
A    Productive at any depth. It is productive at 8000 feet.
Q    Is it?
A    Sure.

MR. MURPHY:    Thank you.
REAR ADMIRAL BARROW: Off the record a
moment.
(Discussion off the record.)

REAR ADMIRAL BARROW: On the record.

By Mr. Murphy:

Q. Did you have opportunity to examine the previous or the prior sonar photographs that have been displayed to this Court, to this Board?

A. Yes, sir.

Q. And did you agree substantially with what they interpret, or -- of course, maybe you don't know what they were told to interpret; what was your determination upon observing them as to what they interpret?

A. Interpreted basically the same as ours.

Q. I see. So that you are satisfied that the two sonar explorations denote the same objects; is that correct?

A. Yes, sir, no doubt.

Q. Now, would you be good enough to tell us, sir, what the location of those objects is, to the best of your knowledge, if you can?

A. Can we go off the record for a minute? I have to run down and get my positions.

CAPT. ZABINSKI: I have it.

46 degrees 59.9 minutes north. 85 degrees 06.6 minutes west.

MR. MURPHY: Since you have that information, Captain, could you tell us whether or not
it is in the vicinity of the 14 miles west of Copper Mine Point, in that area?

CAPT. ZABINSKI: Close to the Point.

MR. MURPHY: It is in that vicinity?

CAPT. ZABINSKI: Yes.

By Mr. Murphy:

Q. In the course of your explorations, did you come upon any other similar objects that may have been other vessels sunken in that general area?

A. No, sir.

MR. MURPHY: Thank you. I have no further questions.

Thank you, sir.

CAPT. ZABINSKI: I have nothing.

REAR ADMIRAL BARROW: Cdr. Loosmore?

(Discussion off the record.)

REAR ADMIRAL BARROW: Yes. The only other piece of business on this item is that we would, of course, be interested in getting your final report and evaluation of your operation as soon as possible.

THE WITNESS: Yes, sir. Yes, sir.

REAR ADMIRAL BARROW: I think I should note for the record that this particular operation was undertaken with some great difficulty and under some pretty lousy weather, to put it sort of crudely,
and I think the results under those circumstances, at least so far as I can tell now, appear to be very good.

THE WITNESS: Thank you, sir.
REAR ADMIRAL BARROW: Very productive.
MR. MURPHY: I think the parties are to be complimented for what has been produced.
REAR ADMIRAL BARROW: Thank you very much.

You are excused.

You are cautioned not to discuss your testimony with others other than counsel before conclusion of this investigation.

THE WITNESS: Aye, aye, sir.
(Witness excused.)

REAR ADMIRAL BARROW: Off the record momentarily.
(Discussion off the record.)
REAR ADMIRAL BARROW: Back on the record, please.

We have some housekeeping items to take care of right now, I think.

CDR. LOOSMORE: Yes, sir. We have been provided copies of the office logs, in answer to our request, and I would like to request that the office log extract of the deck log, be marked Exhibit 88.

I have copies of a log beginning, Xerox copies,
beginning on the 29th of December, 1974, and continuing through the 31st of October, 1975, 84 pages of log sheets, which I would like to mark Exhibit 88, as one bundle, without numbering the pages.

REAR ADMIRAL BARROW: Are they consecutively numbered?

CDR. LOOSMORE: They appear to be, sir. I haven't had time to verify that, however.

REAR ADMIRAL BARROW: If they are consecutively numbered, you can mark them with one mark, 88.

(Exhibit 88 was marked for identification and made a part of the record.)

CDR. LOOSMORE: And I have a similar extract pack of logs marked "Engineer's Log," beginning on April 12, 1975, and ending November 6, 1975. Again, they appear to be continuous through that; I have not had a chance to verify that.

There are 76 pages of this. I would like to mark that as Exhibit 89.

REAR ADMIRAL BARROW: Mark it.

(Exhibit 89 marked for identification and made a part of the record.)

CDR. LOOSMORE: It has also been pointed
out to me that in marking Exhibit 79 --

REAR ADMIRAL BARROW: And those two exhibits, Exhibits 88 and 89, are admitted in evidence.

CDR. LOOSMORE: Did we admit the two photographs and the sketch?

REAR ADMIRAL BARROW: No, we did not.

They are introduced, without objection, into evidence.

MR. MURPHY: No objection.

CDR. LOOSMORE: Now, it has been pointed out to me that in marking Exhibit 79, which I announced was pages A through 00, I marked two different pages 79-G.

I would like to correct that by changing the page of October 1, 1975, to 79-G-1, to avoid renumbering every page.

MR. MURPHY: And Exhibit 79 are the bills of lading?

CDR. LOOSMORE: Exhibit 79 are the bills of lading.

MR. MURPHY: No objection to that.

REAR ADMIRAL BARROW: The one with the 79-G and the other 79-G-1?

CDR. LOOSMORE: Yes, sir. The bill of lading for September 26, 1975, will be 79-G.
The bill of lading for October 1, 1975, will be 79-G-1, and then chronologically through there -- no, no. That's backward.

Unfortunately, the increasing alphabet is in decreasing dates, because they were offered from the most recent to the earliest; so that October 1st will be 79-G, September 26th will be 79-G-1, September 20th will be 79-H, and so forth, backward in times and in increasing numerical sequence.

REAR ADMIRAL BARROW: That is very clear.
I so order it.

CDR. LOOSMORE: Thank you, sir.

REAR ADMIRAL BARROW: Cdr. Loosmore, do you have anything else?

CDR. LOOSMORE: No, sir, I do not.

REAR ADMIRAL BARROW: Mr. Murphy, do you have anything else at this time?

MR. MURPHY: Not at this time, Mr. Chairman, except a personal question off of the record.

REAR ADMIRAL BARROW: Off the record.

(Discussion off the record.)

REAR ADMIRAL BARROW: Back on the record.

Nothing else? The Board will adjourn very shortly and we will reconvene here in Cleveland, Ohio,
at 10:00 o'clock on the morning of 10 December.

(Discussion off the record.)

REAR ADMIRAL BARROW: Back on the record, please.

We have asked for certain additional material to be furnished to the Board, which has not been brought to us at this time, and I would ask that in the interval before the 10th, as those things become available, if they would be furnished to the Commander of the Ninth Coast Guard District here in Cleveland, Ohio, Capt. Ochmann, and he will see that it is forwarded to the Board.

MR. MURPHY: Certainly. We'll do that.

REAR ADMIRAL BARROW: We would like to have that material as soon as we can, in order to be able to look at it.

MR. MURPHY: We are asking that those exhibits be prepared, and as soon as they can be made available, we will forward them.

CAPT. ZABINSKI: The Board will have a look at them as soon as we receive them.

REAR ADMIRAL BARROW: Does the Board have anything further?

CDR. LOOSMORE: No, sir.
REAR ADMIRAL BARROW: We'll adjourn now at 1817.

(Whereupon, at 6:17 o'clock p.m. the hearing was adjourned, to reconvene, on Wednesday, December 10, 1975, at 10:00 o'clock a.m.)
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DEPARTMENT OF TRANSPORTATION

UNITED STATES COAST GUARD

In the Matter of:

Marine Board of Investigation:
Sinking of the SS Edmund Fitzgerald:
on Lake Superior 10 November 1975:

31st Floor
Federal Office Building
1240 East Ninth Street
Cleveland, Ohio

Wednesday, December 10, 1975

The above-entitled matter came on for
further hearing, pursuant to adjournment, at
10:00 a. m.

BEFORE:

Marine Board of Investigation:

Rear Admiral Winford W. Barrow, Chairman
Capt. Adam S. Zabinski, Member
Capt. James A. Wilson, Member
Cdr. C. S. Loosmore, Recorder
APPEARANCES:

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and

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APPEARANCES (Continued):

On behalf of Seafarers' International Union
and James Pratt and John Poviach:

Ned L. Mann
Victor G. Hanson

On behalf of Marine Engineers Beneficial Assn.:

Green & Lackey, by
Merritt Green II and
Gerald Lackey
REAR ADMIRAL BARROW: Good morning, ladies and gentlemen. This Marine Board of Investigation has reconvened at 10:15 in Cleveland, Ohio, for the purpose of investigating the sinking of the SS Edmund Fitzgerald on 10 November 1975.

Just to bring the record up to date, since the time of our adjournment, the Board has been in the process of reviewing testimony, developing additional witnesses necessary for the purpose of the Board of Investigation; and finally yesterday, the 9th of December, there was a meeting in Washington, D. C. to determine the possibilities for a further investigation in this case.

We reviewed at that meeting the final report, which was furnished to us by our contractor, Seaward, Inc., which was a second side scanning sonar search. That particular document will be introduced into the record during this session.

We considered that final report, and we also had weather and climactic conditions and ice covering, for Lake Superior. The basic purpose of this meeting was to explore the possible means of taking a look at the Fitzgerald on the bottom.
No conclusions have been reached at this time as to what specific efforts will be taken in this respect, and the time frame for that.

I am hopeful that prior to our conclusion of testimony during this period in Cleveland to have a report for the record on what additional efforts, if any, have been undertaken.

I would like at this time to note the appearances for the record for the parties in interest.

MR. MURPHY: Yes; as previously noted, Mr. Chairman, my name is Thomas Murphy of the firm of Jaeger & Murphy, 2700 Terminal Tower, for Oglebay-Norton Company, the operator of the Fitzgerald.

Appearing with me is my partner, Mr. John T. Jaeger, and also Mr. Robert G. McCreary, Jr., of the firm of Arter & Hadden.

REAR ADMIRAL BARROW: Thank you, and for the Master, Capt. McSorley?

(No response.)

REAR ADMIRAL BARROW: He doesn't appear to be present.

And for interested parties?

MR. GREEN: Merritt Green III, Green & Lackey, Toledo, Ohio, representing the
Marine Engineers Beneficial Association, for the benefit of the lost seamen.

MR. MANN:   Ned Mann, Barnett & Mann. Associated with me is Victor G. Hanson, and we represent the SIU and three of the families of the people who died in the disaster.

REAR ADMIRAL BARROW: Thank you very much. Any other appearances for the record?

Interested parties?

(No response.)

REAR ADMIRAL BARROW: I would like to note also the presence of a representative from Canada, Mr. Whittet. It's nice to have you with us again. Any other appearances?

(No response.)

REAR ADMIRAL BARROW: Cdr. Loosmore, call your next witness.

CDR. LOOSMORE: The Board recalls Capt. Jesse Cooper.
was recalled as a witness, and having been previously duly
sworn, was examined and testified further as follows:

EXAMINATION

By Cdr. Loosmore:

Q. Capt. Cooper, I believe you are still under oath
from your previous testimony.

A. Yes.

Q. And you are reminded of that, sir.

A. Yes.

Q. Capt. Cooper, we have asked you to come back to the
Board and you previously testified at some length, because
you, of all of the witnesses which we have been able
to contact, you are the one person who was in the immediate
area where the Fitzgerald was and the one person who had
substantial and continuing contact with the Fitzgerald.

A. Yes.

Q. And we are hoping -- there are some additional
questions which we would like to ask about the conduct
of your own vessel and about what you observed of the
Fitzgerald, some of which may seem to be repetition of
things that you previously stated; and the questions
really are directed toward helping us understand the best
we can just what happened in that area and to the Fitz-
gerald.
In your previous testimony, Capt. Cooper, you had prepared several charts for me, one of which has been marked Exhibit 38 and admitted, and I have placed Exhibit 38 up here.

Do you recognize this chart (pointing)?

A. Yes, I do.

Q. One of the things that is somewhat confusing is the series of maneuvers which your vessel made in passing west and south of Michipicoten Island and then north and east of Caribou, and in particular where the Fitzgerald was as these circumstances were occurring.

I would like to go back over that ground. I know we have done so at some length, but just briefly, starting here at position No. 11 on Exhibit 38, which I believe you testified was the position that your vessel was at when you made the turn on Michipicoten --

A. It would be on the west end of Michipicoten; that's right.

Q. All right, sir. And you came to what course?

A. Steering at a 125 course from the west end of Michipicoten to a point approximately eight miles off of the northeast tip of Caribou Island.

REAR ADMIRAL BARROW: Excuse me, Cdr. Loosmore. What course was Capt. Cooper on when he was abreast of the west end of Michipicoten and shifted to
125?

THE WITNESS: We made a five degree haul, that's all. We were on 130 at that time, and I hauled up another five degrees to a 125 course.

By Cdr. Loosmore:

Q All right. Now, you described this position as northeast of Caribou Island.

Could you identify that?

A From the northeast tip of Caribou Island, right here (indicating).

Q And that is identified as No. 9 on this chart, Exhibit No. 38?

A Yes.

Q All right. Now, how did you determine this position No. 9 with respect to Caribou?

A With a radar bearing off the northeast tip.

Q And what was that bearing?

A I would have to lay it all out.

Q Was it to your recollection a beam bearing or was it something other than a beam bearing?

A No. We were running down to a certain number of miles from the northeast tip of Caribou, which would have put us clear of all of the shoal area and the islands.

That was our point of departure, heading down to Whitefish.
Q. Well, was there any consideration of what the bearing of the north tip of Caribou was?

A. We had laid out our course and marked a point on the map, our big map, to the point where we would be clear of all the island shoals for our next course down toward Whitefish.

Q. I have here Exhibit 30 which has been marked and entered into evidence in this proceeding, which was, as you testified, the chart which was in use on the Anderson during that day; is that right?

A. That's right.

Q. Now, can you point out on that chart --

A. On this spot right here, that is where we figured we would be when we were seven and a half or eight miles from here (indicating).

Q. You are pointing to a pencil mark northeast of Caribou Island immediately below and slightly to the right of the 76 fathoms' sounding?

A. And it is just about abeam on this course of this island.

Q. This island being Caribou and that course being the 125 line?

A. Yes.

Q. And your testimony is now that the turn was made at that unmarked point and that point is the same as No. 9 on
Exhibit 30?
A. It doesn't lay out that way on this chart. It looks like it might be off a little bit on this particular chart here. This is exactly --
Q. In referring to --
A. -- exactly what we did at this particular point.
If you will notice, there the water is good all the way down to Whitefish Point.
Q. All right, sir. At No. 9, whether it is No. 9 on Exhibit 30 or --
A. It would represent this point right here (indicating).
Q. The point right here being the one just below the 76 fathoms?

CAPT. ZABINSKI: Can we label that with some type of identification?

CDR. LOOMISMORE: Do you want me to mark on Exhibit 30, which was in use on the Anderson?

CAPT. ZABINSKI: You should identify the point more closely for the record.

I see a 76 fathoms sounding marked here, but I am wondering whether the record will be that clear.

MR. MURPHY: I believe there was also another exhibit, Mr. Chairman, which was the same as the chart in use, Lake Superior Survey Chart No. 9. I think that was Exhibit 28.
I request that they not mark on this chart here and use another chart.

REAR ADMIRAL BARROW: I don't know that we need to use another chart.

Can we not describe by some other means the specific point?

CAPT. ZABINSKI: It is in evidence already, counsel.

MR. MURPHY: That was my recollection, yes, Captain.

CDR. LOOSMORE: I have Exhibit 28 here, which is also a copy of Lake Survey Chart No. 9, and it was prepared by Capt. Cooper on the 20th of November during his previous testimony.

By Cdr. Loosmore:

Q Captain, can you locate on Exhibit 28 the position that you are speaking of on Exhibit 30?

A Yes. It is No. 3 on Chart 28, Exhibit No. 28.

Q Pointing to an intersection which is marked with a circle with a 3 within the circle?

A Yes.

Q Now, what was the maneuver which you made at that point?

A We hauled for Whitefish Point on a course of 141 degrees true.
Q. Were you steering 141?
A. We were steering 141 and holding up one degree, which was a course of 142, making a 141 degree true because of the drift.
Q. Now, returning to Exhibit 38, when you, the Anderson, were in position, which has been marked circle 11 on this chart, which is abeam on the 130 course to Michipicoten --
A. Yes, that would have been the 130, right.
Q. At which point you made a course change of 125.
A. A course change of 125.
Q. Where was the Fitzgerald?
A. On the target, 17 miles off of -- well, 17 miles ahead of us and ahead of our heading flasher off of Caribou Island.
17 miles would be about here and it is when he called us and he was down about 17 miles ahead of us at this time (indicating).
Q. He was away from us 17 miles, not ahead of us. He was to the right of our heading flasher on the 125 course.
Q. That's what I am getting at.
Would it be possible to indicate that on this exhibit?
We can take it down.
A. Yes.

REAR ADMIRAL BARROW: Off the record a moment.
(Pause.)

REAR ADmiral Barrow: Back on the record, please.

By Cdr. Loosmore:

Q. All right, Capt. Cooper, this is Exhibit 33 which is your log, the log of the Anderson at the time, and I believe by consulting that log you should be able to tell what time you talked or what time you made the course change which is indicated in circle 11, is that correct?

A. At 1520 we were 7.7 off of Michipicoten steering 125.

Q. Would that be circle 11 on Exhibit 38?

A. Yes.

Q. And this is Exhibit 35 which is the radio log from the Anderson and I believe that should tell you at what time you talked to the Fitzgerald, is that correct?

A. Yes.

Q. What time was that?

A. 1540 to 1542.

Q. All right. Does Exhibit 38 indicate where Anderson was at the time this conversation with the Fitzgerald took place?

A. Yes; relatively so, yes. This is within reason, yes, because the one thing is with these, these were marked down, I mean, there could be a discrepancy of a couple of three minutes or something with the radio log because
we were busy hauling and all that.

He might not have marked it down per se, but went
back and looked at approximately the time, and approximately
it was 1540 or something for the call.

My recollection was that it was 1530, but it probably
was 1540 when he marked it down. My first mate, Morgan
Clark is very efficient about marking down calls and
this sort of thing.

Q. Now, we had the course change at 1520.

A. Right.

Q. And a telephone call, a radio telephone call from
the Fitzgerald.

A. At 1540.

Q. 1530 or 1540, in that vicinity.

Where on Exhibit 38 was Anderson when that radio
telephone conversation took place?

A. Approximately there (indicating).

Q. Indicating the position with a dot in it.

Would you mark that circle 18, No. 18?

A. (Witness complies with request.)

Q. Is that the position from which -- where Anderson was
when you said you looked in the radar and measured the
distance to the Fitzgerald?

A. Yes, that's correct.

Q. Okay. Now let me get the log out of your way.
At that point, how far away was the Fitzgerald?
A. 17 miles.
Q. And where relative to the Anderson was the Fitzgerald?
A. It was on our starboard bow, to the right of our heading flasher, and I am not sure how many degrees it was, but all we was doing was eyeballing and we were watching it. We were not plotting his course between Michipicoten and Caribou.

Q. All right. Is it possible to indicate on Chart 2310, which is Exhibit 38, an approximate position of the Fitzgerald at that time?
A. Yes. It would be somewhere in this area (indicating).
Q. Would you mark that area with a circle that you just indicated, as No. 19?
A. All right.
Q. And how far from Michipicoten -- excuse me, from Caribou is that position which you have just indicated?
A. That is approximately four and three-quarter miles north and northeast of the north tip of Caribou Island.
Q. All right, sir. You previously testified that to the best of your recollection the Fitzgerald passed something on the order of two or three miles from Michipicoten?
A. Two and a half to three miles off the West End Light.
Q. Off the West End Light?
A. Right.
Q. Which I believe you also testified is approximately what you had in mind?
A. That is true.
Q. Until you made the maneuver of changing the course to 230?
A. Right.
Q. And you also testified that you were, while not plotting, but you were frequently, I think you said, keeping radar track of the Fitzgerald; is that a fair statement?
A. We were observing the blip on the scope of the Fitzgerald.

We glanced at the scope, and you would see that the Fitzgerald was still there. Actually, it was the only other ship in the vicinity.

Q. To the best of your recollection, from the time the Fitzgerald changed course at Michipicoten, did it make any other course changes?
A. It was impossible to tell because we were on a diverging course then. We were steering 145 and the assumption was that he was steering 141, but we do not know this.

We know nothing about his courses until we were up at this point here, and we were hauling down a 141 course.

Q. This point indicating circle No. 9 on Exhibit 38, and why do you know anything about the course at that time?
A. At that time he was about a mile to the right of our
heading flasher on a 141 and on the next couple of hours
of run, he gradually crossed our heading flasher and
wound up a mile on the port side of our heading flasher,
the left side of our heading flasher.
Q. All right. So then could you say whether or not he
changed courses, whether he made any course changes
from Michipicoten on down until you lost him on the
radar?
A. Nothing but an impression. The mate and I both said
this, and then I testified to that previously that he was
about -- I don't know. I said four or five, but the
tape said three miles off Caribou Island.
I am talking not on a 125 course, but I am talking
about a 141 course.
Q. Yes, sir. I would like to talk about the possible
course changes of the Fitzgerald before we do that as
background.
You have testified that the Fitzgerald made a course
change when he was southwest of the West End Light of
Michipicoten?
A. Yes; that is correct.
Q. You observed him?
A. I observed a course change on the Fitzgerald at that
time, yes.
Q. From then until you lost him on the radar, did you observe any other course changes?

A. No. There was no other course change at all that I observed.

I do not know the courses that he was steering between Michipicoten and Caribou, because we were not plotting him.

Q. All right. Were you plotting him when you observed the course change at Michipicoten?

A. No, we were not plotting him then. When you are abeam at the island like we were, he would be coming down at an angle, and his course gradually went inside the island, so you would have to assume he was on a 141 or some course heading for Caribou Island, because he was disappearing -- or not disappearing, but he was working this way in relation to Michipicoten Island.

Q. Working this way --

A. To the east.

Q. Indicating eastward, but that was as viewed from your vessel, which was where at that time?

A. We were about eight miles north on a 230 course.

Q. So then you are speaking of the relative position rather than a true position?

A. Yes.

Q. Is that because you have relative radar bearing on the
ship?
A. Yes.
Q. In your previous testimony, Captain, you were asked specifically how close the Fitzgerald came to Caribou.
A. Yes.
Q. Do you recall that?
A. Yes.
Q. Do you recall your answer?
A. I don't know, but I would assume that I said, I think that I testified to the fact that he apparently, to the mate and myself he apparently hauled down.

We don't know why, but by watching the radar as it passed Caribou Island, as I said, four or five miles off of Caribou Island. I don't mean abeam on the 125. I mean abeam on what course we assumed, which would be 141 at that time, but it appeared to us that he went down on a more southerly course.

This is just appearance because we did not plot him. We don't know. We were eyeballing him and we were on a different course than he is on, so everything being relative on the radar, if you don't plot him then things can be somewhat different than what they appear. But he did appear to be -- on the tape I said three miles off of the island, and I know that I even gave it some thought at that particular time when I was up here, to haul down
more south to get the lee of the island, for what little benefit we could get out of it, and head for Whitefish Point, and the mate and I both had the impression that that is what he did, and he came down here and then hauled out.

Q. Down here indicating what?

A. The south end, putting Caribou off of his stern, which would be about 140 degrees, approximately, and that would have put him out here again, when we hauled down, to the west of our heading flasher, when we were on the 141 course.

Do you understand what I mean?

Q. Well, I would like to go over it again in more detail, but let's do it in slow steps.

What was or what is your present recollection of the closest point that the Fitzgerald came to any part of Caribou Island?

A. Well, I have said from anywhere from three to five miles off the easternmost point of Caribou Island.

That's looking at the radar on a 24-mile scale and guessing.

Q. Yes, sir. I would like to do this one small step at a time, if we may.

The closest point that you think that the Fitzgerald passed Caribou Island at any point was how far?
A. Three to five miles.
Q. Three to five miles, and what was the relative bearing from Caribou, the true bearing from Caribou to the Fitzgerald, as best as you can estimate at that point?
A. Approximately due east, I would hazard a guess. I have no way of knowing.

   We were not watching him that close at this time.
Q. Okay, and approximately what time would that have been, as best as you can estimate?
A. It may be, it probably was between 4:00 and 4:30, 1600 and 1630, approximately.
Q. Yes, sir, I realize all this is approximate, because you weren't keeping a plot and I want to stress that, but again, as best as you can remember, if we have the Fitzgerald due east of the north tip -- is that right?
A. No, he wasn't due east to the north.
Q. All right. Due east of what point?
A. Approximately out here, three miles east of the island, the closest point.
Q. Would you draw a circle on the chart there to indicate roughly where you think he was?
A. I said three to five miles. It would be from there. He would have to have been in this area (pointing).
Q. Mark that circle with the number 20, please.
A. (Witness complies with request.)
Q. Indicating an area due east of Caribou Island with a circle marked and the numeral 20 inside it, and that is marked on Exhibit 38.

Now, at what time would you estimate that was?

A. Between 1600 and 1630, because the mate and I were both observing the radar and we were coming down here, but of course we were obviously watching the target of the Fitzgerald.

Q. How far away were you at the time?

A. At this time he was approximately 16 miles or 17 miles. I am not sure on that at all.

The maximum distance that he was away from us was 17, and we did start closing with him a little bit after, after he talked to us up at Michipicoten Island.

REAR ADMIRAL BARROW: Off the record.

(Discussion off the record.)

REAR ADMIRAL BARROW: Back on the record.

By Cdr. Loosmore:

Q. Capt. Cooper, did you discuss this particular point that we have been talking about where the Fitzgerald passed with relation to Caribou Island with anyone immediately afterwards?

A. The mate and I, Morgan Clark and I did watch the Fitzgerald come down there, and I made the comment that he was in a little closer than I wanted to be, or
Words to that effect, to Morgan.

We were both observing inside our course line.

Appearancewise he was drifting; the target seemed to drift or on the scope now, actually he was widening out at an angle.

He was steering a different course than we were.

Obviously, if we were steering 125 and he was steering 141, that is a difference of 16 degrees, and for every four miles you are going to widen out approximately one mile farther apart if you came down on a parallel heading.

Q. Did you discuss this with anyone once you got ashore?

A. I don't know. I believe I mentioned it in the tape to the office, but I was talking to them after we locked through at the Carbide Works at the Soo.

Q. All right. Let's go into that a little bit. You said there was a tape to the office.

Could you explain what that was?

A. I wrote out a statement, and when I finished the writing of the statement off the top of my head, I was supposed to call Mr. Ransom, who is head of our Great Lakes fleet, and give him verbatim what I had written.

I knew that they were taking that, but we did have a conversation, and I can't remember if it was before I wrote the tape in general what I knew, or what I could tell them as to what happened about the Fitzgerald, and that was
Q. Could you describe that conversation to us, please?

A. Well, if you had the tape, it would be easier to play it, wouldn't it?

Q. I suppose we can.

A. You are talking about describing a conversation that I had when I had been up 48 hours and tired. There might have been something taken out of context, I don't know.

In general, it is nothing more than what I testified to already with a little more salty expressions probably; but other than that, it is essentially the same.

CDR. LOOSMORE: I want to introduce on the record what we are going to play.

Capt. Cooper, you mentioned and we do have here --

REAR ADMIRAL BARROW: Capt. Loosmore, perhaps counsel could explain what it is.

CDR. LOOSMORE: Yes, sir. That is what I was going to do.

We do have here a tape recorder, which Mr. Murphy will explain, and we would like to play it and have you listen to it, and we will question you a little bit about that.

Mr. Murphy, would you explain this?

MR. MURPHY: Yes. With the permission of the Board, I would like to ask the Captain
a couple of questions about the conditions and who
the people were present, so that it would be easier
to understand some of the comments made on the tape.

With that permission, I will do that.

EXAMINATION

By Mr. Murphy:

Q. Captain, you mentioned you had this conversation with
your office. Would you tell us approximately what time
of the day that was if you recall?

A. I would say 1430 in the afternoon of the 11th.

Q. I see. And could you identify for us, please, the
individuals who you knew were present at the other end of
that telephone conversation while you had that conver-
sation?

A. There was Mr. Ransom.

Q. And who is he, sir?

A. He is the head of our Great Lakes fleet. And Mr.
Buhrmann was present, assistant to Mr. Ransom, Capt. Rankin,
who is our marine superintendent, and Mr. Blacik, who is
an attorney for the corporation.

Q. Yes, sir. And who was present with you when you were
having this conversation?

A. On occasions, part of the time Mr. Clarence Nygarro,
who is head of the supply store at the Soo.

Q. I see. At Sault, Ste. Marie?
A. Yes.
Q. And Captain, your name is what?
A. Jess B. Cooper.
Q. And your nickname is what?
A. Bernie.
Q. Some people call you Bernie?
A. Yes.
Q. So when we hear a person addressed as "Bernie," you are the person being addressed?
A. Yes.

MR. MURPHY: Mr. Chairman, this is a tape of that conversation that was furnished to us by United States Steel Corporation, the captain's employer, and tapes of which have previously been submitted to the Board and I cannot identify it with no greater extent than that.

REAR ADMIRAL BARROW: Do you know who took the tape?

MR. MURPHY: I don't know personally, but there is somebody present in the room, I think Capt. Rankin, unless the captain knows.

THE WITNESS: I do not know.

MR. MURPHY: And Capt. Rankin is in the room and I think he was also present, as the captain testified, when the tape was made.
REAR ADMIRAL BARROW: I think we can ask him.

MR. MURPHY: Capt. Rankin, would you be good enough to step forward for the moment?

CAPT. RANKIN: Yes, sir.

REAR ADMIRAL BARROW: Perhaps you can give us some of the details as to who actually made the tape recording.

CAPT. RANKIN: Well, Capt. Cooper identified the people who were present and that is exactly who were present.

Mr. Ransom, the marine superintendent, recorded the conversation. We were talking over a conference call device and he recorded it on a small cassette recorder.

REAR ADMIRAL BARROW: You have heard the testimony?

CAPT. RANKIN: Yes, I have.

REAR ADMIRAL BARROW: To your knowledge, does that represent accurately the conversations that took place?

CAPT. RANKIN: Yes, it does.

REAR ADMIRAL BARROW: Off the record a moment.

(Discussion off the record.)

REAR ADMIRAL BARROW: On the record.

Cdr. Loosmore?
CDR. LOOSMORE: Capt. Cooper, I am going to play part of this tape and I think rather than start and stop it, we will just play it right through for a few moments and we would ask you to take note of what is on the tape and then I think we will have some questions about it later, but we will go ahead with the tape.

THE WITNESS: Fine.

REAR ADmirAL BARROW: I think you might point out specifically the points we are interested to hear are the testimony he has given with relation to the positions of the Fitzgerald as far as how far off of Caribou Island, and any inconsistencies that may appear to exist in the testimony.

Call his attention specifically to that point before we get started.

Off the record.

(Discussion off the record.)

REAR ADmirAL BARROW: On the record.

(At this point in the proceedings, a tape recording was played on the record as follows:)

"A. We came out of Two Harbors and they had gale warnings up. Northeast. Nothing that drastic. And then headed down and the wind went around. Well, the wind was still northeast out there at
the Slates and the wind was southeast down around
Whitefish and we started to get a nasty southeast swell
in there.

A double sea was rolling. It wasn't big seas
at the time, but we got in close enough to the
eastern edge of Canada there to knock off the north-
east sea and we both proceeded on down to Michipicoten
Island, the west end.

And in the meantime there I had been charting --
in fact, I have got the two plots that I had on the
weather. I thought we should save those and not erase
them, right?

Q  (Ransom) Right.
A  There is a -- I was plotting the storm all the way,
and I had them on board and, well, usually I just keep
two of them behind, but I got to thinking, I better
save these two just in case, right?

Q  Very, very good.
Q  Okay. Well, I plotted these two, the storms, up
until the time, well, this period. Had to get the
8:30 winds, because it didn't make any difference
down around Whitefish. I have got the report, though.
I mean I got that on paper, but I didn't draw a plot
on it, because the low had already passed and I was
damn anxious to get down behind the Point.
"I talked with the Fitzgerald on several occasions there. He asked me what I was going to do, what we were going to do, and we kind of generally decided that it wasn't that bad, that we would keep on moseying down.

Well, when he got down just below Michipicoten, I was about seven miles behind him, and the wind went around to the northwest, northwest by west, and was blowing a gagger. And usually up on Lake Superior it takes one to two hours for a sea to build up, and in my own thinking -- I don't know what the Captain of the Fitzgerald thought, but in my own thinking I figured we would be down a couple of hours above Whitefish before the sea would get big enough to bother us, but that sea built in an hour, and it was blowing -- well, I don't know what. I have got it in the log-books. I can't remember exactly, but it was blowing a pretty steady 55 knots and gusting up to 70 at times.

Well, I steered for Michipicoten. Farther out there is a 6-fathom bank in close to Caribou and I wanted to avoid that and the 15-fathom bank down in there called -- it's called the Chummy Bank, south of Michipicoten Island, because when you get over those banks the seas become tremendously huge
"because of the water being shoal, and the waves, you know, they just break crazy.

Well, I steered up away from that and then hauled back down after I cleared the banks, but the Fitzgerald, he went right in close to the island. He went in close to the island, and I am positive in my own mind -- we had him on radar -- we never had him visually, but we had him on radar all the time, and I am positive he went over that 6-fathom bank, and if he did that, the way those seas were running down there; it must have been a hell of a sea in there, because it was shortly after that he called me up and he said, 'I am taking a list.' And he said, 'And I cracked off a couple of vents, vent pipes.' And he said, 'I am taking water down the vent pipes.' And he said, 'Will you stick around by me until we get down?'

And I said, 'I certainly will,' you know.

And at that time he was about 17 miles ahead of us. He ran away from me in this particular instance.

And I checked on him again. We talked to him, I mean, several times on that. I don't think we logged all the calls, but we logged some of them.

And I went down to lay down for about an hour and the mate was up there after supper and he checked
"on him periodically to see how he was doing and he was making out fine, although we were taking a lot of water at that time, even here. On the Anderson we were taking a bunch of it across the deck.

Well, at 10 minutes after seven, at the position that we reported, Neil on the Blough followed an oil slick back and then got there. Right after we got through talking to him, he must have dove right under, because the oil slick was right in that area.

Then 10 minutes after 7:00, I walked into the wheelhouse about five minutes after Morgan had been talking to this Fitzgerald, and he asked how he was doing again, and he said, 'Fine. I am holding my own.'

He said, 'We are going along like an old shoe.' He said, 'No problems at all.'

And in the meantime we had sea clutter. The sea was so big in there at that time we had sea clutter on our radars up over 10 miles. And we had been tracking him, keeping track of him on radar all the time.

Then he said he was going to cut down, and we were walking up -- and I think the last true contact if I remember right, was nine miles. I'd have to confirm that with Morgan.
"And he was in the sea clutter. And after we talked to him, you know, I mean we thought, you know, he is doing good. We will follow him along. And it was snowing and visibility wasn’t too good. We never did see him visually.

Well, then Morgan had talked to him, getting his position, because his radar was out, and he was 15 miles north of the high part of the land at Crisp Point and about 14 miles west of Copper Mine Point at that time. And we informed him that there were three saltwater vessels, the Benfri, the Nanfri -- and I forget the other -- and the Freotus or something like that, another salty. They were coming up there. They were heading into the sea and they were making (garbled) rpm’s and making about two miles an hour, just bouncing up and down.

Well, then after Morgan talked to them there and I came up to the wheelhouse, I thought, 'Well, I will give them a call myself and see how he is making out.'

And I tried to call and I didn't get an answer. And when we tried there, then I started to get concerned. I tried to cut the radar gauge down and tried to pick up a target, and we thought that we had one, and the sea return was so damn bad, we thought we had a
"target, we thought we had them, so we thought, you
know, it was about seven miles down there. Well,
we thought, well, we have checked out and he was waiting
for us.

One of the targets seemed to come in pretty
steady. It was sea return.

And, in the meantime, I am calling these salt-
water vessels that were coming up.

I said, 'Can you see the Fitzgerald anywhere?
Is he in sight on your radar?'

We could see them very well in ours, because
they were over 10 miles away from the radar, and
they were coming in real good. In fact, they were more
than that. They were about 15 or 16 miles away.
And we tried to find out from them if they could pick
up any targets.

And they said, 'Gee, no, we haven't seen any tar-
gets at all.'

So then I started to get extremely concerned.
I called Soo Control and broached the subject to them,
and they sort of half ignored it. They were looking
for a 16-foot boat that had overturned out there
somewhere. They seemed to be more concerned with
that at the time.

And then I became insistent. And, of course, I
"was down too far there before I realized that the
Fitzgerald was gone. I mean he just wasn't there
anywhere.

So that's when I got on the horn to John and
called him and then I turned around and went back out.

Q. (Ransom) Bernie, what position were you approxi-
mately in at that time?

A. What do you mean?

Q. Well, before you turned. In other words, when
you realized that the Fitzgerald was actually gone.

A. Well, I think I knew it, Bill, when I was coming
down by Whitefish. I think then I had kind of a gut
feeling. I knew nobody was seeing him on the radar
or anything else and I was positive he was gone.

Well, I went on down to Parisienne Island,
which is another island, and then turned around and
come back.

Q. (Blacik) Did you get any instructions from the
Coast Guard to turn back or did you do that on your own?

A. They left it up to my judgment.

Q. (Blacik) You had been in contact with the Coast
Guard part way. Before you turned back, you had been
in contact with the Coast Guard?

A. That is right.

And the commander of the port here called me up,
"and he said, 'Do you think you could go back out?'

Well, I had my doubts on it, but I said I would give it a try.

Well, we went out there and the old girl handled like a dream. I had her checked down and she handled extremely well and then rode quite well, although we were taking a lot of water. In fact, I banged up a lifeboat because of that. I will probably have to make a Coast Guard form out for that. I got the starboard lifeboat all stoved in on the saddle side. A wave dropped up on it, I guess.

And the port one was banged a little bit, too. I think the one can be fixed, but we are going to need a new starboard lifeboat.

Q. (Black) After you first heard from the Fitzgerald and that they were taking on water and asked whether you would stay with them, did you have to hold your speed to stay with them?

A. No, he told me he was going to check down and let me catch up with him. See, he was 17 miles ahead of us and then we did close to -- I know at 10 miles we had a definite target and at nine he was very discernible. I think that's what Morgan told me when I come up, that he was nine miles away. And I looked at the radar and Morgan pointed out what we assumed was
"the Fitzgerald, and, 'Yes,' he said, 'Okay.' I mean he just talked to him five minutes before and he said everything was fine.

So, you know, I mean, you know, you think, well, he is going along pretty good, too, the whole bit.

Right after I tried to call him again, and not getting any contact, and then I got to thinking about it afterwards -- and this is the bad part, I think -- what's going to happen if there is any litigation out on it, and I know they are going to question the hell out of me.

When he called me up and told me those vents were gone, that his fence rail was down, he had to take an enormous sea to snap those vents off, because they are only about a foot in diameter and they are pretty solid metal. They are gooseneck, I believe, on him. I am not sure, I think they are the gooseneck type vent.

And after, when we got down around Whitefish there and I got to thinking for sure that this Fitzgerald was gone, I wondered when he was making water if he had some cracks down below and making water and not coming in through the vents, because he had both pumps on to hold his own.

Now, this is going to come up, I am sure.

Q. (Blacik) This is one point that it's
"probably as good a time as any to throw a general
proposition out here, Bernie, and that is that I think
we want you to say only what occurred as a matter of
fact to your knowledge, what was said to you, what
conversations you had, what you did.
A. I know. You don't want to infer anything.
Q. (Blacik) I don't want you guessing as to what --
A. That's hearsay.
Q. (Blacik) -- happened on their ship beyond the
information that was directly related to you.
Q. (Blacik) We don't want any guessing whether
pellets shift in this kind of sea, the construction of
the boat. Only --
A. Well, a lot of this is common knowledge.
Q. (Blacik) -- what occurred.
A. Well, they are going to have to ask you. Well, I
mean I know what they come up and they say, 'Well,
have you ever had a cargo shift on you?'
Q. (Buhrmann) What's the answer to that?
A. I never have, no.
Q. (Buhrmann) Okay. I think all Ben is saying, Bernie,
is if they ask for conjecture, don't volunteer any.
A. Well, I know, but I mean I will have to answer
something.
"Q. (Buhrmann) That is right. But I am saying, you
can identify it's conjecture, too.
A. Yes, right. I understand, yes.
Q. In your opinion.
A. Any other advice? I am going to need it.
Q. (Buhrmann) Well, I guess the best thing to do
is tell it how you see it, that's all.
A. And, of course, they will question the mates, the
second mate.
Q. Right.
A. The first mate, I am sure. And they are going
to question the men that were on watch.
Q. (Buhrmann) What is your personal opinion about
a general question on the weather? Now, I had inquiries
from the television and radio, if they will be able
to talk to you and just get your opinion of the weather.
Now, how would you answer something like that?
A. How would I answer that?
Q. (Buhrmann) Yes.
A. Well, I would say that we came across the whole
north end of Lake Superior with northeast winds.
I mean you can look at the logbook, 30 to 40 knots.
No big seas that would bother us. We came across at
full speed. The ship wasn't working or pounding or
anything else, but that damn low intensified when it
"hit the water, and that water was warm and, of course, that makes the storm center much more intense, and, brother, when we got down to Michipicoten she was blowing a gale. And I, of course, from previous experience on Lake Superior, this being a deep lake, it takes a couple of hours for the sea to build, and I figured I had it made, it's only 50 miles from there down to Whitefish, and I am sure that the Captain of the Fitzgerald felt the same way.

But it got nasty and nasty very quickly.

Q. (Rankin) When did you last see her, Bernie, actually see her?

A. Never did see it.

Q. (Rankin) You never saw him, even when he came out across?

A. I never saw him until after he pulled ahead of us, no. We never saw him visually. We had him on the radar all the time.

Q. (Blacik) The paper said you had seen him visually.

A. Well, how the hell he ever got that I said that.

Q. Well, that's the way the damn stories go and that's right.

A. I never said one word to anyone of them, except to refer them back to the Soo Control or Cleveland or the Great Lakes Fleet office.
"Q  (Buhrmann) Well, you can't really go on that.
Don't concern yourself, because they coin their own
words and say things.
A  Well, that's the reason, because they will quote
you out of context every time. I know I have had a
couple of sad experiences with them.
Q  (Blacik) At any time over your radio did you
hear any call from (garbled)?
A  I had been in the wheelhouse for quite some time.
Q  (Blacik) I mean did the Fitzgerald make any calls
to the Coast Guard?
A  No, I heard that Fitzgerald called Grand Marais
just before he called me and told me about those vents.
      Now, I am wondering whether he called -- I
didn't listen in on that conversation and I am just
wondering whether he called Grand Marais Coast Guard
to tell them that he had knocked off a couple of
vents and that he was taking a list. Now, I don't know.
      I didn't listen in on that. And I didn't know
what it was. I just assumed that he was putting in a
special weather report, because the wind had kicked
up pretty good, and I tried another assumption on
my part, but I didn't listen in on it, and he did call
Grand Marais Coast Guard and I don't even know
whether he got ahold of them.
"(Blacik) Did any other members of the crew in
the pilot house offer any other information where they
heard anything where he talked to anybody else other
than yourself?
A. Whether they what?
Q. (Blacik) Did they talk -- did any other members
of the crew volunteer that he had talked to anybody
else other than y-u?
A. Oh, you mean the skipper of the Fitzgerald?
Q. (Blacik) Yes, right.
A. Oh, yes. The mate was in contact with him. I went
down and laid down for an hour and the mate talked to
him a couple of times in that area.
Q. (Blacik) But you didn't really know whether he
talked to Morgan about it or if Morgan ever heard any
Coast Guard call or anything to them?
A. Oh, no, negative. I was up in the wheelhouse
just until after supper, until about 5:30, and in my
recollected relation that's about the time that he -- well,
it was before that even. It was before supper that
he called Grand Marais, if I remember, and I am not
sure even on that any more.
I mean there has been so many calls and things in
between. But it just seems to me that it was just
before he called me and told me that he had broken some
"vents off. And I know damn well he was in on that 36-foot spot, and if he was in there, he must have taken some hell of a seas.

Q. (Blacik) Again, I asked you whether you had to hold speed to stay with him. You said no, that (garbled) checked?

A. No, he ran away from me and until he called back and said that he lost his vents and was listing and would I stay with him.

Q. (Blacik) You couldn't have picked up speed on him --

A. No, no, I was going full speed.

Q. -- he had to hold back?

Q. They were both 7000 horse power, John.

A. He was running away from me. Yes, right.

Q. He has got you on the speed.

A. (Buhrmann) Bill just stepped out of the office to answer a phone with Chris, so we are kind of dragging time a little bit, Bernie, so bear with us until he gets back.

A. Okay, fine. I have got lots of time here now, (garbled) out in the harbor.

Q. (Buhrmann) Did Kinghorn and Robiak get there yet, do you know?

A. They are supposed to be -- they are due in on the 2:30 plane.
"Q. Okay. They are on a private plane there, so they ought to be coming in.
A. Clarence said there is somebody there to pick them up.
Q. (Buhrmann) Okay. Good. And I told, of course, instructed them that their reason for being and looking is strictly internal purposes only.
A. Yes, I understand. I will tell you, I got the exact drafts in the lock. I had the mate go around in a cart and get all of them, and our draft is within a half an inch of what it is when we left, except for a little different trim. We didn't take any water anywhere.
Q. (Buhrmann) Okay. Good.
A. All right.
Q. Bill has come back in again now, so --
A. What?
Q. I say Bill has come back in again.
Q. (Ransom) Okay. The reason for this is that Chris wanted me to be aware of the UPI release and what it said, and it's quoting a petty officer, Bob Weiler.
A. Yes, one of the fellows heard him -- they interviewed him at the Soo here. I think the second mate heard him interviewed him on the WSOO radio.
Q. (Ransom) Right. And it lines up, of course,
"with your repeating of what's gone on here, because it said that it gave the vessel's position 13 miles north of Whitefish. I didn't get the whole thing there. I couldn't quite take shorthand there, but, last heard from at 7:10.

'The Fitzgerald was last heard from at 7:10 last night when its officers radioed the ship' -- and I have been referring to the Anderson -- 'that it was taking on water and had lost two vent covers. They asked that the Anderson shadow the Fitzgerald in case of more trouble. A short time later, the Anderson lost radio and radar contact.'

A Well, that's a little bit out, because there was a good half an hour, 45 minutes in there, Bill, before -- we had just talked to them and just a half an hour, forty -- before we really started to be aware that he was gone, you know, or that there was some trouble somewhere. And we were trying to find him in the sea return and all this. And by this time, Bill, we were down past the 10 miles of him and I couldn't have turned that ship around no matter what there. I mean I would have torn her right out.

Q (Ransom) No, no, we are not questioning that, Bernie. The only reason I am stating is that it would help Ben in any of the questions that you might have.
"A. I understand, but --

Q. (Ransom) All of our part, what we want to make sure here, Bernie, is that just facts. Whatever is factual. We are not one thing or the other.

A. This here is all judgment, but even going back out there, the sea had started to moderate and we were taking a lacing. Wind -- the sea had started to moderate and, Christ, we were taking a lacing. I was heading right into it, taking water on both sides.

Did he tell you that?

Q. (Ransom) Yes, we had a few discussions last night about that, but you going back there, but John used the good term that kind of made me feel good, that you were riding like an old shoe.

A. Right. John was concerned. He called me back two or three times, and I had her checked down and she handled lovely, Bill. She handled like a dream.

And she wasn't working. This is the part that I liked about it. For that extra length, I thought maybe she would start to spring and bounce and the whole bit.

Q. (Ransom) That was really my concern.

A. Right. I will tell you, I think she is stronger than she was before.

Q. (Rankin) How about when you were running before?

A. She was not working at all at that time either.
"Oh, she had a little bit of a spring when a big one
would come up under her stern, you know, like they do,
they bob and pitch a bit, but actually I think she
worked less than she did before.
Q  (Rankin) Are you concerned about her condition
right now?
A  Pardon?
Q  (Rankin) Do you have any reason to be concerned
about the ship's condition?
A  Absolutely not, John.
      Just to be on the safe side, I was telling Bill,
I got the drafts leading up above. I can't remember,
I think there was 26 feet aft, 25.9 in the middle, 25.6
forward. And in the locks, tied up, I asked the
lock master to hold lowering the water, and she was
25.9 on one side, 25.9 on the other, 25.10 aft, and
25.9 forward, so I didn't take any water.
Q  (Ransom) Good. Perfect.
A  Right?
Q  Right.
A  Okay.
Q  (Rankin) Where were you when he called you that he
had broken off those vents? Were you still up around
Michipicoten?
A  No. No, John, that's what I was telling Bill. I
"swear he went in there -- In fact, we were talking about it. We were concerned that he was in too close, that he was going to hit that shoal off of Caribou. I mean, God, he was about three miles off the land beacon. That's very fringe on that shoal area that extends out northeast from Caribou Island. And when he gets in that close, John, he is over that 36-foot spot in there. You know, there is a 6-fathom spot. Pretty good sized extensive 6-fathom spot. And then out farther there is a 15-fathom bank.

And I hauled out around both of those, because when you get over those damn shallow waters, John, you can get a hell of a sea. You get a much bigger sea right in those particular areas than you do out in the deep water.

Q. (Rankin) Yes. The radio beacon was working, I suppose, on Caribou?
A. That I don't know. We never tried it. But we had Caribou on the radar. I mean in that bit, all we were concerned about was down at Whitefish. We had the radio beacon going for that one.

Q. (Rankin) I mean he would have tried it? He didn't have a radar? Did he say his radar was out?
A. He told Morgan his radar was out. Now, that was just before the last contact with him, because Morgan
"was giving him his position. His radar must have went out after that, John.

Q. (Rankin) But you think he had his radar up around Michipicoten?

A. I believe so, yes, because it was after that that he asked Morgan for a position.

Now, there is an assumption again. I mean maybe it was out before that and he didn't say anything, but I don't know.

Q. (Rankin) Yes, but you had no reason to believe that he didn't have a working radar at Caribou and Michipi-

A. No, no, I am positive he must have.

Q. (Rankin) Yes.

A. I am positive. At least I am as positive as I can be. I mean, you know, without having absolute facts.

Q. (Buhrmann) How would you describe his damage, Bernie?

A. He called -- he told Morgan -- no, he told me. I was up in the wheelhouse when he called, that his fence rail was laid down and that he had snapped off two vents, and he was taking water through those vents into the tanks and he was taking -- he didn't say starboard or port list, but he was taking -- I would assume it was a starboard list, because the sea was on our starboard
"side a little bit.

Q   (Rankin) Well, this is, of course, an assumption. Could it have been that he was cracked then and his fence rail was just --
A   Well, John, you know, I think he has got those gooseneck vents, hasn't he?

Q   (Rankin) Yes. But why was this fence rail on deck? Maybe (garbled) so badly then that his fence rail was (garbled)?
A   Well, he said his fence rail was broken and gone. Now, whether the fence rail -- I don't even know if he had canvas on. If he had canvas on, he could have had a problem.

I don't know of that either, because that would have bent the fence over real quick. Now, whether those cables landed against those vents and snapped them or, theory, that she twisted down inside and snapped those pipes down underneath and then they popped off at the top.

Q   (Ransom) Our pictures appear to have a straight vent, Bernie, with a cap on top, like ours.
A   I am not sure, Bill.

Q   (Blacik) They look like that, according to the picture we see here.
A   Okay. Well, they shouldn't have popped off there,
"then, because they are not that high. Well, of
course, the fence rail could have grabbed them and
if there was that much force --
Q. (Buhrmann) Well, that adds credence to your dis-
cussion, though, that maybe it's another crack and
this below the crack?
A. I can't understand that. We were taking a lot of
water, now, Bill, but you have got to almost have a
12-inch pipe full of water to go in there to cause you
to list that quickly.
Q. (Buhrmann) Well, that's right.
A. So an assumption again. You know, I mean, this is
theory, and you don't want to talk about theory.
Q. (Buhrmann) How about the following sea? How
bad was it?
A. Big. I plotted out -- well, I didn't plot it out,
but the engineer called up and told me that he took
water in the fan room. You know, that's up on the
engineer's deck.
Q. (Buhrmann) Yes, right.
A. I think that's probably when I got that starboard
boat banged. That starboard boat is banged in. I am
going to need a lifeboat there. The port one is banged
a little bit.
Q. (Blacik) He didn't express any concern about
"the following sea type of thing?
A. I was concerned and I always am in the seaway, but I was not worried. Is that what you mean?
Q. (Blacik) No, I mean the skipper of the Fitzgerald didn't call you?
A. No, no, I was talking to him. Everything seemed to be fine, you know. That was our last conversation with him.

He said, 'Oh, we are going along like an old shoe and she is riding good and we are holding our own.'

So I assumed the pumps were taking care of everything.
Q. (Rankin) Did he tell you that he was developing list and he had the pumps on, Bernie, then?
A. That was before.
Q. (Rankin) Yes. But at the time he lost the two vents, then he --
A. Right. He told me that he was developing a list. He didn't say starboard or port. I assume starboard, because the sea was on that side.

And that's when he was listing.

And I said, 'Well, have you got your pumps on?'

He said, 'Yes.'

And that was all -- that was the end of the conversation.
And then he asked if we would follow him. And when we talked to him later, he said that he was holding his own and there was no problem. So I assumed, you know, that everything was fine.

Q. (Rankin) Yes. Well, as you say, not enough water went through those vents to --

A. You would almost have to hook up a ballast pipe pump to it, John, because although we are taking water over, but, you know, it takes a long time with a small opening like that and a wave coming over intermittently.

Q. (Buhrmann) You sort of just have the one tank effect?

A. Well, of course, if he bends down, I mean you could -- if it was snapped off at the deck, he would get more water, because his gunwales would be holding it and it would be pouring in there, but I still, in my estimation, it wouldn't have been enough that he couldn't control it with the pumps.

Q. (Ransom) I think that's a good assumption there. (Rankin) Well, what did you think about the weather report, Bernie? When I saw you Sunday afternoon, you know, there was no hint of this, so I was really taken by surprise. I didn't know anything about it until Monday morning, you know.
"A. Well, this is right. I was telling Ben there, I have charted the storms, John, all the way. I have got -- I think I have got it at 0830 the 10th and 1431 that I plotted, and I didn't erase them. I have still got those on board and I was going to wipe them off and I thought I had better hang onto them. And the storm, John, moved exactly like it was supposed to. I had it plotted right. And we went right through the eye of the damn thing and that was right at Michipicoten.

Q. (Rankin) How were the weather reports? Do you think the weather reports were pretty good?
A. The weather reports on this instance, John, were excellent. They agreed completely with me, for a change.

Q. (Rankin) In finding and everything?
A. Right.

Q. (Rankin) Somebody said that they were a little slow in --
A. Well, I think that they might have been a little bit slow in putting up the storms, yes.

Q. (Rankin) Or predicting the change?
A. Well, predicting (garbled). But I was laying it out, and, cripes, in my plots I was getting 50 knots winds out of it, you know, before they even came up with it.
"Q. (Rankin) Well, it was a long night, wasn't it?
A. A long two days.
"Q. (Rankin) Yes.
A. Almost. Well, since we left -- I had about two
hours sleep since we left Two Harbors.
"Q. (Rankin) I can believe that.
A. And I was up -- well, I was worried or concerned
about the weather, you know.
"Q. Sure.
A. And I was down in the room, you know, tried to lay
down, but the first time the sea would slap her bow,
that's when I was back up again.
"Q. (Rankin) You said you came south of Isle Royal.
Did you go right across to the Slates then?
A. I went across -- I was headed for about, oh, about
12 miles and Morgan came down and called me and said
that the wind had eased up a bit over there on the
Slates, and he suggested that we could come down --
I had been laying down and he come down and said,
'Well,' he said, 'it looks real good.'

And I said, 'Well, I will take a look at it.'

And we went up and I hauled her down about another
10 or 15 degrees, I guess, but before we got over to
near Otter Head we started to get a cross sea and I
hauled her back up until I got into the lee of the
"Canadian shore there.

Q (Blakik) Have you seen the Coast Guard people around? Are they ready --

A I don't know. I sneaked in the back office here with Clarence.

Q (Blakik) Did they indicate they are going to come to see you or not, Bernie?

A I don't know, but I would probably guess that I will have visitors.

Q (Blakik) I guess we are going to let Oglebay-Norton --

Q Oh, yes, absolutely.

The only thing, Bernie, that we are going through here, so that Ben can hear the story and then see if there was anything --

A Just a minute. Clarence was saying something.

Oh, Clarence was just saying, we have got five Oglebay-Norton people up here that want to come up and talk to me.

Q (Ransom) That is correct.

A All right. How frank do you want me to be on this, facts?

Q (Ransom) Facts. Absolute facts.

A All right. I will let them ask the questions and I will answer them.

Q (Blakik) I was just going to make a suggestion here,
"if you have enough time, Bernie.
A. Okay.
Q. (Black) First, we have made the statement already.
It's just the facts of what happened. Due to that,
just as we have been badgering you with questions,
I am a little confused in going back and forth. If
you have a half an hour or 45 minutes to sit down
and put it in a chronological order of just what hap-
pened and what time and how the storm developed, and
when they start to interview you, instead of just
starting a lot of questions, if you could say, 'I
would like to first read a statement of my recollection
of what happened,' and without interruption relate
the full story through.

It will be a reminder to you in the future as well
about answering the questions, but I think otherwise
that you get a little confused picture of going back
and forth answering questions.
Q. (Ransom) Boy, that's a good one, because you are
going to be asked so many darn times."
REAR ADMIRAL BARROW: Let's take 10 minutes.
(REcess had.)
REAR ADMIRAL BARROW: Let the record show
we reconvened at 11:35 a. m. Cdr. Loosmore?
CDR. LOOSMORE: Thank you, sir.
By Cdr. Loosmore:

Q. Capt. Cooper, we played quite a bit of that tape conversation. Did you recognize the voices in that?
A. Yes, I did.

Q. Was that tape that you heard a substantially accurate record of the conversation?
A. As near as I can recall.

Q. Was it a complete record of the conversation?
A. I would assume so. It would almost have to be. I have no way of knowing that for sure, but I would assume it was.

Q. I guess what I'm asking is whether you recall, up until the time we stopped the tape, whether you recall whether anything else was said, which was not in the tape at this time?
A. No. Essentially, as far as I am concerned, that is exactly what transpired as far as the conversation was concerned.

Q. I would like to come back now to the area of questioning that we were discussing before we played the tape, which is concerned with how far Fitzgerald was from Caribou Island and from the shoals north of Caribou.

Now, there were statements in the tape in which I believe you said something like three miles; is that correct?
A  Yes.
Q  All right. And earlier this morning you talked about three to five miles?
A  Right.
Q  Previously you talked about something like four to five miles; is that inconsistent?
A  I can't say really that it would be inconsistent. You are talking about a discrepancy of three miles. If that is an inconsistency, yes.

Without taking a plot on a 24-mile scale, a radar plot is pretty hard to discern by just eyeballing it on a scope.

Q  All right. Really what we are getting at is where the Fitzgerald was with relation to the shoal.

Can you describe on Exhibit 38, as best you can, where the Fitzgerald passed across the area which is shown on this exhibit as the North Bank?
A  I think he passed it east of the North Bank.
Q  Would it be possible for you to take a pencil and sketch a line or a dotted line in the area?
A  I can't really. All this is are impressions because I can't absolutely say he was there or absolutely he was here. I really cannot specify that, except that we had the impression that he was in closer than I would have wanted to be, to the island.
Now, I can't specifically say because we did not plot him. I don't know what he did. We were steering at another course. There was a divergent course here.

If he was steering 141 straight through, it is a divergent course, and if you don't plot him you can't be specific, and I cannot be specific on it.

All I can give you is a general impression that we had and approximately what he looked like as far as distance off is concerned.

I can't be specific.

REAR ADMIRAL BARROW: Cdr. Loosmore, I think we have had him testify previously to some degree at this specific session and I think we have a transcript of three particular places where he commented on the Fitzgerald's position in that statement and an earlier statement, and I think it would be appropriate if Capt. Cooper would read those specific sections and be prepared to comment on those at this time.

THE WITNESS: All right.

CDR. LOOSMORE: All right, sir.

This is what has been offered as a transcript of a tape which was previously played, and I would like you to look at page 4 of the transcript. Since the tape is on the record, I don't believe it will be
necessary to offer the transcript and, Capt. Cooper, if there is anything in that transcript which to your recollection is not a correct transcription of what you said or is not of what you heard or of what you said, then please point that out; but one of the areas that we have heard this morning was the one which is right here (pointing).

THE WITNESS: Yes.

MR. MURPHY: Can we have a page, please?

REAR ADMIRAL BARROW: I don't think we need to refer to the page number of a document we aren't going to have in, but you might go back at least to the point where the question was asked and the response given by Capt. Cooper.

CDR. LOOSMORE: Yes, sir; I was just looking. There doesn't seem to be any direct questioning and answering, but the transcript I have -- let me read it:

" -- but the Fitzgerald, he went right in close to the island. He went in, in close to the island, and I am positive in my own mind -- we had him on radar -- we never had him visually, but we had him on radar all the time, and I am positive he went over that 6-fathom bank, and if he did that, the
way those seas were running down there, it must have been a hell of a sea in there, because it was shortly after that that he called me up and he said, 'I am taking a list.'"

MR. MURPHY: May I point out at this stage, Mr. Chairman, that perhaps part of the confusion would be that the Captain previously testified that the chart he was using at the time he was describing this situation is not the chart that is before him at the present time.

Perhaps if the chart that he actually was using at the time of the navigation were put before him, it might be easier for him to answer the question.

By Cdr. Loosmore:

Q. This is Exhibit No. 30 which is Lake Survey Chart No. 9, a much larger scale chart of the same area?

A. Yes, this is what I was testifying about.

I mean, here again on the 6-fathom bank, how far does it go?

I had used a large-scale chart. Does it go between the 6 and 35-fathom bank? Is it all the way across?

CAPT. ZABINSKI: What 6-fathom bank?

Q. Captain, are you talking about the 6-fathom area north of, immediately north of Caribou Island or the 6-fathom area about which this penciled circle is drawn?
A. Where the penciled circle is drawn.
Q. Indicating a 6-fathom sounding north and west of Caribou Island and not within the colored shading?
A. True.
Q. This is on Exhibit 30?
A. Yes.
Q. Now, does that shoal indicate it on Exhibit 38 to your knowledge?
A. No, it does not.
Q. It doesn't?
A. No, I don't see it. It is not -- well, yes, it is, too. I think it is marked 8 fathoms on this one (indicating).
But according to the Canadian chart it does not agree, I mean, with the large-scale map, it does not agree with the other scale.

CAPT. ZABINSKI: Would you have the captain circle the 8-fathom spot he just referred to?

CDR. LOOSMORE: Yes, sir. It is identified on the chart as McMillan Bank.

CAPT. ZABINSKI: All right, that is sufficient.

By Cdr. Loosmore:

Q. Now, does the sounding that is shown on this chart, Exhibit 30, as the 6 fathoms, does that appear on Chart No. 2310, which is the Canadian chart, Exhibit 38?
A. No, it does not.
Q. It does not? All right.
Now, when you said on the telephone conversation
which we just played the tape, that I am positive that
he went over that 6-fathom bank, to what were you
referring?
A. I was referring to a 6-fathom spot that I had circled
between the 36-fathom bank sounding north of Caribou
Island --
Q. Referring to Exhibit 30?
A. Yes.
Q. Okay. Were you referring in that statement to the
shoal area immediately adjacent to and north of Caribou
Island?
A. No, I was not.
Q. Subsequently in the telephone conversation you said,
"I know damn well he was in that 36-foot spot."
To which 36-foot spot were you referring at that time?
A. That would be the area between, north of Caribou
Island, between the two 36-foot soundings on the chart.
Q. On the chart?
A. Yes.
Q. And later in the conversation you said, "We were
concerned that he was in too close; that he was going
to hit that shoal off of Caribou"?
A. Yes. This would have been abeam on the eastern part
of the island, and I was not referring to the northern
part of the shoal; I was referring to the distance that
he appeared to be off of Caribou Island proper.
Q. Off of, in what direction?
A. Well, it would be more due east of Caribou Island
than it would have been northeast.

Apparently he was clear. Where I assumed he went
through was somewhere between that circle that I have
drawn and this 36-fathom spot.

I don't know how anybody else assumed, but I assumed
between that, with that one mark there, which it could be
36 feet here (indicating).
Q. Referring to the circle around it?
A. And it could be 36 here; so anywhere between those two
areas it could have been 36 feet on this large-scale chart.
Q. Now, to what were you referring when you said the
shoal east of Caribou?
A. Just the shoal water that extends out from the island
itself, which is tinted in blue.
Q. Again, referring to Exhibit No. 30.
A. The blue mark in there on the island. That is
under 30 feet on this chart here.
Q. All right, sir. Capt. Cooper, in the tape you
talked about one of the conversations with the Fitzgerald,
and you used a phrase "the fence rail was broken and gone."

A. Yes.

Q. At other times you used an impression "the fence rail lay down."

A. Yes.

Q. Was that -- were the two different phrases used because you and whoever it was that you talked to on the Fitzgerald spoke of it more than once?

A. No, that was just one occasion that he did speak to us, but when I was talking on the phone to the Fitzgerald, at that time the front window was open and the wind was whistling, and both the first mate and the wheelsman heard him say that the fence rail was gone.

So after I got to thinking about it, I mean, there was two of those fellows that heard it was gone and I said I thought it was laid down, and I could have misinterpreted it because the wind or whatever, or they could have heard from a speaker that it was coming back to them, where I was in the front window where the wind was whistling, so conceivably -- I went back and forth on this particular instance and the fence wire was very definitely damaged as far as what the captain, Capt. Mc Sorley, told me.

I mean, you are talking about a different wording than what I heard over a speaker or over a ham set that is in the wind, and even the wind whistling on a ham set
would distort something or make you think you heard some-
thing that you didn't hear in that particular spot right
there.

But the wheelsman and the first mate said that the
fence rail was gone. I guess maybe I assumed he said it
was laid down, or because I guess I just couldn't conceivably
think that a fence wire could be gone because, as far as
I can ever remember, I have never known a ship to lose a
fence wire in a seaway. It is almost impossible.

So with probably that, I assumed something that he
said, when he said it was gone; but the other two fellows
definitely heard him say that it was gone.

You are talking back again from what you hear. I
mean, from trying to recollect back, I mean, can you tell me
the conversation that you had with your wife two weeks ago
word for word? It is the same principle.

Q. Captain, coming back to Exhibit 38 and comparing that,
at least looking at Exhibit 30, which is the lake survey
chart that you were using, and the Exhibit 38 which is
the Canadian chart of the area of just the area of
Michipicoten and Caribou, what is your best estimate
of where the Fitzgerald passed when it was due north of
Caribou?

A. Well, the best -- and here again it is strictly a
guess --
Q. Yes, sir.
A. He was on the fringe area of this water, as it started to shoal up from the deep water north of the island.
Q. Could I ask you to draw a circle in there and make it as large as you feel you need to?
A. All right. (Witness drawing)
Q. Would you number that 21?
A. (Witness drawing.)
Q. And when the Fitzgerald was in the area of circle 21, what is your best estimate of the course that he was on?
A. I really can't -- I cannot answer that. I can after he got down here, and both the mate and I had the same impression that he must have hauled on a southerly course or something along that line to get in clear to the island.

But up here --
Q. Up here is referring to circle 21?
A. The north part of that edge of that shoal.
I just don't know because here again we were not plotting him, and the closest -- I said he was close aboard the island. This is where I was referring to him.
Q. Indicating circle 20.
A. Where he was close aboard.

REAR ADMIRAL BARROW: Circle 20?
CDR. LOOSMORE: Yes; due east of
Caribou, sir.

THE WITNESS: And we just both assumed that he came down like this, abeam of the island, to get the lee of the island as much as he could, to come back out toward Whitefish Point because all the time -- now, these are strictly impressions again.

By Cdr. Loosmore:

Q. Yes, I realize that.

A. The thought crossed my mind that maybe I should come in closer to the island just then and go with the course for Whitefish from Caribou to pick up the lee because the wind was directly, almost constantly, on a 300 degree bearing all the time. So you would have had some lee from the island.

In other words, until you got up here where the wind would pick up the sea, and it wouldn't make any difference where you could run out of it.

Q. All right. Do you know at any time anything about which course the Fitzgerald was steering?

A. The first time I can give you any specific course was when we hauled ourselves at point No. 9 to steer 141 for Whitefish.

Now, from there on, there was a conversation not too long after this about his radars and Morgan was plotting him.
Now, he was not plotting him per se, but he would
give him a fix and he marks that on the chart. He would
know how far ahead of him the Fitzgerald was.
When we hauled down to here, he was about 14 miles
or so ahead of us at that time, and he was about a mile
to the west or to the right of our heading flasher, and
Morgan had a call with him.

He said he was steering 141.

Q. What were you steering at that time?
A. We were steering 142, making a 141 course.
    That is the way we were figuring on it.

Q. Did you have a half degree low gyro error?
A. A half degree gyro, essentially a degree and a half.

Q. When you were at point No. 9 and making your course
    change to make the 141 course good, do you recall whether
    you looked out to the starboard into the shoal area north
    of Caribou?
A. It was almost dark at that time. It gets dark up
    there at five o'clock.

Q. All right. And what time was that course change made?
A. 4:50 or 4:53.

Q. The log indicates 1652.
A. And the visibility was poor, too. It was snowing out
    there.

Q. Okay. Can you recall what the state of the sea in
the vicinity of point No. 9 was when you made that course
change?

A. If I recollect correctly, it was building and the
seas maybe were running 10 to 16 feet.

CDR. LOOSMORE: That concludes my
questionings.

EXAMINATION

By Rear Admiral Barrow:

Q. Capt. Cooper, I want to talk a few minutes about the
tape, and I recognize we don't have an official transcript
of it yet. We will have a little later.

You have been read certain statements that are in the
transcript provided by counsel for Oglebay-Norton, and
I think you stated for the record that with respect to
your comments on the 6-fathom shoal area, this accurately
reflects what you said at that time?

A. Yes, in respect to that small-scale chart.

Q. And going back to this one specifically here, you
have stated, "He went in close to the island, and I am
positive in my own mind we had him on radar, not visually,
but we had him on radar all the time, and I am positive
he went over that 6-fathom bank."

This statement was made on the 11th or 12th?

A. That was on the 11th.

Q. But that is a rather positive statement.
Did you believe that to be true?

A. I still believe that as far as the small-scale chart was concerned. That is what I was using.

Q. You believed that to be true at the time you stated it?

A. If that chart says 36 feet and the Corps of Engineers are right or whoever it was that got that, then he went over a 36-foot area.

Q. You believed at the time you made this that he went over a 36-fathom bank?

A. Yes, I do.

Q. And further on in the transcript it says, "But it just seems to me that it was just before he called me and told me that he had broken some vents off. And I know damn well he was in on that 36-foot spot, and if he was in there, he must have taken some hell of a seas."

That is an accurate description of what you stated at the time?

A. I believe so. If he was not on the 6, when you have a shoal area as shallow as that north end off of the north end of Caribou, the seas could be extremely nasty in there.

Q. And you believed that to be true at the time you stated it?

A. Yes, I do.

Q. And a third part of the transcript says, "We were
concerned that he was in too close, that he was going to hit that shoal off of Caribou."

A. The shoal water that extends out from Caribou, yes.

Q. You are talking in that specific instance not about the previous 6-fathom mark but one just to the northeast of it, of the island?

A. Just to the east of Caribou Island. He was running close to the island, yes.

Q. It says, "I mean, God, he was about three miles off the beacon. That's very fringe on that shoal area that extends out northeast from Caribou Island."

A. That is a mistake on the beacon. I did not mean the beacon; I was referring to the land mass itself, because if he were three miles off the beacon, it would have been closer in than that.

Three miles from that would have put him more or less just a mile off the island.

He was out farther than that off the island, but I was concerned -- well, myself, I don't like to be in that close. Here again, I am assuming that it is close for me.

Maybe it was not close for him. I don't know.

Q. "And when he gets in that close, John, he is over that 36-foot spot in there. You know, there is a 6-fathom spot. Pretty good sized extensive six-foot spot."
And then out farther there is a 15-fathom bank."

That is the one northeast of Caribou?

A. Yes.

Q. And at the time you made that statement, you believed that to be true?

A. Absolutely.

Q. In earlier testimony before this investigation, you had concluded that the Fitzgerald was perhaps some four to five miles off Caribou.

Would you care to comment on what appears to be a contradiction between these two positions here?

A. Yes. Now, if you look at this chart and you look at the other one, a pencil mark on the small scale is almost one mile. We were using the small-scale chart, and even the soundings show up different.

We were also using the 24-mile scale on the radar, which very definitely brings that down to a very small scale.

We were not plotting him. All we were doing was eyeballing him.

All we can do is give you up to this point what we hauled down as an impression. It was my impression definitively, the mate and I both looked at this, and in the respect that he was in closer than I wanted to be is the absolute truth.
I didn't want to be in that close to the island, and again, now, when you are using a small-scale chart, it changes in perspective. It definitely changes in perspective of what I was testifying about.

You cannot transpose my testimony from that chart to this one, not very well.

CDR. LOOSMORE: Referring to Exhibit 38.

By Rear Admiral Barrow:

Q. When you referred to that chart, what chart were you referring to?

A. No. 30, Exhibit No. 30.

CDR. LOOSMORE: And the other one?

THE WITNESS: 2310 or Exhibit No. 38.

REAR ADMIRAL BARROW: Capt. Wilson?

EXAMINATION

By Capt. Wilson:

Q. Just a couple of questions. You mentioned you were on the 24-mile scale when you were reviewing the Fitzgerald. Which radar were you using?

A. Both of them.

Q. So you saw him, a radar image, on both your 3 or 10 radar centimeters?

A. Yes.

Q. And they agreed?

A. Very close, yes.
Q. When you noticed him off the northeast shoal of Caribou Island, you were on the 24-mile scale of the radar you said, and what view did you have of the vessel?

A. No. The island was clearly visible, and so was the Fitzgerald. All I was doing was estimating the distance. I didn't check it out or plot it.

I was estimating by just looking at it, the distance he would have been off the island, and it appeared to be reasonably close.

Q. Yes, sir; but the point that I am attempting to arrive at is from the radar pulse from your vessel, did it pass over the island before striking the Fitz, or was it an open view of it, too?

A. No, it was an open view.

Q. Open view?

A. Yes.

Q. So there was no land mass in between?

A. No.

Q. You mentioned about the shoals and that he appeared to be in closer than you would like to be.

Was that your feeling because of the breaking seas or because of the danger of striking the shoal?

A. More because of the seas that you would develop in that area.
Q. So it was your thought of the damage that you would suffer from the breaking seas in that area rather than striking the shoal?

A. That is a pretty good statement, right.

Q. You also mentioned in his conversation concerning the fence rail that he mentioned two vents.

Now, to the best of your recollection, did he say -- how did he phrase his statement concerning the vents?

A. I think that terminology was that, "I lost a couple of my vents."

Q. A couple, rather than two specifically?

A. I think he said, "I lost --" and I am not sure on that, but I think he used the word "a couple."

Q. You also mentioned that he was taking water in his tanks. Do you remember, did he specifically say "water in the tanks"?

A. I don't believe so; I don't believe that he did. I believe that he said, "I am taking a list," and there is only one way that I can take a list at that time, which would be by taking water in a tank.

Q. But to the best of your recollection, then, the only mention that he made was of the list?

A. Of the list.

Q. Not of taking water?

A. Of the list, and the inference would have to be
there that he had his pumps on, so he had to be pumping a
tank, so he would be taking water and not have a shift of
cargo because he mentioned pumps, and this wouldn't --
and he evidently had water in the tank because you have
what you call King gauges, which is an automatic sounding
device.
Q  Yes, sir; but now as to the pumps, did he say how
many pumps he had on?
A  Yes. I said, "Have you got your pumps on?" and he
said, "Yes, both of them."
Q  To the best of your recollection, he said, "both"?
A  "Both," right.
Q  All right.

CAPT. WILSON: That's all I have.
REAR ADMIRAL BARROW: Capt. Zabinski?

EXAMINATION

By Capt. Zabinski:
Q  Capt. Cooper, when he said he was pumping or using
two pumps, would he be referring to pumping cargo holds?
A  No; it would have been impossible. You cannot pump out
the cargo hold with cargo aboard.
Q  With the cargo aboard?
A  Right.
Q  Why is that impossible?
A  Because all of the cargo hold's section is all
completely plugged with 30 or 40 feet of pellets.

Q. And water would not come out fast enough?
A. You could have some, but it would be negligible.
Q. In your tape we heard, you indicate that the Fitz may have said "taking water down the vent pipes."
Do you recall that statement?
A. I don't know. I can't remember. I don't know whether I assumed some of this in the conversation.

You automatically assume something when you are listening to a conversation, and I am not sure, Captain, whether he said, Captain, he was taking it down, or I assumed that he was taking it down primarily because of the mention of the pumps.
Q. You indicated that it was impossible to lose a fence rail. Why is it impossible to lose a fence rail?
A. I don't know. In all the years that I have been sailing, I have never known anybody to lose a fence rail in a seaway and I have been out in some pretty good sized seas, actually or probably bigger than these, and a fence rail is a series of stanchions with three cables running through them. They are set in slots in the deck and there is no buoyancy to them. A sea wouldn't get underneath it and lift it. It might bend them, possibly, because the stanchions are about three inches wide.

The only solution that I can have to a fence rail
breaking is -- you can't break one by sagging a ship, but you would have to bend the ship, hog it up in the middle, to put such a tension on the fence rail that you would break it.

Q. And if you broke it, that is what you would mean by losing it, Captain?
A. This would be -- this would be the impression, yes.
Q. Let's say something hit the fence rail, would that cause it to break?
A. That is five-eighths wire rope with three strands running in through there. You might break one, but you can't conceivably think of breaking three.
Q. You indicated, Captain, that when you made this statement that we heard on the tape recording, that you were tired.
A. Yes.
Q. You had been up for some time.
You have listened to this statement now and you have thought about the testimony, I am sure, that you have given before the Board that was recalled to you today; and is there any changes that you would make?
A. Anything that puzzles me?
Q. Yes.
A. Yes, there is definitely one thing. With the mate and myself watching the Fitzgerald, approaching Caribou
Island and passing Caribou Island and with our 125 degree course down the northeast of the island, I can't -- logic takes over with tangent bearings and something 16 miles at 16 degrees is going to be six miles over a 17-mile run, and I can't help but wonder why we got the impression that he came down inside the island when we hauled on our course of 141 and he was only about a mile to the right of our heading flasher.

Again, logic doesn't seem, however, to coincide with what we saw on the radar, if you know what I am trying to say.

Q  You were sure that he was off your starboard to some amount, as you were approaching Caribou; is that correct?
A  No. When we hauled on our 141 course to Whitefish, he was about one mile, approximately one mile, you might say, to the west or to the right of our heading flasher.

Q  But you were then somewhere about abeam of Caribou, is that right?
A  We were up off the northeast tip of Caribou.

Q  I am talking before you reached Caribou, when he was in the vicinity of Caribou, you indicated in your testimony that he was about a point or point and a half on your starboard bow; is that correct?
A  When we hauled on the 125 course, yes.

Q  When you hauled on the 125 course?
A. Yes.

Q. He was that far over?

A. A point or point and a half; yes.

Q. Other than that, is there any difference that you recall from what you have said on the tape and from what you have said to the Board?

A. I firmly believe that he had a damaged ship and didn't know how damaged she was.

Q. How close did the Fitz pass off of Michipicoten?

A. About two and a half to three miles.

Q. Did you see her visibly at that time?

A. No.

Q. This would have been a radar observation?

A. Yes.

Q. On the bearings, just to clarify it for the record, because I think I understand, Captain, but I just want the record to be clear; you indicate that the mate and you took bearings of lights and so forth?

A. Yes.

Q. And then in other cases you said you take a distance off. When you say "bearing," what do you mean by bearing, Captain?

A. A bearing is a relative number of degrees that an object is on your bow.

Q. And when you want to indicate a distance like 7.7
or six miles off, how would you indicate that?

A. Well, you take a 45-degree bearing relative on your
bow and you run it to 90 degrees on your bow and the time
run in between the two bearings would be equal to your
distance off.

Q. Is that bow beam bearing?

A. Bow beam bearing.

Q. And by what you have indicated, Captain, that is
the way you normally -- this is your normal navigation
procedure and how you estimate how off a point you are?

A. Yes, that was taken -- that bearing was taken on
Caribou Island -- I mean on Michipicoten Island.

We actually saw the island for a couple of bearings
there, but also it was snowing and a lot of these bearings
were relative bearings, so many degrees, so many miles
to a specific point; and you laid it back out from that
specific point.

This is our ship now.

Q. When you just take a distance off, say, the north tip
of Caribou, we have had much testimony about how far off
of the north tip of Caribou you were. This would be by
a range or by a bearing?

A. This would be by a radar bearing off of the north tip
of the island.

Q. How do you get the distance for a bearing?
A. You have a variable range marker from the center of the ship to the tip of the island which would give you the number of miles, statute miles, that you are off and the curser will give you the number of degrees relative that is from your ship's course, which you interpolate and bring back to a true bearing.

Q. So you use this variable or curser to find your distance; is that correct?

A. You use the variable marker and a curser.

Q. You used a word that I am not familiar with when you said the storm was a gagger, Captain.

I have not looked in the dictionary, but what does that mean?

A. It is a little terminology for a pretty stiff breeze.

Q. Stiff breeze?

Captain, I would like to direct your attention now to when the Fitzgerald, the time when the Fitzgerald was around the north side of Caribou Island.

What was the sea state at that time?

A. What was that?

Q. The sea state, what was the state, the height of the waves or the sea state? Was it that high as to be a concern to the Fitzgerald?

A. Yes, it was 10 to 16 feet and I was trying to recollect in there, but it seems to me that even if there was, by
the time we arrived down in that area, there was the
remains of another southwest sea.

Now, where it came from or what it was doing, whether
it bounced off the island or what, I don't know, but we
were down approaching the place where we hauled the 141
and there were definitely the remains of another sea
that had built up, although the west-northwest sea was by
far predominant.

Q. Is this a normal situation when you have a wind shift
to have two different sea conditions?
A. Yes, it happens. It is not an irregular happening.
It is not a rare occurrence. It does happen frequently,
especially when you have such a large wind shift from
southeast over to a northwest direction as when we pass
through the center of the storm.

Q. But on the day in question, the wind shift had actually
come from northeast to northwest, is that correct, or is
there a difference?
A. That was on the north half of the portion. The wind
was southerly on the south half of Lake Superior, just
about 50 or 60 miles away.

Q. The wind shifted from a southeasterly or to a north-
westerly?
A. I believe it was southeasterly; I would have to check.

Q. The southern quadrant, anyway, the southern hemisphere.
A. Right.

Q. You used the word "springing" in your testimony before the Board previously, springing.

A. Springing, yes.

Q. I would like you to just define that term for me again.

A. When a ship is springing, it is the movement of the end as compared to a stationary object in the middle of the ship. The ship will bend or spring, whichever you want to call it.

If a ship is completely rigid in a seaway, you will break in two. There has to be give to the ship, like our Lakers that are built to carry a lot of cargo on a shallow draft.

So you can actually discern springing in a seaway. Your stern will dip down as sea runs out from under it and it will dip a little bit and come back up, and the same way as the wave progresses forward on the bow. The bow will go down and you can actually see the movement of the two ends and compare it to a stationary spot amidships.

Q. In the center of the vessel?

A. In the center of the ship.

CAPT. ZABINSKI: That's all I have.

REAR ADмирAL BARROW: Mr. Murphy?

MR. MURPHY: Mr. Chairman, in view of the fact that the transcript that we had
made of the tape has been referred to several times in the record, I would like to identify it for the record and state that this transcript was prepared by the professional court reporting firm of Reilender, Ferris & Skomski, in Cleveland, Ohio, and that it has been certified and notarized as a true copy of that court reporter's transcribing of the tape, and because I do have the original and it has been certified by the professional court reporter, I would offer it into evidence, since it has been referred to in the cross examination and questioning of the Board members.

REAR ADmiral Barrow: Let's go off the record.

(Discussion off the record.)

REAR ADmiral Barrow: Mr. Murphy, we used the transcript to refresh the witness' memory of events which took place.

We will, of course, have our own transcript of those portions which we have listened to this morning.

I don't believe there is a necessity to introduce a separate document.

MR. Murphy: Very well, sir.

In that event, I would like to formally offer into
evidence the tape played here today so the court
reporter will have the benefit in his preparation
of his transcript and have the opportunity to
listen and re-listen to it in areas where there
might be any uncertainty as to what was said, because
some of those conversations came very rapidly.

I would offer that in evidence.

REAR ADMIRAL BARROW: Let's go off the
record again.

(Discussion off the record.)

REAR ADMIRAL BARROW: Back on the record.

Just to clarify this specific point, we used a
tape and also an unofficial transcript of that
tape in order to refresh the witness' memory of the
events which took place.

It is my intention now not to accept into evi-
dence itself but to utilize it through the court
reporter to make an official transcript, which
would be a part of the record of this proceeding.

MR. MURPHY: Very good. Thank
you, Mr. Chairman; that was the whole purpose of my
offering it.

REAR ADMIRAL BARROW: Capt. Zabinski?

By Capt. Zabinski:

Q. Were you aboard the Andersin in October of 1974 that
you recall? I have a reference to an incident where
the Anderson required drydocking because of some fractures
in the bottom plating.

Are you aware of that incident?

A. I was master of the vessel then.

Q. I am particularly interested, Captain, of your experience
during this occasion.

The vessel was proceeding loaded?

A. She was loaded downbound on Lake Michigan.

Q. And how did the fractures come to your attention?

A. At 2:30 in the morning, the second mate rang my bedroom
to inform me that one of our King gauges was showing 28
inches of water.

We had one King gauge and that happened to be the one
that was malfunctioning part of the time.

I said, "Okay, get a sounding rod and go out and
sound the tank and let me know what you have got."

He came back, and he said there was 28 inches of water.

It had been dry up above.

I told him to put on the pumps and to pump it out,
and then sound it every hour to see how much water we were
actually making in that specific tank per hour.

It wound up that it was making about 28 or 30 inches
every four hours.

In the morning, after breakfast, I sent the second mate
down to check, after we sucked the tank out, to check out
the bottom of the ship to see where it was leaking,
because definitely we did have a leak of some kind.

It was not anything that was a problem that we couldn't
maintain with the pumps.

He came up, and he reported to me, and I left him
in the wheelhouse. I went down myself and took a look.

A half inch in front of the watertight and a welded
seam where the watertight was welded to the shell of the
ship, there was a crack that extended all the way across
the E plate, except for the last inch or two where the
crack ended in a rivet hole.

In drydock, they checked it out and they tried to find
out why it cracked.

There was no reason, and there was no apparent damage.
They planed it off, but it was on absolute flat bottom.
There was no satisfactory explanation as to why it did crack,
other than the fact that I am a qualified American Bureau
welder, or was a few years ago, and I know that if you
weld and you weld too long and get the metal too hot, you
set up a crystallization process which will not break in
your weld, but it crystallizes the metal ahead or behind
your weld.

I was looking at it and looking at the marks. ALL
I assumed was that either there was a built-in flaw in the
plate, or it had been welded with too hot of a machine.

Q. Was this on one side of the vessel or both that you recall?

A. I think on the port side of 5 and the starboard side of 4. It was No. 4 on one side and No. 5 on the other.

There was an identical crack on the other side of the ship, which was not leaking, but it was discernible after they got her in drydock.

Q. I see. The reason I am asking is that I wanted to see what your procedures were when you discovered that the vessel was making water from some source that was unknown to you.

You indicated that this first came to your attention, the condition first came to your attention when someone looked at the King gauges.

How often do they look at the King gauges?

A. On my ship, the King gauges and the ballasting of the ship is checked, whenever it is changed and marked in the logbook.

Whenever it is loaded and I have it set up for the mate, he comes on watch at 4:00 in the morning and 4:00 in the afternoon, and he will call back and get a reading on the gauges to see if we are making any water in any specific tank. So every 12 hours it is checked.

The oilers themselves are supposed to check the King
gauges when they come on watch. All you have to do is
punch a button and it gives you the inches of mercury,
and it is measured in feet or inches.

Q. Is this normal practice on the lake vessels that
you know of, Captain?
A. It is a practice on vessels in the Great Lakes with
King gauges. On any others, I can't say.

Q. How does either the mate or the engineering personnel
know what the reading should be on a particular ballast
tank?
A. Well, we have a set of plans, specific plans drawn up,
ballast plans 1, 2, 3 and 4, and they are informed on
what ballast plan to pump out or into when we are in
ballast.

When we are loaded, sometimes when we leave the dock,
it will show an inch or two of water in the tank.

This is primarily maybe where there is a little water
left in there that they didn't completely strip dry,
but very seldom do you have more than one or two inches.

In fact, maybe in one or two tanks that is all you
would have leaving a loading dock.

The more water you take out, the more cargo you carry.

In ballasting conditions, it is a different story,
because it is set up by a marine consultant as to what
specific ballasting plans we can have, so there will not
GL2-40

Coast Guard Investigation,

EDMUND FITZGERALD Sinking
MARINE BOARD OF INVESTIGATION

OF SINKING OF THE SS EDMUND FITZGERALD

ON LAKE SUPERIOR 10 NOVEMBER 1975

The bulk freighter EDMUND FITZGERALD, owned by the Northwestern Mutual Life Insurance Company of Milwaukee, Wisconsin, and on long-term lease to the Oglebay Norton Company, Cleveland, Ohio, sank on November 10, 1975. She was lost on the east end of Lake Superior off Crisp Point nearly on the International Boundary Line with her entire crew of twenty-nine men and a cargo of taconite ore.

The United States Coast Guard Marine Board of Investigation convened on November 18, 1975. It was held in the auditorium on the 31st floor of the Federal Office Building, 1240 East Ninth Street, Cleveland, Ohio. The Board was composed of Rear Admiral Winfred W. Barrow (Chairman), Captain Adam S. Zabinski (member), Captain James A. Wilson (member), and Commander C. S. Loosmore (recorder). The hearings adjourned on December 13, 1975.

It should be stressed that the purpose of the inquiry was not to fix criminal or civil liabilities. Rather, it was called to determine the cause of the casualty, to the extent possible, to permit the taking of appropriate measures for future promotion of safety of life and property at sea.

The transcript of the investigation and related items were made available to the Center for Archival Collections, Bowling Green State University, for microfilming through the authority and forethought of Captain James A. Wilson, United States Coast Guard. His intent is to insure the availability of the document for future generations of scholars involved in Great Lakes studies.
CENTER FOR ARCHIVAL COLLECTIONS

MARINE BOARD OF INVESTIGATION OF SINKING OF THE SS EDMUND FITZGERALD ON LAKE SUPERIOR 10 NOVEMBER 1975

END

ROLL 2