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

END

ROLL 1
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 ap-
propriate 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.
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Exhibits

The index to exhibits gives the number assigned each item and a short description of it. Exhibits are arranged in numerical order following the testimony. An index also appears with each volume of the transcript, listing those exhibits referred to in the volume and the page such reference appears on. Exhibit #30 is not on film; researchers are referred to the Center's collection of navigation charts. Exhibit #104 is located in the Center's collection of bound volumes. Because of their size, blueprints included among the exhibits are not included on film; they are maintained elsewhere in the Center's holdings. Included here are exhibits number 6b-6k, 23a-23g, 25, 28, 29, 38, 49, 85, and part of 108.

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TRANSCRIPT OF MARINE BOARD OF INVESTIGATION

Volume 1
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, Auditorium
Federal Office Building
1240 East Ninth Street
Cleveland, Ohio

Tuesday, November 18, 1975

The above-entitled matter came on for hearing pursuant to notice at 10:30 a.m.

BEFORE:

Marine Board of Investigation:

Rear Admiral Winfred 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. Waeschle
99 John Street
New York, New York 10033
APPENDICES: (Continued)

On behalf of Seafarers' International Union
and James Pratt and John Poviach:

Ned L. Mann
Victor G. Hanson
Rodney Coleman

On behalf of Marine Engineers Beneficial Assn:

Gerald Lackey
Merritt Green II

On behalf of United Steelworkers of America,
Local 5000:

Samuel Gaines
James J. Courtney
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PROCEDINGS

REAR ADMIRAL BARROW: Good morning, ladies and gentlemen. It is now 10:10, Tuesday, November 18, 1975. This Marine Board of Investigation will now come to order.

I would like to have each one in the room stand for about 60 seconds in respect for those who lost their lives in this tragic accident.

...Pause...

REAR ADMIRAL BARROW: Thank you very much.

I am Rear Admiral W. W. Barrow, United States Coast Guard, Commander, Eighth Coast Guard District, and Chairman of this Board.

On my right is Capt. Adam S. Zabinski, United States Coast Guard, from the Office of Merchant Marine Safety, United States Coast Guard Headquarters, Washington, D. C.

The officer on my left is James A. Wilson, United States Coast Guard, Commanding Officer, Marine Safety Office, Detroit.

The officer on his left is Commander C. S. Loosmore, United States Coast Guard, from CO, Marine Inspection Office, Seattle, who is also recorder.
Let the record show that the members of this Board have been duly sworn and that the court reporters have been sworn. The U. S. Attorney has been notified of the convening of this Board.

At this time I have a statement concerning the conduct of this Marine Board of Investigation. This Marine Board of Investigation has been convened by the Commandant, United States Coast Guard, under the authority of Revised Statute 4450, as amended (46 USC 239), and Part 4 of Title 46 of the Code of Federal Regulations, to investigate the facts and circumstances surrounding the loss on 10 November 1975 of the Ore Carrier Edmund Fitzgerald in Lake Superior.

This investigation is intended to determine the cause of the casualty, to the extent possible, and the responsibility therefor, subject to the final review by the Commandant of the U. S. Coast Guard and by the National Transportation Safety Board.

The investigation and determinations to be made are for the purpose of taking appropriate measures for the promotion of safety of life and property at sea and are not intended to fix criminal and civil liabilities.
The investigation will determine as closely as possible:

1. The cause of the casualty;

2. Whether any failure of material, either physical or design, was involved or contributed to the casualty so that recommendation or the prevention of a recurrence of a similar nature may be made;

3. Whether any act of misconduct, inattention to duty, negligence or wilful violation of law on the part of any licensed or documented seaman contributed to the casualty so that appropriate action may be taken under Revised Statutes 4450, as amended, against the license or document;

4. Whether any Coast Guard personnel or other representative or employee of the Government or any other person, caused or contributed to the cause of the casualty.

All parties in interest have the right to be present and be represented by counsel, to cross examine witnesses and to call witnesses in their own behalf.

Witnesses who are not parties in interest may be assisted by counsel for the purpose of advising them concerning their rights.

However, such counsel are not permitted to
examine or cross examine other witnesses or otherwise participate in the proceedings.

Witnesses will be examined under oath when testifying; a witness is subject to the Federal laws and penalties thereunder for perjury and for making false statements under Title 18 U.S.C., Section 1001.

At this time I will explain the term "parties in interest."

A person or agency is a party in interest by reason of his position or his part in a casualty. He is not necessarily suspected of wrongdoing. Parties in interest are those who, under the existing facts, or because of their positions, may in any way be responsible for or have contributed to the casualty.

As discussed with counsel at the pre-investigation conference, a person is named a party in interest so that he may have an opportunity to protect himself if facts develop that are adverse in nature to him.

A party in interest may be named during the course of this investigation if it appears that he in any way may have been responsible for or may have contributed to the cause of the casualty.

For the purposes of this Board of Investigation,
the following are hereby designated as parties in interest:

The operator of the vessel Oglebay-Norton Company, Cleveland, Ohio. The Master was Ernest McSorley.

The sources of information into which this Board will inquire are many and varied. The investigative resources of the Coast Guard have made attempts to locate every available source of information having some bearing on this casualty.

This Board will hear all such pertinent evidence.

Should any person have or believe he has information not adduced, but which might be of direct significance, he is urged to communicate such information to the Board through the recorder.

Smoking will not be permitted during the time the Board is in session. Taking of photographs and television pictures will not be permitted while the Board is in session.

I would like to introduce at this time one additional person who is in attendance, Mr. Lou Colucciello of the National Transportation Safety Board, who is sitting in front of me at the table.

At this time I request appearances for the
record of the parties in interest representing the Operator.

MR. MURPHY: Yes, Mr. Chairman.

My name is Thomas O. Murphy of the firm of Jaeger & Murphy, 2700 Terminal Tower in Cleveland, Ohio.

With me is my partner, Mr. John T. Jaeger, and my partner, Richard C. Binzley.

Acting also with us on behalf of the Operator, Oglebay-Norton, is Robert G. McCroary of the firm of Arter & Hadden of Cleveland, Ohio.

Also present is Mr. Warren A. Jackman of the firm of Bradley, Eaton, Jackman & McGovern of Chicago.

REAR ADMIRAL BARROW: Could you please identify, from among those, who will be the spokesman?

MR. MURPHY: Who will be the spokesman?

REAR ADMIRAL BARROW: Yes, sir.

MR. MURPHY: I believe I will be the spokesman.

REAR ADMIRAL BARROW: Representing the Master?

MR. SCHUCHMANN: John Schuchmann, Attorney at Law, 700 Security Building, Toledo, Ohio,
and present as counsel for the Toledo Trust Company, Toledo, Ohio, as the nominated executor of the last will and testament of Ernest McSorley, and I am here as spokesman at this time.

REAR ADMIRAL BARROW: Are there any other interested parties who wish to make an appearance for the record at this time?

MR. MURPHY: I would state for the record, Mr. Chairman, that Oglebay-Norton, being the Operator of the vessel, is in the general position of speaking for the owner, which I think has been indicated is an insurance company, so that apparently there will be no separate appearance on behalf of the owner.

REAR ADMIRAL BARROW: May I have at this time any other appearances of interested parties?

MR. LACKEY: Gerald Lackey, and I am representing the Marine Engineers Beneficial Association, the union which represented for purposes of collective bargaining the officers aboard the Fitzgerald other than Capt. McSorley.

I am here as well with Mr. Samuel Gaines of the law firm of Metzenbaum, Gaines & Stern, who is here representing the United Steelworkers of America, Local 5000, the union representing the non-licensed
personnel aboard the vessel.

We at this time would like to move, and we have a formal motion in writing, to intervene in these proceedings as an interested party, since it is the unions which represent those individuals who were crew members aboard the vessel, and whose documents and certificates might be called in question as a result of this inquiry.

Therefore, we would ask at this time and officially move to become parties in interest in this matter.

I might add for the record, sir, that we were not notified of any pre-investigation conference for attorneys; therefore, we had no input into that decision making.

REAR ADMIRAL BARROW: Yes, sir. I am very sorry that you were not.

Basically, what transpired during that investigation was an explanation of the terms for the parties in interest and interested parties.

I recognize your petition to enter these proceedings as a party in interest.

However, I have just explained that the category of "party in interest" is one which is referred to those whose conduct may be called into question
as having caused or contributed to the casualty.

That does not appear to be the case at this
time with respect to the people you represent.

If at any time during the proceeding it appears
that there is someone from among those you represent
whose conduct is called into question, we will be
happy to reconsider at that specific time, but as
of now, your request for status of party in interest
is denied.

MR. GAINES: May it please
the Board, I am Samuel Gaines who has been referred
to. I simply wish to echo what has been said by
the previous speaker, Mr. Lackey.

I understand the Board's actions and the reasons
announced by the Board and you, Admiral.

For the record, we want it understood that we
represent these proceedings of the non-licensed
personnel, and I understand precisely what the Board
has stated up till now.

MR. HANSON: My name is Victor G.
Hanson, Mr. Chairman. I am an attorney out of
Detroit, 15929 West Seven Mile Road, Detroit,
Michigan, and I am associated with Ned Mann of
Cleveland, Ohio and Rodney Coleman of Cleveland, Ohio.

We represent two families of the crew members
that went down on the Fitzgerald, the Second Mate, James A. Pratt, and the Wheelsman, John J. Povliach.

As I understand from our meeting, Admiral, this morning, we will be designated interested parties without the right to cross examine the witnesses, and we are allowed to submit questions to the Board in writing for the Board's consideration.

We will also be allowed time to follow up with additional questions, based on the answers to each question or series of questions that we ask the Board to consider.

I am also representing the Seafarers' International Union, Great Lakes District, that are concerned regarding the safety of seamen on the Great Lakes, and they represent a great number of merchant seamen plying the waters of the Great Lakes.

One matter of clarification, Mr. Chairman, you mentioned that there is a representative of the National Transportation Safety Board.

I would like to inquire as to whether or not that representative is going to take an active part in these proceedings or is merely an observer?

I have sent a telegram on November 17th to the Secretary of Transportation, and following is a telegram that I served on the Board:
"I represent the Seafarers' International Union of the Great Lakes and families of deceased crew members of the SS. Edmund Fitzgerald which sank in Lake Superior on November 10, 1975, with the loss of all hands.

"A Coast Guard Marine Board of Investigation is scheduled to convene tomorrow morning, November 18, 1975, in Cleveland, Ohio, to determine the cause of this tragedy.

"It is my firm belief that this latest tragedy on the Great Lakes should be investigated by the National Transportation Safety Board in the same manner that the Board has so effectively conducted in depth investigations and studies into major airline crashes.

"These tragedies involving the shockingly quick sinkings of Great Lakes vessels with the loss of all hands, or nearly all hands, are a matter of record, and it is high time that modern technology and the latest investigative methods be called in to prevent future recurrences.

"Secondly, it is my belief that the Marine Board of Investigation should be reconstituted since the Coast Guard may have contributed to this casualty and a very definite impropriety would exist if
that agency investigates itself."

I would, on behalf of my clients, request a clarification as to the function of that representative of the Marine Safety Board in these proceedings; whether or not that representative will take part in examination of the witnesses in demanding certain investigations of the wreck of the Fitzgerald, and basically, what part that representative will take in these proceedings. Thank you.

REAR ADMIRAL BARROW: Thank you, Mr. Hanson.

Mr. Colucciello is an observer, a representative of the National Transportation Safety Board at this proceeding.

He is not a member of the Board. No, I am sure, if he perceives things within the proceedings where he might like to have an area investigated which he perceives, which we have not done so, we will, through the Board, put questions to witnesses.

MR. GREEN: Merritt Green II, and I am appearing with Mr. Lackey as his partner on behalf of MEBA.

We also represent a number of families that were in one degree or another involved; mainly, George Hall, Chief Engineer, the First Engineer,
Edward Bindon, the Second Engineer, Russell Haskell, the Third Engineer, Oliver Champeau, the Second Engineer, Thomas Edwards, the Steward, Robert Rafferty, and an unlicensed seaman, William Spengler, and the family of the cadet, David Weiss.

In view of the statement that Mr. Hanson has just made, we were not again advised of the meeting and were not in attendance.

I would like a clarification of the responsibility and the extent of our privileges in representing these people as designated interested parties.

REAR ADMIRAL BARROW: Well, I have stated this several times. I will once more say that your purpose in this as an interested party is to represent your client as to his rights.

You will not have the privilege of bringing your own witnesses and cross examining witnesses before the Board as is the prerogative of a party in interest.

You will, following the examination of the witnesses by the recorder, by the Board and by counsel for the parties in interest, if you perceive areas which you do not think we have gone into sufficiently,
you may present to the Board in writing additional
questions which you would like to put to the par-
ticular witnesses.

MR. COLEMAN: Rodney Coleman,
Attorney at Law, and my address is 2250 East 105th
Street, Cleveland, Ohio.

I am here with my colleagues, Mr. Ned Mann
and Mr. Victor Hanson, representing the Estate of
James A. Pratt, Second Mate on the vessel.

We are here as interested partis.

REAR ADMIRAL BARROW: Thank you, sir.

MR. COURTNEY: Mr. Chairman,
my name is James J. Courtney, Jr., Duluth, Minnesota,
Attorney at Law.

I am here on behalf of six of the crew members
aboard the vessel from Duluth, and I am also local
representative of Local 5000, United Steelworkers,
in the Duluth-Superior area.

I have given my card to the reporter, so he
has my name and address. Thank you, sir.

MR. WAESCHE: Donald M. Waesch
of the law firm of Bigham, Englar Jones & Houston,
99 John Street, New York, New York, and I am repre-
senting those interested in the cargo aboard the
Fitzgerald.
REAR ADMIRAL BARROW: Are there other appearances?

(No response.)

REAR ADMIRAL BARROW: Exhibit 1 to the record will be a message for the Board and will be replaced by the convening Board. This comes from the Commandant, United States Coast Guard, District 9, Cleveland, Ohio, and the subject is: The SS Edmund Fitzgerald, 277437, sinking on Lake Superior on or about 10 November, 1975.

Paragraph 1 says: "Rear Admiral Winfred W. Barrow, Chairman, Capt. Adam S. Zabinski, Member, Capt. James A. Wilson, Member, Commander Charles S. Loosmore, Member and Recorder designated Marine Board of Investigation under the authority of 46 Code of Federal Regulations 4.09 to investigate at the Office of the Commander, Ninth Coast Guard District or such other places as directed by the Chairman, and shall inquire into all aspects of the casualty.

"Utilization of commercial court reporting service is authorized.

"Press release by Coast Guard 9 authorized.

"Convening Board order follows."

If we have any further photographers in, I will ask them if they would remove their equipment.
at this time.

Would you call your first witness?

COMMANDER LOOSMORE: Before we call any
witnesses, the Operators of the vessel have been
requested to provide several documents and other testi-
mony, written information, which relate to the
vessel and its operation.

Mr. Murphy, representing the owners, has agreed
to provide that, and I would like to call on Mr.
Murphy and take the documents one at a time and enter
them as exhibits to the Board and into the record.

MR. MURPHY: Would you like me
to produce the documents?

COMMANDER LOOSMORE: We will call for
them one at a time.

The first document is Coast Guard Certificate
of Inspection, or a copy of it.

MR. MURPHY: Yes; I hand you
a copy of a Certificate of Inspection, dated 9 April,
shown to expire 9 April 1976, which I believe was
the certificate which was in effect at that time.

COMMANDER LOOSMORE: I would like to
enter that as Exhibit 2 before the Board.

CAPT. ZABINSKI: May we have that
identified as the number on the form, if it has a
number on it.

COMMANDER LOOSMORE: This is a copy

of Form SG 841 for the Edmund Fitzgerald, No.

277437, expiring 9 April 1976, signed by H. E.

Gafford, Commander, U. S. Coast Guard, Toledo, Ohio.

REAR ADMIRAL BARROW: For the record,

where is the original of this Xerox?

MR. MURPHY: I believe it was

aboard the ship, Mr. Chairman.

We can find out whether there is a duplicate

original available.

I think also for the record, there will be a

copy available in the possession of the Coast Guard

officer who issued the certificate.

REAR ADMIRAL BARROW: Mark it for iden-
tification as Exhibit 2, please.

(Exhibit 2 was marked

for identification and

made part of the

record.)

COMMANDER LOOSMORE: Mr. Murphy, do you

have the American Bureau of Shipping surveys for the

Fitzgerald?

MR. MURPHY: Yes, I believe I

have them here for the past five years.
MR. WAESCHIE: Is that for both hull and machinery? Are those the ABS certificates for both hull and machinery?

COMMANDER LOOSMORE: I can't tell without looking at them.

I believe what we have here is the entire owner's file on their dealings with the American Bureau of Shipping concerning the Edmund Fitzgerald.

REAR ADMIRAL BARROW: Could counsel clarify what he has in this specific exhibit?

MR. MURPHY: Yes; the intention of the company was to produce all of the American Bureau certificates pertaining to the vessel for a five-year period as we understood the request.

So as far as I know, they have been produced.

COMMANDER LOOSMORE: I may describe for the record that these are Xerox copies of letters and survey reports from the American Bureau of Shipping concerning the SS Edmund Fitzgerald. The earliest date I see is March 13, 1970, and the most recent date I see is 22 October 1975.

MR. MURPHY: Pardon me, Mr. Chairman. May we either by number or numerically identify them individually or count them by number or somehow identify them for the record, please?
REAR ADMIRAL BARROW: Well, I think this would be Exhibit 3 and for each individual report, they should be by date of survey marked 3-A through whatever letter there happens to be.

I think if we use the terminology ABS Certificates, I think in reality they are survey reports, are they not?

MR. MURPHY: Yes, I used that terminology. You are correct.

It happens to be survey reports and forwarding letters.

Perhaps we can mark the exhibit No. 3 and I can go through and count the page and mark 3-A or whatever.

REAR ADMIRAL BARROW: I think the exhibit as a whole, Exhibit 3, with each individual survey report starting by date sequence, 3-A through whatever it turns out to be, would be the best way to do it.

COMMANDER LOOSMORE: Yes, sir.

MR. MURPHY: If it please the Chairman, I think I can rather rapidly leaf through them and identify them for the record, if that would please the Chairman, so that we would have the rotation in the record of each of the documents.
REAR ADMIRAL BARROW: Very well.

MR. MURPHY: Each of those docu-
ments has as its heading "American Bureau of
Shipping."

Some of them are dated at Cleveland, Ohio
or are shown to be addressed at Cleveland, Ohio.
Others are from Broad Street, New York, but the
first document is dated 22 October 1975, and consists
of three sheets.

The second one is dated April 9th at Toledo,
Ohio; April 9, 1975, at Toledo, Ohio, and is en-
titled Report TL 8051 consisting of five sheets.

The second document is dated October 17, 1974,
at Cleveland, Ohio, Report No. C 5730, consisting
of two sheets.

COMMANDER LOOSMORE: Excuse me. That
third one will be 3-C and the first two will be
3-A and 3-B.

MR. MURPHY: The next document
is not dated, but it is shown with the heading of
American Bureau of Shipping, Cleveland, Ohio, Record
No. 580124, consisting of eight sheets.

COMMANDER LOOSMORE: That is 3-D.

(Exhibit 3-D was marked for identification and made part of the record.)

MR. MURPHY: The next is a letter simply included in these documents. It is a letter to Capt. McSorley enclosing a Great Lakes Load Line Certificate, and it is signed by one of the members of the company, Mr. W. L. Voegtly. I really don't think it is pertinent.

CAPT. ZABINSKI: What is the date on this letter?

MR. MURPHY: July 17, 1974.

COMMANDER LOOSMORE: 3-E.

(Exhibit 3-E was marked for identification and made part of the record.)

MR. MURPHY: The next document is an American Bureau of Shipping Report No. TL 7845, dated in Toledo, Ohio, June 18, 1974, consisting of two sheets.

COMMANDER LOOSMORE: 3-F.

(Exhibit 3-F was marked for identification and made
MR. MURPHY: The next document is a letter dated March 7, 1974, to the American Bureau of Shipping, signed by the Marine Superintendent of Oglebay-Norton Company.

COMMANDER LOOSMORE: 3-G. (Exhibit 3-G was marked for identification and made part of the record.)

MR. MURPHY: The next document is an American Bureau of Shipping report No. C 5587, dated Cleveland, Ohio, 19 April 1974, and consisting of 10 sheets.

COMMANDER LOOSMORE: 3-H. (Exhibit 3-H was marked for identification and made part of the record.)

MR. MURPHY: The next document is a report to the American Bureau, report No. C 5544, dated 12 March 1974, consisting of two sheets.

COMMANDER LOOSMORE: 3-I. (Exhibit 3-I was marked for identification and made part of the record.)

MR. MURPHY: The next document is

22 March 1974 is a letter from the United States Coast Guard to Oglebay-Norton.

This is a letter on American Bureau of Shipping letterhead to Oglebay-Norton, dated 15 March '74, consisting of four sheets.

COMMANDER LOOSMORE: 3-J.

(Exhibit 3-J was marked for identification and made part of the record.)


COMMANDER LOOSMORE: 3-K.

(Exhibit 3-K was marked for identification and made part of the record.)


COMMANDER LOOSMORE: 3-L.

(Exhibit 3-L was marked for identification and made part of the record.)

COMMANDER LOOSMORE: 3-M.

(Exhibit 3-M was marked for identification and made part of the record.)


COMMANDER LOOSMORE: 3-N.

(Exhibit 3-N was marked for identification and made part of the record.)


COMMANDER LOOSMORE: 3-O.

(Exhibit 3-O was marked for identification and made part of the record.)

MR. MURPHY: The next document, Report TL 7624, dated Toledo, Ohio, October 27, 1973,
consisting of two sheets.

COMMANDER LOOSMORE: 3-P.

(Exhibit 3-P was marked for identification and made part of the record.)


COMMANDER LOOSMORE: 3-Q.

(Exhibit 3-Q was marked for identification and made part of the record.)

MR. MURPHY: Report No. 7419, American Bureau of Shipping, issued at Toledo, Ohio, November 7, 1972, consisting of two sheets.

COMMANDER LOOSMORE: 3-R.

(Exhibit 3-R was marked for identification and made part of the record.)

MR. MURPHY: consisting of three sheets.

COMMANDER LOOSMORE: 3-S.

(Exhibit 3-S was marked for identification and made part of the record.)

COMMANDER LOOSMORE: 3-T.

(Exhibit 3-T was marked for identification and made part of the record.)

MR. MURPHY: American Bureau Report No. DL 3497, Duluth, Minnesota, May 1, 1972, consisting of four sheets.

COMMANDER LOOSMORE: 3-U.

(Exhibit 3-U was marked for identification and made part of the record.)

MR. MURPHY: American Bureau Report No. DL 3419, Duluth, Minnesota, May 1, 1972, consisting of six sheets.

COMMANDER LOOSMORE: 3-V.

(Exhibit 3-V was marked for identification and made part of the record.)


COMMANDER LOOSMORE: 3-W.

(Exhibit 3-W was marked
for identification and
made part of the record.)

MR. MURPHY: Load Line Certificate,
Edmund Fitzgerald, Certificate No. GL-25,380, dated
16 December 1971 in two sheets.

COMMANDER LOOSMORE: 3-X.
(Exhibit 3-X was marked
for identification and
made part of the record.)

MR. MURPHY: Report from American
Bureau, No. D 7167, Detroit, Michigan, December 1, 1971,
one sheet.

COMMANDER LOOSMORE: 3-Y.
(Exhibit 3-Y was marked
for identification and
made part of the record.)

MR. MURPHY: American Bureau Report
D 7158, Detroit, Michigan, November 3, 1971, two sheets.

COMMANDER LOOSMORE: 3-Z.
(Exhibit 3-Z was marked
for identification and
made part of the record.)

MR. MURPHY: Report of Annual Load
Line Inspection, dated October 19, 1971, consisting of
three sheets.
COMMANDER LOOSMORE: 3-AA.
(Exhibit 3-AA was marked for identification and made part of the record.)

MR. MURPHY:
American Bureau of Shipping, in two sheets.

COMMANDER LOOSMORE: 3-BB.
(Exhibit 3-BB was marked for identification and made part of the record.)

MR. MURPHY:

COMMANDER LOOSMORE: 3-CC.
(Exhibit 3-CC was marked for identification and made part of the record.)

MR. MURPHY:

COMMANDER LOOSMORE: 3-DD.
(Exhibit 3-DD was marked for identification and made part of the record.)


COMMANDER LOOMIS: 3-EE.

(Exhibit 3-EE was marked for identification and made part of the record.)


COMMANDER LOOMIS: 3-FF.

(Exhibit 3-FF was marked for identification and made part of the record.)


COMMANDER LOOMIS: 3-GG.

(Exhibit 3-GG was marked for identification and made part of the record.)

MR. MURPHY: Report No. DL 3250, Duluth, Minnesota, April 1, 1971, a single sheet.

COMMANDER LOOMIS: 3-HH.
MR. MURPHY:

Duluth, Minnesota, April 1, 1971, a single sheet.

COMMANDER LOOSMORE:

3-II.

(Exhibit 3-II was marked for identification and made part of the record.)

MR. MURPHY:

Report DL 3239, Duluth, Minnesota, April 1, 1971, in two sheets, again an American Bureau Report.

COMMANDER LOOSMORE:

3-JJ.

(Exhibit 3-JJ was marked for identification and made part of the record)

MR. MURPHY:

A further American Bureau Report, and the report is dated November 17, 1970 in one sheet.

COMMANDER LOOSMORE:

3-KK.

(Exhibit 3-KK was marked for identification and made part of the record.)

MR. MURPHY:

COMMANDER LOOSMORE: 3-LL.

(Exhibit 3-LL was marked for identification and made part of the record.)

MR. MURPHY: Single sheet, Report


COMMANDER LOOSMORE: 3-MM.

(Exhibit 3-MM was marked for identification and made part of the record.)


COMMANDER LOOSMORE: 3-00.

(Exhibit 3-00 was marked for identification and made part of the record.)

REAR ADMIRAL BARROW: They are introduced as exhibits 3-A through Z and 3-AA through 3-00, and, as I understand it, this constitutes the entire five-year correspondence dealing with the surveys of the Fitzgerald.

MR. MURPHY: From the American Bureau:

yes, sir.

REAR ADMIRAL BARROW: From the American Bureau?

MR. MURPHY: That is my understanding,
yes.

COMMANDER LOOSMORE: Do you have a Certificate of Enrollment or a copy of it?

MR. MURPHY: Yes; I hand you a Xerox copy of the consolidated Certificate of Enrollment and License. It looks like Temporary Certificate No. 29, and it is in two sheets, which I believe is simply the Xeroxing of the back of the one sheet.

COMMANDER LOOSMORE: Where is the original of this?

MR. MURPHY: I believe the original of that was aboard the vessel.

COMMANDER LOOSMORE: Perhaps we can mark this as Exhibit 4. It does consist of two sheets and the Xerox copy, which is the front and back of the original.

REAR ADMIRAL BARROW: The Certificate was issued on the 8th of April, 1969, in Duluth. This will be Exhibit 4.

(Exhibit 4 was marked for identification and made part of the record.)

COMMANDER LOOSMORE: Mr. Murphy, do you have a list of crew men who were on board the Fitzgerald?
MR. MURPHY: Yes, sir.

I hand you what the company has furnished to me as a list of the crew members aboard the Edmund Fitzgerald as of November 9, the date that she departed the harbor of Duluth-Superior, on the voyage in question.

This crew list consists of three pages and lists the name of the individual, his position aboard the vessel, his identification number or security number, his age, his home address and years of service with the company.

In certain instances, the addresses are shown, but not necessarily as the individual's home address, but next of kin, if different, or the person to be notified, if different than the home address, and this is, as I understand it, consistent with your request for the information to be produced.

COMMANDER LOOSMORE: Who prepared this list, Mr. Murphy?

MR. MURPHY: This was prepared by the personnel department of Oglebay-Norton Company.

COMMANDER LOOSMORE: And this is effective as of the sailing?

MR. MURPHY: As of the date of November 9, which was the date that the Fitzgerald
started on the voyage in question.

COMMANDER LOOSMORE: Does this reflect the crew that was on board the vessel when it sailed?

MR. MURPHY: It is my understanding that that is correct; yes, sir.

COMMANDER LOOSMORE: I request to mark this as Exhibit 5, Mr. Chairman.

REAR ADMIRAL BARROW: Who made up the list that you have presented here?

MR. MURPHY: This list was made under the supervision of Mr. Robert E. Kratzert, who is the Manager of Vessel Personnel and Service.

CAPT. ZABINSKI: How did he gather the information to prepare this list?

MR. MURPHY: From the records contained in the office, the personnel records of the various individuals, and from reports of crew changes that have been made recently, whatever information was available in Oglebay-Norton's office as of actually this morning.

This list was just completed within the last couple of hours, so to the best of the knowledge of the office, that is an accurate list.

CAPT. ZABINSKI: If there had been a crew change in Duluth just prior to leaving Duluth,
would that information have reached the personnel of your personnel office in time to reflect it in this list?

MR. MURPHY: It hopefully would have been. It is expected that it would have been reported and it would have reached the office.

Now, we can check that out a little more carefully as to what the mode of communications is, but those crew changes are communicated to the office as rapidly as they are made.

If there are substitutions required through outside facilities, there will have been a message received from the facility that such and such a crew member has been sent to the vessel.

I believe also that a good deal of that information is based upon communications which have been made by the company to the families, since this occurrence took place, and of course this is one means of confirming the fact that these were the people aboard the vessel. So I would believe it would be fairly -- it should be accurate, completely accurate, as of this time.

CAPT. ZABINSKI: Could counsel check to see if any communications affecting this crew list had been made in Duluth prior to the vessel's
departure from Duluth or what port the last crew change or change of crew may have been reported to the personnel official?

MR. MURPHY: Yes, sir. As I say, Captain, this was reported to me within the last hour prior to the commencement of these proceedings as being accurately up to date to the best of the company's knowledge, but I will recheck it and confirm that that is the fact.

REAR ADMIRAL BARROW: Do you have any changes that were made, the last changes that were made to establish this list? Do you have any idea?

MR. MURPHY: Well, I personally do not, but there are people who do, I am sure.

REAR ADMIRAL BARROW: We can check it out further. I would like to read these names for the benefit of the interested parties here.

They are:

Ernest M. McSorley, master; John H. McCarthy, first mate; James A. Pratt, second mate; Michael E. Armogost, third mate; Thomas D. Borgeson, AB maintenance man; John D. Simmons, wheelsman; Eugene W. O'Brien, wheelsman; John J. Poviach, wheelsman; Ransom E. Cundy, watchman; William J. Spengler, watchman; Karl A. Peckol, watchman; Mark A. Thomas,
deckhand; Paul M. Riippa, deckhand; Bruce L. Hudson, deckhand; David E. Weiss, cadet-deck; Robert C. Rafferty, steward; Allen G. Kalmon, second cook; Frederick J. Beetcher, porter; Nolan F. Church, porter; George J. Holl, chief engineer; Edward F. Bindon, first assistant engineer; Thomas E. Edwards, second assistant engineer; Russell G. Haskell, second assistant engineer; Oliver J. Champeau, third assistant engineer; Blain H. Wilhelm, oiler; Ralph G. Walton, oiler; Thomas Bentsen, oiler; Joseph W. Mazes, maintenance man; Gordon F. MacLellan, wiper.

That constitutes the list and that will be marked as Exhibit 5.

(Exhibit 5 was marked for identification and made part of the record.)

MR. WAESCHE: Just for point of clarification, and I speak from ignorance, I do not know whether or not this constitutes all of the documents which the Coast Guard is requesting that the owner be produced at this hearing, but if so, then I have quite a few further requests.

REAR ADMIRAL BARROW: I don’t think we have finished yet, have we?
COMMANDER LOOSMORE: No, sir.

MR. WAESCHLE: Okay.

COMMANDER LOOSMORE: Mr. Murphy, do you have the plans of the vessel?

MR. MURPHY: Yes, sir.

These documents have been furnished to me as constituting the plans of the vessel.

COMMANDER LOOSMORE: Perhaps we can deal with these the same way we did with the ABS.

REAR ADMIRAL BARROW: Yes.

MR. MURPHY: Would you like me to identify them?

COMMANDER LOOSMORE: Yes, sir, please.

We are talking about Exhibit 6.

MR. MURPHY: The first document is a folder with the title: "SS Edmund Fitzgerald, Great Lakes Engineering Works, Hull No. 301, Seatrials, September, 1958." It is a bound folder consisting of 15 or 20 pages.

COMMANDER LOOSMORE: 6-A.

(Exhibit 6-A was marked for identification and made part of the record.)

MR. MURPHY: The next document is a Hull 301 Capacity Plan, Great Lakes Engineering
Works, and this contains the date of October 6, 1958, stamped upon it.

It also contains other numbers and other information, but I think that is adequate information for identification purposes.

COMMANDER LOOSMORE: This will be 6-B.

(Exhibit 6-B was marked for identification and made part of the record.)

MR. MURPHY: The next one is Hull 301, Lifeboat Arrangement, Great Lakes Engineering Works, River Rouge, Michigan, Hull Department, which document has a date of July 3, 1958, stamped upon it.

I think it appears that the prior document and this one each have a number 113. The prior document was 113-1314. This document is 113-1322.

COMMANDER LOOSMORE: This is 6-C.

(Exhibit 6-C was marked for identification and made part of the record.)

MR. MURPHY: The next document is Hull No. 301, Outboard Profile, Great Lakes Engineering Works, and it is dated June 13, 1958. It also has the designation 113 and it also, then, has a No. 1316.
REAR ADMIRAL BARROW: What is the title of that plan?

MR. MURPHY: That plan, sir, is the Outboard Profile.

COMMANDER LOOMSMORE: 6-D.

(Exhibit 6-D was marked for identification and made part of the record.)


COMMANDER LOOMSMORE: 6-E.

(Exhibit 6-E was marked for identification and made part of the record.)

MR. MURPHY: The next document is entitled Midship Section, Fitzgerald, dated May 8, 1959.

COMMANDER LOOMSMORE: 6-F.

(Exhibit 6-F was marked for identification and made part of the record.)

MR. MURPHY: The next document is the Diagrammatic Arrangement of Ballast Piping and Details of Vent and Sounding Pipes, and it shows
the builder as GLEW, and its drawing number is 112-701.

COMMANDER LOOSMORE: 6-G.

(Exhibit 6-G was marked for identification and made part of the record.)

MR. MURPHY: The next document, again, is for the Fitzgerald, a Diagram - Bilge and Ballast System, GLEW, which of course stands for Great Lakes Engineering Works, the builder, drawing No. 78-2.

COMMANDER LOOSMORE: 6-H.

(Exhibit 6-H was marked for identification and made part of the record.)

MR. MURPHY: The next document is Standard Eight-Inch Vent Caps, GLEW, the builder, Drawing No. 77-300.

COMMANDER LOOSMORE: 6-I.

(Exhibit 6-I was marked for identification and made part of the record.)

MR. MURPHY: The next one is entitled Shell Expansion, Builder - GLEW, Drawing No. 113-1198.

COMMANDER LOOSMORE: 6-J.
MR. MURPHY:

is Hatch Covers and Details, GLEW, Drawing No. 113-1234.

COMMANDER LOOSMORE:

6-K.

(COMmit 6-K was marked for identification and made part of the record.)

COMMANDER LOOSMORE:

Mr. Murphy, do you have the records of the fuel and water consumption?

REAR ADMIRAL BARROW: Just a minute, please.

Before we proceed to that particular point, the exhibits which have been introduced, 6-A through K, plans of the vessel, are basically "as built" plans. Do they constitute alterations or modifications which took place after the vessel was built?

MR. MURPHY: The only modifications, as I understand it, that took place after the vessel was built was the conversion from coal to oil, other than minor repairs, and I really can't answer that question for you at this time.

May I answer that question at a later date?

REAR ADMIRAL BARROW: Who would be in a position to know that? We may want to have them as
witnesses before the Board.

MR. MURPHY: Yes, Capt. Edgar H. Jacobson would have that information.

REAR ADMIRAL BARROW: Fine, thank you.

Then, Exhibits 6-A through 6-K, plans of the vessel, are marked for identification and appended to the record.

MR. MURPHY: In response to your request, Commander, for the records of fuel and water consumption, the only record that the company was able to locate in that regard is a record of the amount of fuel which was put on board the vessel on November 9, at Duluth, Minnesota, and this is a document, a copy of a letter, an invoice actually, from Marine Fueling, Inc., 1714 Terminal Tower, Cleveland, Ohio.

This document has been handed to me, indicating the vessel took on board at that time 50,013 gallons of No. 6 fuel oil and then after that, also underneath that, a product entitled Oil Treatment, and I hand you that document.

COMMANDER LOOSMORE: Where is the original of this?

MR. MURPHY: I believe that it is in Oglebay-Norton's office. The original of that
invoice, yes.

COMMANDER LOOSMORE: I would like to mark this Exhibit 7.

REAR ADMIRAL BARROW: This will be marked Exhibit 7 and is drawn on the date of November 9 for the No. 7 fuel oil in the amount of 50,013 gallons. (Exhibit 7 was marked for identification and made part of the record.)

COMMANDER LOOSMORE: Mr. Murphy, do you have the logs or extracts of the logs from the Oglebay-Norton Company for the Fitzgerald?

MR. MURPHY: I might add that the practice is to maintain logs aboard the vessel and then, periodically, submit what are called "office logs" to the office. These are, for the most part, what are contained in the original log, but all of the information in the vessel's initial log is not necessarily contained in the office log, but we do have office logs for both the engineer's log and for the forward end or the pilothouse lot, for the entire 1975 navigational season to the date of the casualty.

These are the logs that are regularly sent in to the company, to the office, by the vessel.

I don't know how you want me to identify these.
COMMANDER LOOSMORE: There are quite a few loose sheets here.

REAR ADMIRAL BARROW: I don't think that we want to introduce each one of these as an exhibit into the record. I think probably what we need to do is to examine these and determine which of these should be entered into the record.

I don't think we want to go through these page by page.

COMMANDER LOOSMORE: I think I would agree with that.

MR. MURPHY: May we then, for our records, have an opportunity to Xerox all of them and then return them for whatever examination the Board wishes to make of them because these, I believe, are the only records that the company has. Perhaps it could be delivered into the hands of the reporter to do that and then return them to the Board, whatever manner you would wish to do it in, but just so that we may retain an accurate record.

REAR ADMIRAL BARROW: Yes, I think so. I don't think we want to clutter the record with material until we have a chance to look at it and tell what it is that you have there.

The original logs which are on board, what
happens to those?

MR. MURPHY: Well, the original log, of course, went down with the ship.

REAR ADMIRAL BARROW: But we are talking about --

MR. MURPHY: In the past years?

REAR ADMIRAL BARROW: How long do you keep them?

MR. MURPHY: For a season. The log that was on board the ship commenced with the commencement of navigation for 1975, so it contains all of the records for the 1975 navigation season.

These are the office copies of those logs. In case I made a misstatement, these sheets, of course, include logs up to the last log that was sent in prior to the casualty.

REAR ADMIRAL BARROW: What date was that?

MR. MURPHY: I believe, I am told by my partner that it was November 1. I haven't personally checked it.

Yes, November 1 -- November 2 is the last date which appears on the engineer's log, and I really haven't examined these, Admiral, to see what the last date was on there, but here they are.

This log, which is the forward end log, the
last date appears to be October 31st, so in each instance they are up to November 1 or thereabouts.

CAPT. ZABINSKI: Are they consecutively marked by the people in the ships when they send them to you, counselor?

MR. MURPHY: Yes, they are marked in terms of trip numbers and they appear consecutively.

Well, I shouldn't say that. As I leaf through these, they are not consecutively in order, but each one is marked as trip number, so they could easily be marked in sequence by their headings.

REAR ADMIRAL BARROW: These records were produced for the Board by counsel as operating records and I think we, as a Board, will have to take a look at them to determine which one of these will be appended to the record.

Counsel can make copies.

MR. MURPHY: May we have them simply because I think they are important enough documents that I would like to be sure that we retain copies of all of them in the office.

COMMANDER LOOSMORE: Mr. Murphy, you were requested to prepare some information on reports of repairs requested and completed.

MR. MURPHY: Yes, sir.
I have been furnished with copies of documents, which Oglebay-Norton represents to me covers repairs to the vessel. The first appears on January 17, 1975, through the last record, which is October 23, 1975.

It has been represented to me that these are records of repairs to the vessel since during the 1975 season from that date, from January 17th.

REAR ADMIRAL BARROW: I think there, too, with regard to these specific documents, the Board would want to take a look through and select only those documents which deal with things which are pertinent to the investigation.

COMMANDER LOOSMORE: Do you want to make copies of these or do you have copies of these?

MR. MURPHY: Those are Xeroxes, so I am sure we have copies of all those records. So you may retain those.

You will indicate to us which of those you intend to use, of course.

REAR ADMIRAL BARROW: We will mark these Exhibit 8.

COMMANDER LOOSMORE: Exhibit 8 for identification? Sure.

(Exhibit 8 was marked for
MR. MURPHY: Will there be any purpose in just counting the number of sheets, just to make sure we know?

COMMANDER LOOSMORE: 52 Xerox sheets and a letter.

REAR ADMIRAL BARRON: Those specific ones which will be appended as Exhibit 8 will be identified later.

COMMANDER LOOSMORE: Yes, sir.

Mr. Murphy, do you have data on the last loading cargo capacity and so forth?

MR. MURPHY: Yes. The most accurate on the last loading is on the bill of lading and I have a copy of the bill of lading showing the loading of the cargo in Duluth-Superior, which I will hand you.

COMMANDER LOOSMORE: Is that related to this?

MR. MURPHY: That is the second part of your request, which was other information in relation to cargo capacity; is that correct?

COMMANDER LOOSMORE: Yes, sir.

MR. MURPHY: And the most responsive
material which we were able to produce in response to that request is a guidance manual for the loading of the Fitzgerald, prepared by the R. A. Stern, Inc., Naval Architects and Marine Engineers, of Sturgeon Bay, Wisconsin, prepared on February 28, 1972, revised October 5, 1973.

COMMANDER LOOSMORE: I would like to mark the copy of the bill of lading, Exhibit No. 9 for identification, and offer it as an exhibit to the record.

REAR ADMIRAL BARROW: Lake Bill of Lading for Bulk Cargoes, American Form 1942, under date of November 9, 1975, will be marked Exhibit 9 for identification.

(Exhibit 9 was marked for identification and made part of the record.)

REAR ADMIRAL BARROW: I might read the total amount into the record. The total amount of railroad weight loaded was 26,116 tons.

COMMANDER LOOSMORE: And I would like to request that the Guidance Manual for Loading be marked as Exhibit 10.

REAR ADMIRAL BARROW: Yes, this Guidance Manual for Loading Edmund Fitzgerald for Columbia
Transportation Division, Oglebay-Norton Company, which is revised October the 5th, 1973, shows an approval and subject to comments by Commander Ninth Coast Guard District (MMT), October 23, 1973.

It also shows American Bureau of Shipping, Cleveland, Ohio, stamped under date of October 17, 1973.

I was just about to ask the question, is there a copy, counselor?

MR. MURPHY: I'm sorry.

REAR ADMIRAL BARROW: This was approved subject to comments in a letter from Commander Ninth, Coast Guard District (MMT), October 23, 1973.

Do you have a copy of that letter?

MR. MURPHY: I don't have it with me, but I will find out if it is available.

REAR ADMIRAL BARROW: This will be marked Exhibit 10 for identification.

(Exhibit 10 was marked for identification and made part of the record.)

COMMANDER LOOSMORE: Mr. Murphy, are there reports from the master or from the chief engineer or any other voyage reports available during the last season?
MR. MURPHY: The only reports in that category are the office log sheets, which have been produced and which will be copied and then submitted to the Board.

COMMANDER LOOSMORE: All right. Do you have a Coast Guard report -- what is the title of that?

MR. MURPHY: This is U. S. Coast Guard Form 2692, and I offer this form in triplicate.

COMMANDER LOOSMORE: I would like to request that this be marked as Exhibit 11 and entered as part of the record.

REAR ADMIRAL BARROW: The Report of Vessel Casualty or Accident 2692 by the Marine Superintendent for Oglebay-Norton is marked as Exhibit 11 for identification.

(Exhibit 11 was marked for identification and made part of the record.)

COMMANDER LOOSMORE: Mr. Murphy, do you have the Report of Personal Injury or Loss of Life, Form 924-E, which is for the men lost?

MR. MURPHY: Yes, sir. I have in triplicate Coast Guard Form 924-E, a report of personal injury or loss of life for each of the individuals known to be aboard the vessel signed
again by the Marine Superintendent of Oglebay-Norton Company.

COMMANDER LOOSMORE: Which one of these -- there is a date of November 17th. I could read them each into the record by name.

REAR ADMIRAL BARROW: I don't think that's necessary. It is not necessary.

COMMANDER LOOSMORE: There are 29 forms, apparently all in triplicate.

REAR ADMIRAL BARROW: Mark them for identification consecutively as 12-A through whatever.

COMMANDER LOOSMORE: It will be CC.

REAR ADMIRAL BARROW: 12-A through 12-CC.

(Exhibits 12-A through 12-CC were marked for identification and made part of the record.)

MR. MURPHY: Would you identify those, Capt. Wilson, when you identify the name of the individual being given, whatever the number or letter is, please, so we have it for the record?

COMMANDER LOOSMORE: All right, we will do that.

CAPT. ZABINSKI: Just read them off as you mark them, A, B, C, for the record.
COMMANDER LOOSMORE: Are these in alphabetical order, Mr. Murphy?

MR. MURPHY: I am not sure.

REAR ADMIRAL BARROW: Just go ahead and present it.

COMMANDER LOOSMORE: In each of the cases, I will read the name of the person, which is in block 9-A of Form 924-E, and the letter following that will be the number of the exhibit.

Michael Eugene Armogost, 12-A; Frederick J. Beetcher, 12-B; Thomas Benson, 12-C; Edward Francis Bindon, 12-D; Thomas Dale Borgeson, 12-E; Oliver Joseph Champeau, 12-F; Nolan Frank Church, 12-G; Ransom Edward Cundy, 12-H; Thomas Edgar Edwards, 12-I; Russell George Haskell, 12-J; George John Holl, 12-K; Bruce Lee Hudson, 12-L; Allen George Kalmon, 12-M; Gordon Francis MacLellan, 12-N; Joseph William Mazes, 12-O; John Henkle McCarthy, 12-P; Ernest Michael McSorley, 12-O; Eugene William O'Drion, 12-R; Karl Anthony Peckol, 12-S; John Joseph Povisioch, 12-T; James A. Pratt, 12-U; Robert Charles Rafferty, 12-V; Paul M. Riippa, 12-W; John David Simmons, 12-X; William J. Spengler, Jr., 12-Y; Mark Andrew Thomas, 12-Z; Ralph Grant Walton, 12-AA; David Elliot Weiss, 12-BB; Blain Howard Wilhelm, 12-CC.
Mr. Murphy, do you have information on the record of radio transmissions or other communications which were sent by the Fitzgerald in its last voyage or any preceding voyage?

MR. MURPHY: Yes, sir. The company regularly receives a morning report from each of the vessels, and then that report is transcribed by radio to the company office, and it comes in on a teletype type machine.

The report for the Fitzgerald for the morning of November 10 reads as follows:

"This is WMI Lorain," which is the reporting station, Lorain, by which the vessel report is received, and from which the vessel report is sent to the company office, dated November 10 at 0720, so that is 7:20 a.m. This is a copy of the report. It is very short. I will read it.

It says: "Fitzgerald Superior piers 0742/9 dock 0825, start to load 0840 departed 1420/9," meaning 1420 or 2:20 p.m. on the 9th.

"Superior piers 1452 Manitou Island 0530/10 ETA 500 indefinite weather cargo 26116 require FM radio service."

This was the morning report. This was the message received.
In addition to that, there is documentation of that evidence from the radio station contained in the office, so I will hand you these documents, which are three sheets, which substantiate that morning report.

That is the only report that was received by the office from the vessel on the date of the casualty, and, well, that's all.

COMMANDER LOOSMORE: Mr. Murphy, do you know where the originals of these are?

MR. MURPHY: Yes, sir. They are in the office; that is, in the office of Oglebay-Norton.

COMMANDER LOOSMORE: I see.

MR. MURPHY: The originals of those copies are at Oglebay-Norton, yes.

COMMANDER LOOSMORE: The originals from which these copies were made?

MR. MURPHY: Right.

REAR ADMIRAL BARROW: Do you have the same reports for the previous day or so?

Where did the voyage specifically start?

MR. MURPHY: It commenced at Superior, as indicated on this report.

This was when they loaded and departed in
Superior.

REAR ADMIRAL BARROW: I think we would like the one for the day before also, please.

MR. MURPHY: All right, sir.

REAR ADMIRAL BARROW: We'll append the same exhibit, the one for the previous day, to this one.

COMMANDER LOOSMORE: All right, sir. I would like to request that this be marked Exhibit 13-A through 13-C for identification.

Mr. Murphy, are these received every day? Is that what you are saying?

MR. MURPHY: That is my understanding, yes. Well, there may not have been a report, for instance, for the day that they are out away from shore, and there isn't any particular information to be reported, so they may not have been received totally on a daily basis.

REAR ADMIRAL BARROW: Yes. Let us know if there is one for the previous day, and if so, we'll mark that for identification in sequence.

COMMANDER LOOSMORE: Why I was hesitating is because, while you are looking in the logs or records, you could look for the entire trip up, which I suppose is three or four days?

REAR ADMIRAL BARROW: From the last departure.
MR. MURPHY: All right.

REAR ADMIRAL BARROW: The reports we have here will be marked 13-A through 13-C for identification. The other reports will be in sequence upon receipt from counsel.

(Exhibits 13-A through 13-C were marked for identification and made part of the record.)

COMMANDER LOOSMORE: Mr. Murphy, do you have any written record of a copy of a policy or instructions on vessel reporting, either normal or in an emergency?

MR. MURPHY: Yes, sir. I have a copy here of a document, a three-page document, entitled "Section 100: Reporting to Cleveland Office By Radio."

That is a portion of the instructions relating to the request.

COMMANDER LOOSMORE: Where is the original of this held, sir?

MR. MURPHY: That is in the office. The document again from which that was Xeroxed is in the office.

COMMANDER LOOSMORE: This is entitled "Section 100: Reporting to Cleveland Office by Radio."
Is this a copy of the pages of an instruction manual?
Is there a Section 200, for example?

MR. MURPHY: I don't know the answer
to that question at this time, sir. We responded
to your request to produce information relating
to that.

REAR ADMIRAL BARROW: Perhaps we can take a
look at the entire manual from which this comes to
determine what its relationship is to the rest of
the manual.

COMMANDER LOOSMORE: I have four pages
undated -- excuse me, noted Rev. 5-1-75, and it
mentions, "Section 100: Reporting to Cleveland Office
by Radio."

I would request that these be marked Exhibits
14-A, B, C and D for identification.

REAR ADMIRAL BARROW: This report will be
marked 14-A through D for identification.

Perhaps at a later time when we get some opera-
tional personnel, we can talk about the report.

(Exhibits 14-A through
14-D were marked for iden-
tification and made part
of the record.)

COMMANDER LOOSMORE: Yes, sir. Mr. Murphy,
youd are requested to provide, if possible, a record
of the radio installation, the inspection reports
and so forth on board the Fitzgerald.

MR. MURPHY: I have to submit to
the Board a letter dated November 17, 1975 from
Lorain Electronics Corporation, J. D. Cain,
Executive Vice President, to Capt. E. M. Jacobson,
Marine Superintendent of Oglebay-Norton Company,
setting forth the equipment aboard the Fitzgerald.

The letter states: "The radio telephone equip-
ment aboard the Fitzgerald consisted of the following:" and it lists the equipment, and also then there are
two additional certificates attached to the letter
pertaining to the equipment, the license and equip-
ment, the radio equipment aboard the vessel.

I submit this in response to your request.

COMMANDER LOOMIS: I would like to request
that these five pages be marked 15-A through 15-E
for identification.

REAR ADMIRAL BARROW: These are exhibits
which will be marked 15-A through 15-E and relating
to the electronics, the radio telephone equipment,
specifically.

(Exhibits 15-A through
15-E were marked for iden-
tification and made
MR. MURPHY: Mr. Chairman, as you will see, that is an original letter, and we do not have copies.

May I request that the court reporter be instructed to make copies during the noon recess so we have copies, please, sir?

REAR ADMIRAL BARROW: Yes.

COMMANDER LOOSMORE: Do you have a recent photograph of the vessel, Mr. Murphy?

MR. MURPHY: Well, sir, I have two photographs of the Fitzgerald. You added the word "recent." There isn't any date. They are overall shots of the vessel. Neither one does seem to be dated, so I can't tell you how recent they are, but they are photographs of the vessel and should depict or show as she appeared at the time of this casualty, as far as we know.

COMMANDER LOOSMORE: Sir, I would like to request they be marked as Exhibits 16-A and 16-B. Perhaps we could mark them on the envelope, rather than on the photograph itself, or on the back of the photograph.

REAR ADMIRAL BARROW: We'll mark them 16-A and 16-B for identification.
(Exhibits 16-A and 16-B were marked for identification and made part of the record.)

COMMANDER LOOSMORE: Do you have a Load Line Certificate?

MR. MURPHY: Yes. I have a document from the American Bureau of Shipping dated July 9, 1975, from American Bureau of Northwestern Mutual Life Insurance Company.

Also, I have a Great Lakes Load Line Certificate from American Bureau, dated July 1, 1974, stating the Certificate remains in force until 19 April 1979, and then I have three additional sheets pertaining to the Load Line Certificate and a letter forwarding those certificates from Northwestern Mutual to Oglebay-Norton Company.

This document or these documents are stapled together as five sheets.

COMMANDER LOOSMORE: Again this is a copy. Do you know where the original of this certificate is?

MR. MURPHY: Well, I think the Load Line Certificate also is retained aboard the vessel, is it not, generally? Is that true?

If it isn't, it should be in the office then.
American Bureau of Shipping perhaps maybe has it. I will find that out, if it is important.

COMMANDER LOOSMORE: The certificate is entitled "Great Lakes Load Line Certificate," and typed in above that and underlined is the word "Duplicate," issued under the authority of the Commandant of the U. S. Coast Guard, United States of America, under the provisions of the Act of August 27, 1935, as amended, to establish load lines on the Great Lakes of North America, and the load line regulations in force on April 14, 1973.

The official number is 277,437, which was issued at New York, New York on the 1st day of July, 1974, signed by J. R. Blakeby, Secretary.

There is a cover letter dated 9 July 1974.

I would like to request that this exhibit be marked 17-A through 17-F for identification.

REAR ADMIRAL BARROW: Including in this particular exhibit, in addition to the several letters that relate to the subject, there are two pages of computations which are indicated in 17-D and E.

It is not readily apparent to me as to what significance or as to what this relates to in this exhibit.

MR. MURPHY: Yes, I think it does
require an explanation.

REAR ADMIRAL BARROW: I think prior to admitting these as exhibits, we really should find out what relationship the computations have to the specific certificates, and at this time we will try to determine that before admitting them.

MR. COLUCCIENLO: If those computations relate to the load line, we would like to see them in there.

REAR ADMIRAL BARROW: Yes. I am sure they do, but it is not readily apparent from a quick look at the face as to how the two tie in.

Before we admit them, we will find out.

MR. COLUCCIENLO: Will you let me know what your decision is?

REAR ADMIRAL BARROW: Yes. It will be on the record.

(Exhibits 17-A through F were marked for identification and made part of the record.)

COMMANDER LOOSMORE: Do you have a record of life saving equipment and the service inspection certificate for the Fitzgerald?

MR. MURPHY: Yes, sir. I have a
certificate dated February 24, 1975 appearing in four sheets by Sampsel Rope & Marine Supply Company.

There are four sheets, four separate sheets of inspection, which I hand to you now.

COMMANDER LOOSMORE: Is this the extent of the information on the life saving equipment?

MR. MURPHY: That was furnished to me as being the extent of the information, yes.

COMMANDER LOOSMORE: I have four pages, which appear to relate to two inflatable rafts and a notation "Ship - Str. Fitzgerald," and each is dated 2-24-75.

There are two other sheets which are marked 5118, one typewritten and one a carbon copy being handwritten, and the other is marked 5119, similarly one being typed and one handwritten.

Apparently these relate to the servicing of the inflatable life rafts.

I would like to request that these be marked Exhibits 18-A, B, C and D for identification, but before they are offered as part of the record, I think they are going to need further explanation.

MR. MURPHY: As a matter of course, in response to that question, there is an annual Coast Guard Inspection Report which covers all of those items. If there is anything else that you require,
we'll check to see if there is anything else in the office.

COMMANDER LOOSMORE: All right.

REAR ADMIRAL BARR: The two reports which are a Service Inspection Certificate in each case covering two for 25 persons each, quick inflatable life rafts, will be marked Exhibits 18-A, B, C, and D for identification.

I think we will need at a later time to call witnesses to talk about these specific items here.

I will note that in each of these cases on the two life jackets there is a certification under dates of 2-24-1975 that the rafts have been tested and inspected from that date.

(Exhibits 18-A through D were marked for identification and made part of the record.)

COMMANDER LOOSMORE: That is the list of documents to be made available this morning.

REAR ADMIRAL BARR: I think this is probably a good time to break for lunch. We will now adjourn at this time, and we will reconvene at 1:15 p.m.

(At 12:05 p.m. the hearing was adjourned, to reconvene at 1:15 p.m. this date.)
AFTERNOON SESSION

1:30 p.m.

REAR ADMIRAL BARROW: Good afternoon, ladies and gentlemen.

Let the record show we reconvened at 1:30 p.m.

Mr. Recorder, will you call your next witness, please?

COMMANDER LOOSMORE: Yes, sir. I would like to call Captain Jacobsen, the Marine Superintendent for the Oglebay-Norton Company.

MR. WAESCHE: Admiral, will there be a ruling on the request I made for the production of the official documents? I believe the paper is before you.

REAR ADMIRAL BARROW: Make your request on the record, if you would, please?

MR. WAESCHE: I request the audio gauge readings of the vessel and the stability calculations of the Fitzgerald, stress analysis calculations of the Fitzgerald, and four, if the information is not contained in the log, abstracts with respect to drafts on prior voyages. Then, I requested that the bills of lading or other information giving such draft information be made available at least for the 1975 season.
REAR ADMIRAL BARROW: Most of the points, if not all, that you raised here in asking for additional information, will be covered in the future submissions. You did not indicate that time frame you are talking about when you say drafts of previous voyages.

MR. WAESCHE: I thought I said for the 1975 season, at least. I would like it back before that, but at least for 1975.

REAR ADMIRAL BARROW: We have production of other information and the ones that you cite here should be covered in future submittals to the Board.

MR. WAESCHE: Thank you.

COMMANDER LOOSMORE: Would you please stand and raise your right hand?

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EDGAR M. JACOBSEN

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

EXAMINATION

By Commander Loosmore:

Q. Would you state your name and address and occupation?
A. Edgar M. Jacobsen, 1055 Wilbert Road, Lakewood, Ohio
I am a marine superintendent for Oglebay-Norton.

Q. You are here in your role as marine superintendent
of Oglebay-Norton, which has been designated a party of
interest, and the record should show that counsel for
Oglebay-Norton is present.

Capt. Jacobsen, do you hold a Coast Guard license?

A. Yes, I do.

Q. Could you describe that?

A. Master's, First Class Pilot, Duluth, Gary & Cape Vincent

Q. How long have you held such a license?

A. I have had my Master's license since, I believe,
around 1943.

Q. Do you know what issue it is?

A. No.

Q. How long have you been at your present occupation?

A. I have been ashore since 1962 with Oglebay-Norton.

Prior to that I was with Hutchison & Company which
operated two fleets of ships. My title there was Fleet
Captain.

Q. Capt. Jacobsen, one of the things we would like to
have you describe for the Board is some rather general
background on the operation of vessels such as the
Fitzgerald and fleets of vessels such as that.

Is it fair to say that a vessel such as that operates
pretty much on a set round trip from point to point?

A. Yes, normally she is in one particular run, but we do divert occasionally to other ports.

Q. What would be the particular run?

A. Primarily Toledo to Silver Bay back to Toledo.

Q. Could you describe in your own words the conduct of a trip from Toledo to Silver Bay and back, describing such things as a process of taking on cargo and the ballasts, if any, and fuel and water and so forth?

Describe the entire operation and the time involved and so forth.

A. Well, Toledo is an unloading port. We unload ballasts in Toledo.

During the course of unloading, the ship is ballasted. They use Hewlett unloaders to keep it on an even keel.

Prior to finishing the discharge, the remainder of the ballasts are put in to get the stern of the ship down, and then they leave and head for the upper Lakes, passing through the Detroit River, Lake St. Clair, the St. Clair River, Lake Huron, St. Mary's River, through the locks at the Soo and across Lake Superior to Silver Bay.

Upon arriving at the loading port, during the loading of the cargo, you discharge your ballasts completely.

We have been fueling our ships there in Silver Bay toward the upper end of the Lakes the last few years.
Upon completion when the ship is loaded, it returns and crosses Lake Superior, which is an easterly course, and you might say that she goes to the St. Mary's River, through the locks again and down through Lake Huron, the St. Clair River, Lake St. Clair, Detroit River, and back to Toledo.

This relationship normally takes about five days round trip.

Q  Okay. You said you would load pellets. Specifically what are those? Is it always the same cargo?
A  Well, lately it's been primarily pellets. These are iron ore pellets. They are about three-quarters of an inch in diameter.

Q  Is that the sole cargo the ship carries?
A  That's right. This is a bulk cargo ship; it is not general cargo. It is a bulk ship, dry bulk ore.

Q  You used a phrase, I believe, "Hewlett unloader." Can you describe that?
A  A Hewlett unloader gets its name after the person that designed it, Roger Hewlett. It is actually like a large arm with a grab on the end and it reaches down in the cargo and picks up, depending on the docks. Some docks go up to about 17-ton capacity.

Toledo, I think, is around 12 or 13. Depending on what you are unloading and the unloading dock, you may
have three unloaders and you may have four. Some ports
even have five.

The discharging takes about 12 to 14 hours.

Q. 12 to 14 hours discharge? How much cargo?
A. 26,000, roughly.

Q. In a ship, for example, the size of the Fitzgerald?
A. Right.

Q. I'm sorry. I was talking when I should have been
listening.

What was the answer?

A. You are right. For the size of the Fitzgerald,
26,000 tons, thereabouts.

Q. You said the ship takes on ballast.
A. Water ballast.

Q. How much quantity could a ship the size of the
Fitzgerald take on then?

A. In tons?

Q. Yes.

A. I would say roughly 10,000 tons, 10 to 12, depending
on weather conditions.

Q. All right. Could we elaborate on that a little bit?

A. Well, you have been furnished with the loading
manual for that particular ship, which spells that out,
the ballast conditions.

Q. Could you elaborate a little bit on your statement
that you take on some of the ballasts discharging
and some of the --

A. These lake ships, the machinery is aft, which puts
them down deeper aft normally, so to keep the ship on
a fairly level plane so these Hewletts can unload
efficiently, you put water forward first for the first four
tanks until you get toward the end and then you start
ballasting again.

Q. You said that the route was across Lake Superior.

A. Are there shipping lanes in Lake Superior?

Q. Yes, there are.

A. Are they optional or mandatory?

Q. They are optional.

A. At whose option?

Q. The Lake Carriers Association, which all of the
American ships or most of the American shipbuilding
companies belong to, recommend these courses. It is a
safety feature to separate traffic primarily for poor
visibility and this is where it really means something.

Q. Just to make the point a little more clearly,
the shipping lanes, you said, are recommended?

A. Right.

Q. They are recommended to the --

A. To the Association. Well, I might say that the
Dominion Marine Association, which is the counterpart to
the Lake Carriers Association, cooperates with us on these separate courses.

In the trade they are called upbound and downbound courses, to differentiate.

Q. You have described the passage across Lake Superior as westbound and eastbound?
A. Right. Lake Huron would be north and south.

Q. Is this upbound? Is this westbound in Lake Superior?
A. Yes, that's right.

Q. Is that north or south of the downbound lane?
A. The upbound is south of the downbound. It's just the reverse of it. You are passing starboard to starboard.

Q. About how far apart are these lanes, then?
A. Seven to eight miles.

Q. At the widest part?
A. Of course, they converge when you get near land. For example, Whitefish Point.

Q. How close together are they at their closest points?
A. At Whitefish, well, the closest I would say is probably a mile. This is when you are getting into fine areas.

Q. And whose option is it to deviate from these lanes? Is it up to the company or master of the ship?
A. It is up to the master, depending on the conditions.

Q. What sort of conditions?
A. It could be weather conditions.

Q. What kind of deviation would you expect?

A. Extreme wind, storms, where you try to keep the lee
of the land for protection from the wind.

Q. You said that Oglebay-Norton has been having its
ships fuel at the upper end of the lake.

A. The ships that are going up there.

Q. Fair enough. Would that be done before or after the
cargo was loaded?

A. During. Simultaneously.

Q. That's done simultaneously?

A. Yes.

Q. About how much fuel would a ship the size of the
Fitzgerald be expected to take?

A. For a five-day trip, roughly 50,000.

Q. Is that topped off?

A. No.

Q. All right. What percentage of fuel capacity would
you expect it to sale at from the Duluth-Silver Bay area?

A. Roughly 75 per cent.

Q. During the course of this trip, what sort of regular
reporting procedures would there be? What kind of
communications would the ship have with the home office?

A. We have a morning message that is sent in.

It is supposed to be filed prior to 7:00 o'clock in the
morning by radio.

That is whether the ship is in port or on the run.
That is every day that that is to take place.

This comes into our office on a teletype from the
radio station. We have this on record, of course.

Q. And then the information, I suppose, is distributed
to the company?

A. Yes.

Q. We have as an exhibit an excerpt from some sort
of instruction which sets out the requirement for this
morning report.

Are you familiar with the whole book; could you describe
that to us a little bit?

A. The book deals with the painting of the ship and
all kinds of maintenance that the ship's crew does, as
well as the instructions on reporting to the office,
purchasing, how they handle their purchasing and things
of that sort. It is just operational. It is an
operating manual.

Q. Is there a general one for every ship in the company,
or is it specifically for each ship?

A. It is general for the whole fleet.

Q. You have described the regular reporting procedure.
Is there an emergency reporting procedure set out,
and if so, what would it cover?
A. Well, sure. The engineers or the captains are instructed to get in touch with the marine superintendent. If it is primarily an engineering problem, a minor engineering problem, he can get in touch with our fleet engineer.

Q. Capt. Jacobsen, you mentioned ballast in fuel. What do you do about the ship's water?

A. Well, the pumpable water, on some ships we put it through our own filtering system. On some ships we might take it right from the shore site. It would be an approved watering point.

Q. And feed water?

A. From the lake.

Q. Feed water comes directly from the lake?

A. Right.

Q. In relation to the sequence of loading and ballasting and so forth, would that be done at any particular time? Would taking on feed water be done at any particular time?

Let me ask you this: Is there any instruction that suggests it to be done at any particular time?

A. We prefer to take our water out of the cleaner lakes, which would exclude Lake Erie.

Q. But would you ballast in Lake Erie?

A. Oh, yes. You have to.

Q. When you ballast, you implied that Lake Erie is not
one of the cleaner lakes.

Do you get a lot of silt or other solids in your ballasting?

A. Yes.

Q. How do you cope with that? Is it pumped out? Does it get pumped out?

A. Some of it pumps out, and we have to manually pump it out, or in some ships we use a chemical to give the mud or silt -- the trade name is Zimite, and this keeps the mud in suspension.

Q. Are these tanks, the ballast tanks, cleaned of the mud on a regular basis?

A. I wouldn't say a regular basis. I mean, as far as the manual, we would do it when we have the opportunity. The chemicals are put in on a regular basis.

Q. How long does it take to load one of these vessels?

A. About five hours.

Q. So that if you are putting on the order of 25,000 tons in, is that what you said?

A. Yes.

Q. That is for five hours?

A. Yes.

Q. Who on the vessel is in overall charge of that loading operation?

A. The first mate.
Q. And what sort of instruction or plan does he have about loading?
A. He has been furnished with this manual, which is one of your exhibits here.
Q. And that is what he has?
A. Yes. Well, at the time a man becomes a first mate, he already has experience, and when he was a second mate, he had worked with the first mate, and he had experience; a lot of them.
Q. Could you tell us a little bit about what's in that exhibit for purposes of describing this loading operation?
A. It refers to various ballast conditions, normal running, tipping, if you have to tip the ship for examination of the propeller.

It refers to heavy weather ballasting; it refers to loading and various drafts; it gives the information on what the drafts are on the first or second page.
Q. You said that the ballasting and deballasting, which takes place during loading and unloading, was in order to keep the vessel on an even keel?
A. Right, at the dock.
Q. Are there considerations given to the longitudinal strength in this? Do you worry about that?
A. Yes.
Q. And that is in here?
A. Yes.

Q. Is there a stress numeral calculated?

A. Our naval architects who prepared this would be in a better position to answer that question. We can produce them.

Q. All right. Let me put it the other way: To your knowledge does this or any other instruction require the calculation of a stress numeral?

A. No. This is for the layman; it shows whether it is a bad condition or whether it is a good condition.

Q. Okay. When in the season does this operation begin, generally, and how long?

A. I would say a normal start would be probably April 15, but as you know, we have been starting earlier. Last winter some ships went right around the whole season, not in our fleet though.

Q. And how long, again, is a normal season? How late would you expect to operate?

A. A normal season I would say would be December 15 to December 30.

Q. And what do you do between December 15 or December 30 to April 15?

A. Maintenance and repairs.

Q. What do you do with the vessel?

A. We put it in layup.
Q. In layup?
A. Yes. It goes in port naturally, and we find a dock to moor it at, and we put extra lines on it, secure it for the winter, and put anchor chains on it. We drain the systems.

This past winter we did keep some ships warm, because there was a short layup.

Q. Okay. And you said you do repairs during the layup period; is that correct?
A. Repairs, improvements and maintenance.
Q. And general maintenance, I suppose?
A. Yes; right.

Q. Could you describe the sequence then of repairs and maintenance such as when do you develop work lists, if you do, and what do you do during the operating season?

What do you postpone until the winter layup and that type of thing?
A. Prior to September 1, we write to the captains and chief engineers and ask them to make a list of the things that they feel should be done, and we have, in our company, a fleet engineer and an assistant fleet engineer, and our hull superintendent visit each ship, go over the ships and look over the ships.

They may add to this list or they may not, depending on what the ship needs.
When they finish their fall inspection, as we call it, they bring these lists in.

They are typed up, and we work out our projections for appropriations.

When the ship actually does come in, then we start the work.

Q. Now I would like to talk a little bit about -- wait a minute. Let's pursue that a little further.

You make up a work list and accomplish it during the winter, and then what happens? You must have to do something to the ship before you are ready to sail it, is that right?

A. Then we call the engineering crew about three weeks prior to sailing, and they fit out the ship.

If there is any machinery that was taken off like pumps or motors, they are put back on. When they feel that they are all set, they get a date for annual Coast Guard inspection, and whatever date is agreed upon, the Coast Guard hull inspector and boiler inspector come out and inspect the ship.

Q. And that is not done in the --

A. It is done in the springtime prior to sailing.

Q. What other inspections are performed by agencies other than the company?

A. American Bureau of Shipping, and the FCC inspects the radio gear, the electronic gear, and Public Health
inspects occasionally. It is not on an annual basis.

They get around when they can.

Q. Now, to talk specifically about the Edmund Fitzgerald
for a moment, you said that this work list ordinarily
would have been prepared around the first of September,
I believe?

A. We started then, and we finalize it probably in the
latter part of October or the first of November.

Q. All right. Do you know whether such a list was pre-
pared for the Fitzgerald this year?

A. This year?

Q. Yes.

A. Yes. I will say it is in the process of being typed
for the whole fleet; that is for each ship.

Q. I think we would want to see a copy of that work list.

COMMANDER LOOSMORE: Mr. Murphy, rather
than question this witness on details that he probably
doesn't have at his immediate recall, would you see if you
can obtain a copy of the work list for the Fitzgerald,
which is in preparation, and make it available?

MR. MURPHY: Yes, Commander, certainly.

By Commander Loosmore:

Q. Captain Jacobsen, I would like to talk a little bit
about what you know about the Fitzgerald.

I don't know whether you have detailed records
with you or not, because as things come up, I am sure they can be provided.

Do you know whether there have been any structural problems on the Fitzgerald, say in the last five years, problems being things which required removing the vessel from service, or major structural repairs?

A. No. We never had to remove her from service.

Q. All right. Were there any --

A. We had a collision a number of years ago with another ship, which was a major repair job, the starboard side.

Q. A collision? Do you recall when that was?

A. No, I don't recall. I would guess it could have been five years, four to five years ago.

Q. Have there been any major engineering problems subsequent to the conversion?

A. Mechanical problems?

Q. Mechanical problems.

A. No.

Q. How about electronic problems?

A. No.

Q. Have there been any significant problems or changes in life-saving equipment in the last five years?

A. Well, we have added inflatable life rafts.

I don't recall just when that was compulsory, although we did have rafts before it was compulsory. I would have
to check the records.

Q. All right.

COMMANDER LOOMISMORE: That's all I would have to ask him.

REAR ADMIRAL BARRON: Capt. Wilson?

EXAMINATION

By Capt. Wilson:

Q. Mr. Jacobsen, you said that the off-loading of the vessels were generally done by Hewlett rigs?

A. Generally, depending upon the port and the harbor.

Q. And this vessel, at least recently, you mentioned, had off-loaded in Toledo?

A. That's right.

Q. Are the rigs in Toledo Hewletts?

A. Yes.

Q. And if an off-loading rig is not a Hewlett rig, what kind of a rig is it?

A. I guess you would call it just a free-swinging bucket from a bridge type unloading where the car travels on the track and a grab, which are on cables.

Q. Are there any major differences from the owner's standpoint as to the desirability of one rig over the other, such as speed?

A. Well, as far as speed, it depends on how many free-swinging buckets you have or how many Hewlett unloaders.
We prefer the Hewlett unloader.

Q. Why is that, sir?
A. Because they are a lot easier on the ship. You are not banging and there is less physical damage.

Q. Has the Anderson, to your knowledge or recollection, recently off-loaded at other than Hewlett rigs?
A. Are you talking about the Anderson or the Fitzgerald?
Q. I am talking about the Fitzgerald, I'm sorry.
A. Yes. I couldn't tell you just when, but I think they have been to free-swinging bucket docks. This cargo was designed this way in Detroit, Great Lakes Steel.

Q. To your recollection, and I realize it is very difficult because you don't have the records here and you may not know the answer, but was it during the season, say, in Detroit with the free-swinging buckets?
A. I would say probably. I wouldn't say definitely without checking the records, but she was going there.

Q. Had she? Well, if you don't know whether she had been there this year or not, I guess you can't answer that.

When was the last time you were on the Anderson, sir?
A. On the Fitzgerald?

Q. On the Fitzgerald, I'm sorry.
A. I am not really sure. Definitely last winter, but how many times since she has started operating, I don't know.
Q  You mentioned on the question of mud in the tanks,  
you mentioned the use of a chemical additive, which I  
assume is a detergent or a detergent type compound,  
something of that nature.
A  Was this used on the Fitzgerald?
Q  Yes, it has been in use.
Q  Over the life of the vessel?
A  Oh, I would say within the last, oh, definitely the  
last five years.
Q  Now, you made mention, Captain, about Zemite. You  
mentioned that that held the mud in suspension?
A  That is the principal idea.
Q  Does it assist in removing mud that may have been  
previously in the tanks?
   If you didn't use it over the life of the vessel,  
would it strip the tanks eventually?
A  Eventually it is supposed to.
Q  Captain, you also mentioned concerning the guidance  
manual for loading procedures to follow to, I believe, if  
I read it correctly, to "tip the snip"?
A  Right.
Q  And I believe you mentioned that that was to observe  
propeller or oar damage, perhaps?
A  Inspection or observe damage.
Q  To your knowledge, had this been done on the
Fitzgerald recently?

A. Yes.

Q. How long ago, sir?

A. October 16th.

Q. Do you recall, and again I realize that you may not know because you don't have the records here and it is a little difficult, but do you recall where she was at the time?

A. She was in Toledo.

Q. Was she loaded?

A. Well, she was in the process of being unloaded.

Q. She was in the process of being unloaded?

A. Right.

Q. Do you remember about what stage; was she almost completed when you tipped her?

A. Well, I would guess that she was probably half unloaded.

Q. Why did you tip the vessel at that time?

A. For inspection of the propeller and the rudder.

Q. Was this a routine observation or did you have reason to believe that something was wrong?

A. We had a minor crack on one of the propeller blades and we were just watching it. This last time, we did tip her and we changed the blade. There was a crack in the throat of one of the propeller blades.
Q. You mentioned this last time. Had you been periodically doing this in order to examine the blade?
A. Right.
Q. Over the season or about how long?
A. During the season. Frankly, I don't recall when the first time was this season.
Q. Did you at any time after that, was the blade replaced or did you still have the same one?
A. We replaced the blade.
Q. When was that, sir?
A. October 16th.
Q. At that time?
A. Right.
Q. She went into dry docking at that time?
A. We did it afloat.
Q. You did it afloat?
A. Right.
Q. Would there be in existence any record of the amount of cargo aboard the vessel at that time or the amount of fuel, in other words, the loading condition of the vessel when you tipped her?
A. I would say we would have to refer to these log sheets which you have and figure out at what point they stopped unloading and guesstimate the tonnage that was taken off.
Q. Yes, sir. In these log sheets, would it be reported
as to when the vessel was tipped?

A. Yes, it should be.

Q. As with the amount of ballast taken on board in order to lower the head?

A. Well, I would think that we could determine how much iron ore was taken out that day, out of the aft end of the ship.

Q. Captain, how long was, if you recall again, the Anderson laid up last year? Was it a fairly short season?

A. Do you mean the Fitzgerald?

Q. The Fitzgerald.

A. I would say two and a half months. That is my best guess at this point.

Q. Yes, sir. Were there any major repair items done at that time?

A. No.

Q. Just routine?

A. Just routine.

CAPT. WILSON: That's all.

EXAMINATION

By Capt. Zabinski:

Q. How long have you been with Oglebay-Norton?

A. 1962.

Q. And you joined them as what, sir?

A. Assistant Marine Superintendent.
Q. Did you ever sail or did you relieve the master during the normal course of your duties?
A. No.
Q. Have you ever been to sea on any of the -- either on the Fitzgerald or any of the other ships operated by Oglebay-Norton?
A. Not when working. As a crew member, I have made trips on them.
Q. When was the last time you made a trip on them?
A. The Fitzgerald?
Q. On the Fitzgerald, yes, sir.
Q. Do you recall what the circumstances were of that trip?
A. No, nothing special. Just a busman's holiday, I guess you would call it.
Q. Do you ordinarily make any kind of a trip record or anything about what you observed or how good the food was, maybe?
A. I make mental notes, maybe.
Q. Mental notes, but nothing else?
A. I was aboard two days in Toledo in Silver Bay.
Q. What would be the purpose of your riding?
A. Supposedly on vacation.
Q. Are you being facetious or is this what it is?
You didn't go aboard then in any official capacity to observe operating conditions, or is that what you are inferring?

A. Yes, sir; right.

Q. Did you ever ride the Fitzgerald to observe her operating techniques?

A. No, not the Fitzgerald.

Q. Has anybody from Oglebay-Norton ridden the Fitzgerald to see if they were complying with instructions and so forth?

A. Periodically, or occasionally, I should say, one of our engineers might make a short trip.

Q. Do you know when the last trip, when such a last visit may have been made?

A. No.

Q. Who would that engineer be that may have made a trip, if you know?

A. It could have been our fleet engineer.

Q. Is there any way of finding out?

A. I could ask him.

Q. Please let the Board know.

A. All right.

Q. Is there any kind of a company policy requiring either yourself or other fleet engineers to ride the vessel specifically to see if the company instructions are being
followed?
A. No.
Q. What is your job description; what would you say that
your job was with Oglebay-Norton Company?
A. Well, it embraces -- I will tell you the people that
work under me. There is the fleet engineer and his assis-
tant, the hull superintendent, and the personnel manager.
So my job deals with the maintenance and repair of
the ship and see that the ships are properly manned.
Q. And how about operating, loading and so forth, whether
they are being loaded properly, overloaded or unloaded?
Would that fit in your job description?
A. Yes.
Q. How do you check on overloading if vessels are, in
fact, overloaded at any time?
A. I don't make a physical check.
Q. Is there any way you can check that?
A. We can always refer to our bills of lading.
Q. What would they show? Do we have bills of lading
for the past operating season?
A. You have one here.
Q. You would have them for the operating season?
A. Oh, yes.
Q. What does the fleet engineer do?
A. His job primarily is being involved with the mechanical
part of the ship to see that everything is in good repair.

Q. Does he ride the ship to see if machinery is operating, or does he rely on the ship's personnel to tell him?

A. Primarily on the ship's personnel, unless there is a problem.

He visits the ships periodically.

Q. And you don't know when the last time a fleet engineer may have been aboard; is that your testimony?

A. That's right.

Q. How often would he visit? Do you have any frequency set when he might go aboard?

A. It could be probably a maximum of every two weeks that somebody from our staff would be aboard a given ship.

Q. Who was the last man aboard the Fitzgerald from your staff, and what was the date?

A. Well, I think the last man aboard was our assistant personnel manager in Ashtabula.

Q. And his name is what?

A. Eugene Gilmore.

Q. And what would be the purpose of his visit?

A. Well, he went aboard primarily to advise the captain and the mate on our new payroll procedures.

Q. Does he make any kind of a report, or is he required to make any kind of a report about the way the ship is being maintained or operated insofar as his responsibility is
concerned?

A. He might informally. I hadn't heard any reports for this particular --

Q. Did he inform you after his visit about what he found?

A. No.

Q. What else does your personnel department do? Do they man the vessels as to who particularly goes on?

A. Yes. They make arrangements for manning.

Q. How about the master; how is he chosen?

A. He is chosen for his ability and seniority.

Q. But is he from a union, or is he a dedicated person of the company?

A. That's right. He is not a member of a union.

Q. I see. He is someone who has been in the company employ a long time?

A. Yes.

Q. About how long has Capt. McSorley been with the company?

A. We have the records here. I don't have it myself.

Q. You knew McSorley personally?

A. Yes.

Q. Would you describe him for me, professionally?

A. I feel that he was the best captain in our fleet. He had the most time in as a master.
Q. The most what?
A. The most time as a master in which he served as a master.
  The exact dates I can't tell you, but we can produce that for you.
Q. You are a licensed master yourself?
A. Yes.
Q. How would you gauge his professional ability?
A. A-1.
Q. Have you observed him under way as far as navigation and ship handling and that type of thing?
A. Yes.
Q. When was the last time which you would have made note of that?
A. Well, 1974.
Q. And that was during this two-day visit that you mentioned?
A. Yes.
Q. Do you recall what the weather was like?
A. The weather was good.
Q. There were no problems?
A. Nothing out of the ordinary.
Q. How about the mates? How are they employed?
How about the chief mate; how is he employed?
A. He is assigned by our company. He is a member of the
union, but we assign the mates.

Q. How long has he been with you, the chief mate?
A. I don’t recall. We would have to check the records.

Q. Did you know him personally?
A. Yes.

Q. How long have you known him?
A. I would say 20 years, before I came to work for this company.

Q. Did you ever have occasion to overseeing their loading or discharging operations of the vessels when they came into port, you personally?
A. I had been on the ship when they were loading.

Q. Did you take note of what special procedures were being used for loading or discharging?
A. No; I didn’t.

Q. You have sailed as a master; is that correct?
A. Yes.

Q. Have you sailed as a mate also?
A. Yes.

Q. Have you loaded or discharged?
A. Yes.

Q. How about this taconite cargo? Have you handled that in a supervisory capacity?
A. Very little taconite, because when I was sailing, it was just coming into the picture.
Q: What kind of cargo is taconite?
A: It is very dense, heavy.
Q: If in a hold of the Fitzgerald, if we had, let's say, a cargo of bulk ore and taconite, which would be higher, which would be peaked higher, the taconite or the bulk ore, would you say?
A: The taconite would spread out more. Volumewise, there is not much difference.
Q: There is not much difference?
A: No.
Q: Do you know what the angle of repose of taconite might be, Captain?
A: No, I don't.
Q: Do you have any idea of the characteristics of taconite on a rolling ship, let's say? Is it very stable?
A: As far as I know, it is quite stable. I have never heard of any problems.
Q: Do you think if there were any problems it would have come to your attention in your capacity with Oglebay-Norton?
A: Yes.
Q: How many ships does the company have, Captain?
A: 20.
Q: How about the other mates? How are they picked? How do you employ them?
A: We assign them primarily by seniority with the various
ratings of which they possess.

Q. Do these people come from the hall, or do you have
these people pretty stable with the company?

A. We assign the ones that were there on the previous
season. Where we have openings, the union fills in the gaps.

Q. How about the unlicensed people, Captain; how are
they employed?

A. The same way. We take our senior employees, place
them, and then the union referral center fills in the
vacant spots.

Q. On the company policy, as far as this ship, how many
hatches has it got? 21?

A. 21, yes. That is right.

Q. And what kind of a hatch securing arrangement was on
the Fitzgerald?

A. Well, we have hatch clamps, as we call them, and they
lock. They are spaced, I believe, on two-foot centers.

Q. Does the company have a policy as far as, first of
all, securing these hatches whenever the vessel sails?

If so, what is that policy?

A. We don't have a policy spelled out.

There is the mate or the mate. That is part of his
job to see the ship is battened down.

Q. Would that be whether she is in ballast or loaded?

A. Yes.
Q. Both conditions or either one?
A. Right.
Q. Right, what?
A. Both conditions.
Q. Would you say, as a mariner, that they should be battened down?
A. At all times, when she is loaded.
Q. How about in ballast?
A. In ballast, you probably wouldn't have every clamp on. You might have every other clamp or you might have one and skip two, depending on the weather, I guess.
Q. Do you feel that on the trip in question, with your experience, that those hatches would have been secured on the Fitzgerald?
A. Definitely.
Q. All the clamps?
A. Yes.
Q. What keeps them watertight, if anything? Do you have a steel plate?
A. There is a gasket on the lower underside of the hatch cover.
Q. What is that gasket made out of?
A. That particular ship, it is rubber or synthetic rubber. It is set in a channel on the bottom of the hatch cover.
Q. It is set in a channel of --
A. On the bottom of the hatch cover.
Q. Does that make an effective seal?
A. Yes.
Q. Is that ever tested or required to be tested by the Coast Guard or American Bureau for tightness?
A. It is tested for tightness if you are carrying grain by putting water on top. Otherwise, it is a visual inspection.
Q. Would you know whether the hatch covers had been tested in the last year for watertightness?
A. A visual examination.
Q. What would that visual examination entail?
A. Just looking at the combing and the cover.
Q. You would have one plate sitting on another?
A. No. It would be when the covers are off.
Q. Is there any inspection when the cover is on to insure the tightness; is there any way of conducting such an inspection?
A. It would be just visual.
Q. You indicated a hose test before. That would be with the hatch cover on, wouldn't it?
A. Right.
Q. And clamped down?
A. To be sure you had tension on your hatch clamps, you have them tightened.
These hatch clamps are adjustable to make sure --
it is similar to a lock on a trunk.

Q. Whose responsibility is that to insure that they are
properly adjusted?

A. The mate.

Q. The chief mate?

A. Yes; right.

Q. Do you know, to your knowledge, if they had been
checked or adjusted, when they were last checked or adjusted
on the Fitzgerald?

A. I really don't know.

Q. Would such a report be made to you in your capacity?

A. No. The ship was in for a special survey in 1974
at which time the American Bureau and the Coast Guard
and our representative had looked at all this equipment.

Q. Do hatch covers have a way of becoming damaged in
service? Would that be a fair statement?

A. Yes.

Q. To your knowledge were there any repairs done to the
hatch covers or hatch coming done in the last year?

A. I don't recall.

Q. Could any have been done without your knowledge?

A. I would think I would know, but I don't have the record.

Q. By means of repair lists, you mean?

A. Yes.
Q. Is that a normal thing, to repair hatch combings or hatch covers on this class of vessel?
A. It is normal to repair them, sure.
Q. Do you mean is it normal to get a lot of damage?
A. No.
Q. Captain, I would like to direct some questions about the ballasting system on the Fitzgerald.
I wonder if you could describe that for me to the best of your knowledge.
A. The ballast system?
Q. The ballast system.
A. Well, each tank -- there are eight tanks per side, a total of 16 ballast tanks, and each tank has a pipe going into it.
Q. Do you know what size?
A. You pump water -- I believe on the Fitzgerald it is an eight-inch pipe.
Q. How many pumps do you have that can be utilized on the ballast system?
A. Four.
Q. Do you know what their capacity is?
A. The main pumps are 6000 GPM. There are two of those, and there are two smaller stripping pumps.
I don't really know the capacity of those.
Q. Is that all you have: two main cargo pumps and two stripping pumps?
A. They are not cargo; they are ballast pumps.
Q. Ballast pumps? You have two main ballast pumps and two stripping pumps?
A. Right.
Q. Is that total or on one side?
A. That's total.
Q. We have a plan here, Captain. It is called Exhibit 6-H. I would like for you to look at it, please, and would you refresh your memory?
How many ballast pumps are indicated on that exhibit, main ballast pumps?
A. It looks like four.
Q. How many stripping pumps?
A. Well, there should be two. We should have a layout.
Q. What is the title on that plan, Captain?
A. This is a Diagram of the Bilge and Ballast System.
Q. I have one other exhibit here, Captain, that I would like to have before you as you answer.
It is 6-G. It is entitled "Diagram Arrangement of Ballast Piping Details," and so forth.
Take a look at it. Your testimony is that you can't see the two stripping pumps on there, but you see four main ballast pumps, is that right?
A. Yes. This drawing doesn't show the pumps. I can produce this information for you though. I don't have it with me.

Q. I am just trying to get your best information.

When was the last time you had anything to do with the ballast system on the Fitzgerald?

A. I don't recall. I never got involved in the ballast system.

Q. If I ask questions and if it has been some time and you are not familiar, that is all right.

How about the vents on those ballast tanks?

Are you familiar with those?

A. Yes.

Q. Can you describe those for the Board, please?

A. Well, the size --

Q. The size.

A. I believe it is an eight-inch pipe going from the top of the ballast tank, which comes up the side of the ship and terminates above the spar deck.

Q. With a screw-down cap cover?

A. That is right.

Q. What is the purpose of that cover on a system; what's the purpose of that cover on a vent line?

A. To keep the water out and the sea out.

Q. To keep the sea out?

A. Right.
Q. Could you look at that diagram and give us an idea how high they are off the spar deck?
A. You should have a drawing there showing the air vent. I believe it is around 14 inches.

(Pause.)

It is 14 inches.

Q. Is that the top of the eight-inch pipe, or is it the top of the cover cap?
A. The top of the pipe.

Q. In other words, let's take a hypothetical situation: If we had water more than 14 inches above the spar deck and that cover was off, water would enter through that opening; is that correct?
A. Right.

Q. You say it had a screw cover. Would you describe that for me and tell us how that operated?
A. It is turned on by hand and screwed on with a right-hand pipe thread.

It is like a mushroom.

Q. You have this cover on top of this eight-inch cap on top of this eight-inch pipe?
A. Yes.

Q. You screw it down. What does it do; does it seat against the pipe, or is there a gasket, or what is the
arrangement?

A. There is no gasket.

Q. It just sets against the pipe?

A. Yes.

Q. Metal-to-metal contact; is that right?

A. Yes.

Q. And to open it, you would raise this cap cover?

A. Right.

Q. Let's say we kept unscrewing this cap cover.

Could it come all the way off, or is there a stop on it that would prevent it from --

A. There is a stop lock, a locking bolt.

Q. Can that locking bolt be bypassed?

A. Not to my knowledge.

Q. Could you describe for us on the Fitzgerald or otherwise what the normal procedure is for opening and closing these vent caps when you ballast and deballast?

A. They have to be open when you ballast and deballast.

Q. Why is that?

A. Why is that?

Q. Why do they have to be open when you ballast?

A. You have got to have a place for the air to go.

If you put too much pressure on your tanks, the air is displaced --

Q. The air is displaced by the --
A. -- the incoming water.

Q. And do you know how fast that water could be pumped in?

A. 6000 gallons per minute if you are working on one particular tank.

Q. That would raise quite a bit of pressure within the tank, wouldn't it?

A. Yes.

Q. Can you give us an idea how much pressure that would be?

A. No.

Q. With the vent closed?

A. No. As I pointed out before, we can produce witnesses that will give you this information.

Q. Who would that be?

MR. MURPHY: Excuse me. I find we do have a photograph which displays those vents.

Perhaps that would be of assistance to the Board and to Capt. Jacobsen with respect to him describing them.

CAPT. ZABINSKI: Mr. Chairman, I would like this photograph to be introduced as an exhibit at this time.

COMMANDER LOOSMORE: No. 19, sir?

REAR ADMIRAL BARROW: The photograph which shows the spar deck of the Edmund Fitzgerald with some vents in the foreground will be marked for
identification, No. 19.

(Exhibit 19 was marked for identification and made part of the record.)

By Capt. Zabinski:

Q. Captain, can you hold that photograph while I question you on it?

Would you say that this photograph shows the arrangements of the vents as they were on the Fitzgerald on the day of the accident, November 10?

A. Yes, there were two vents per tank.

Q. Two vents per tank?

A. Right.

Q. Are they located in the same area of the tank or are they remotely located from each other?

A. They are right next to one another.

Q. And in the photograph here, we show two vents. Could you give us an idea what tank they may have served?

A. I would say No. 2.

Q. No. 2.

By referring to the exhibit, this is the plan on the ballast piping and vent arrangement, and can you tell us on what part of the tank they went into?

A. Forward.
Q. Have you checked on the exhibit?
A. Forward end of the tank.
Q. Forward end? Possibly No. 2 tank, is that what you said?
A. That's where you normally have them, yes.
Q. Could you tell by looking at them whether they are open or closed in that configuration?
A. No, I can't.
Q. How could you tell by looking at them whether they are open or closed?
A. Well, I would say that a person like a mate, that sailed on the ship could tell, but not having been close to the ship or sailed on it, I couldn't tell you whether it was opened or closed.
I am assuming they are opened, though.
Q. Do you know if there was an indicator on those caps to indicate if they were opened or closed?
A. No. It is just a visual thing.
Q. But the threads are inside the pipe?
A. Right.
Q. Or inside the cap?
A. It is either up or down; it is a mushroom.
Q. In relation to the deck, is that what you are talking about?
A. Right.
Q. Why do the vents have to be opened when you are de-ballasting a cap?
A. Well, to prevent a vacuum.
Q. Have you, in your experience, have you had any ships that have been damaged because of these vents being opened or closed when you are either ballasting or deballasting, when a vessel was either ballasting or deballasting?
A. I have heard of damage to the side tanks because of leaving the vents closed. I have never been directly involved myself.
Q. Has that happened to any of the Oglebay-Norton vessels?
A. Not that I know of.
Q. How extensive would the damage be on an overpressure or underpressure situation?
A. Well, they would probably just push the side tank plate.
Q. When you are referring to that, is that the bulkhead that is common with your cargo tank?
A. Right.
Q. Can we have some indication, preliminary indication, that the Fitzgerald may have been taking on water shortly before the casualty, may have been taking on water through some vents?
A. Yes.
Q. What vents would you think this may have been?
A. I assume they are talking about the cargo or ballasting
tank vents.

Q. Just given that statement that they were taking on water through these vents, could you give us a guess, if you will, and tell us, would these vents have been damaged; would they have been opened, or what circumstances could have existed that created a problem?

A. I have been trying to figure that out for seven days, if this was the case. I really don't know. If it was the case, how they came off or broke off or whatever happened, I really don't know.

Q. Could it have been possible that these vents could have been sheared off under certain rough sea conditions?

A. I can't imagine the sea doing that.

Q. They are very sturdy, then?

A. Right.

Q. Suppose -- is it possible that the caps could have been dislodged by rough sea conditions?

A. I can't see how it is possible either or could have been possible.

Q. Is it possible that they could have been left open while the vessel was under way?

A. It is possible, but the cap would still be on.

Q. I beg your pardon?

A. It could have been left open, but the cap would have been on, which would not permit much water to get in.
Q. Also there are indications, preliminary indications, Captain, that the fence may have been damaged. When they talk about fence, what part of the vessel are they referring to?
A. They are apparently referring to the wire cables that are stretched through these stanchions, as these photographs show here.
Q. Would you describe that for the record, please?
A. Well, the stanchions are three-quarter or one inch by four and they fit into sockets on the gunwale and they have holes, two holes or three, in which a cable is stretched from one end of the ship to the other.
Q. But what is the purpose of this fence, Captain?
A. Safety.
Q. What?
A. To keep one from falling off of the side, safety. It is just like a handrail.
Q. Is this for loading and discharging and so forth?
A. At all times.
Q. In rough weather, would a crew member be transiting the main deck, normally?
A. Normally, no.
Q. How would he get from one end to the other?
A. From the side tunnels, which are at the main deck level. There are passageways from one end of the ship to the other.
Q. On either side of the vessel?
A. Right.
Q. So when they say the fence was broken, that would be the railing, that protective railing is what you are talking about?
A. As you know, that is hearsay.
Q. Could a sea condition damage this fencing?
A. I can't figure out how it could, really.
Q. Have you ever experienced a storm condition on the Great Lakes that you did have heavy weather damage?
A. Yes, I was on the big Armistice Day storm in 1941, which was very bad.
Q. Did the vessel fencing suffer any damage?
A. No.
Q. What part of the vessel, if any, was affected?
A. Forward gammon.
Q. Was it smashed in or what?
A. Right.
Q. Wouldn't the damage be dependent on the way you were either going into or which way the sea and wind was coming from, Captain?
A. Normally, yes.
Q. Who normally on the ship supervises the opening and closing of vents, tank vents, Captain?
A. It could be the captain or the mate.
Q. Who actually does the opening and closing?
A. The actual opening and closing?
Q. Yes.
A. It could be one of the seamen.
Q. And he is directed by either the master or the mate?
A. Right.
Q. Who normally, say you are the master and you want to deballast, let's say, the No. 1 tank; what is the procedure and who does the actual deballasting?
A. The pumps are controlled from the engine room, of course, and it is a matter of going to the engine room, if you are in port. If you are on the lake, you would normally use the telephone, the ship's telephone, and call the engine room and tell them which room you wanted to ballast or deballast.
Q. Who operates the pumps?
A. The engineers.
Q. Who lines up which tank, which manifold is going to be used?
A. Well, the engineer directs that.
Q. What is the master or the chief mate? What do they do other than giving the instructions?
A. That's it.
Q. And also advising the deckhand to open or close them, is that right?
A. Right, the deckhand or the AB.

Q. How do you know when the tank is stripped out to de-ballast them?

A. We have two ways; we have a ballast gauge and we have sounding pipes which you put a sounding rod in and it is marked in inches and feet.

Q. Does this show in this photograph on Exhibit 19?

A. The sounding pipes show.

Q. Does it show on this photograph, Exhibit 19?

A. Yes.

Q. Would you point to it, please?

A. It is this small pipe here (pointing).

Q. Do you want to describe that, please?

The witness indicates a small pipe just forward of the two vent lines as vent pipes; is that correct?

A. Yes.

Q. How does it sound? How do they sound it?

A. With a sounding rod, which is a piece of -- normally about five-eighths rod, which is graduated in inches and feet, attached to a line, and dropped down to the sounding well until it hits the bottom of the ship, and you pull it out and see what the water level is.

Q. Do you let the tanks overflow normally when ballasting?

A. Normally we don't.

Q. You sound them to see when they are near full?
Is that the way it is done?

A. Yes, and as I pointed out, there are gauges in the engine room area of the ballast manifold. They could see it there. Usually they are mercury gauges.

Q. About the characteristics of the Fitzgerald, how fast a ship was she?

A. She ran around 16 1/2 to 17 miles per hour.

Q. Do you know what her fuel consumption was per day?

A. I don't have those figures with me.

Q. Who would have those figures?

A. I could produce them in the morning. We have them in the office, but as a check, you have the engineer's log, which would show how much fuel is consumed in the trip. You have this information.

Q. The previous testimony indicated that the engineer's log is not sent to the company, which is kept aboard the ship; is that right?

A. I didn't say that. I think Mr. Murphy did.

Q. Is the engineer's log sent to the company?

A. This is a copy similar to your deck log, which I am quite sure Mr. Murphy pointed out.

CAPT. ZABINSKI: The ones that you produced this morning, these extracts of the logs, is that correct?

MR. MURPHY: I am sure those are the
documents to which the captain is referring at this
time.

By Capt. Zabinski:
Q. Would these contain the fuel consumption data?
A. Right.
Q. Would you describe the Fitzgerald as far as ship
handling characteristics, if you know?
A. I never handled the Fitzgerald, but I understand she
handles well, and you also have the book in your exhibits
which describes the trial run on that ship as far as turning
radius and circles, et cetera, stopping ability.
Q. How about stability, Captain? What can you tell us
about the stability, loaded and light conditions, of the
Fitzgerald?
A. I can just generally say that she was very stable.
That's about it.
Q. Under light conditions? How was she without any
ballast in her?
A. Without any ballast, you wouldn't be out in the lake
with her. The only time with ballast taken out completely
would be during lay-up, other than when you are loading.
Q. Other times, you have ballast in her?
A. When you are going light, you have to have ballast in
order to keep your propeller down in the water.
Q. To keep the propeller down?
A. Right.

Q. Do you need ballast for stability considerations, to your knowledge?

A. No; to my knowledge, no.

Q. And loaded, did you indicate that she also has a good stability characteristic?

A. Yes.

Q. Do you know if there were any stabilities performed on the Fitzgerald?

A. I believe at the time that she was built there were, yes.

Q. Are there any sister ships to the Fitzgerald?

A. There was. There isn't any more. The Arthur B. Homer was, but she is in the process of being lengthened.

Q. How about cargo shifting aboard vessels that Oglebay-Norton operates? Have you ever had any reports of cargo shifting?

A. No, I never have.

Q. I am talking about specifically taconite. Do you have any reports from any vessels?

A. No, sir; never.

REAR ADMIRAL BARROW: We have been going for about an hour and a half. I would like to have about a 10-minute recess.

We will reconvene about 12 after 3:00.
(Recess had.)

REAR ADMIRAL BARROW: Let the record show that the Board reconvened at 3:18. Capt. Zabinski?

By Capt. Zabinski:

Q. Captain, I would like you to look at Exhibit 6-D, which is entitled "The Capacity Plan," that has been introduced here, and I would like for you to direct your attention to the freeboard:

First, what is the date of that plan, Captain?

A. September 9, 1958.

Q. Now, could you, by referring to that exhibit, tell me what the designated freeboard, the summer freeboard was?

A. The summer freeboard?

Q. Yes.

A. Not the draft?

Q. Not the draft, the summer freeboard.

A. 12 foot six and three-quarter inches.

Q. Now, what would have been the draft; could you give me the draft corresponding to that summer load line?

A. 26 feet six and one-quarter inches.

Q. 26 feet six and one-quarter inches?

A. That's on this now, but you might refer to that loading manual to be sure that that's it.

Q. All right. Would you do that?

What is the date of the loading manual, Captain?

Q. Now, was that an original loading manual, or that revised one, had it been in existence?

A. That was prepared at that time.

Q. Did you have one in existence before October 5, 1973?

A. No.

Q. That was the first one?

A. Yes.

Q. What did you do for loading instructions prior to October 5, 1973, Captain?

A. We didn't have a loading manual as such.

It shows the capacity on the capacity plan here.

Q. But why October 5, 1973, did you suddenly need a loading manual or feel it desirable to have a loading manual prepared?

A. On some ships it was compulsory that we have a loading manual prepared if there were modifications.

Q. Were any modifications made to the Fitzgerald in October of '73, to your knowledge?

A. No. She was converted to oil, as Mr. Murphy pointed out, and I don't have the date.

Q. Would converting the vessel from coal to oil necessitate a new loading plan?

A. I don't think so. I voluntarily had loading manuals prepared for a lot of our ships.
Q. Why was that?
A. I just felt it was good practice.

Q. It was good practice?
A. Yes.

Q. What did the loading plan provide the people on the ships that they didn't have before?
A. That was a technical look at what the ship -- the way she should be ballasted.

I think primarily the concern on the Great Lakes has been in ballasting ships.

Q. Ballasting? What's the problem with ballasting, Captain?
A. I think you will find in the record that most of your disasters have been with ships that have been light.

Q. Could you enlighten me why ballasting creates a problem?
A. Improper distribution.

Q. And what does distribution of ballast, what makes it proper or improper?
A. Leaving certain tanks too slack or maybe too much water in one place.

Q. What would happen if you let the tanks slack?
A. You could put a strain on the ship by improper ballasting.

Q. What kind of a strain?
A. A strain on the structure.
Q: Could you describe that for me a little more, such as longitudinally or --
A: Longitudinally.
Q: What could happen if a ship is overstressed in a longitudinal manner?
A: What could happen?
Q: What is undesirable about large longitudinal stresses?
A: Your steel starts showing stress marks, and you would have to replace the plates.
Q: Could it also --
A: These things come up in your inspection, your annual as well as your five-year inspection surveys.
Q: Would you say that fractures and that type of thing were indicative of overstressing the vessel, Captain?
A: Right. They could be, yes.
Q: They could be; is that your answer?
A: Yes. It depends upon where these fractures might show up.
Q: Well, where would one expect to find a fracture due to this overstressing because of ballast problems?
A: Well, a number of years ago when we had one disaster, the Coast Guard was of the opinion that the ships were falling on the bottom, but apparently there had been a change in everybody's thinking.

Now they are assuming that the stresses are on the
deck, so I think we are all speculating.

Q. What is your opinion?
A. Frankly, I don't have an opinion.
Q. Do you have any experience?
A. I have seen some stressed bottom plates on ships, yes, and which we removed and replaced with new plates.
Q. Have you seen stressed spar decks?
A. I have seen some damage. There may be loose rivets after a severe storm.
Q. Was there any such stress indication on the Fitzgerald the last time you saw her?
A. No. I had not seen any on her.
Q. Have you ever received any reports of any such stress indications on the Fitzgerald?
A. No.
Q. With respect to bottom plates?
A. No.
Q. Or on the spar deck?
A. No.
Q. If you would refer to the loading manual dated October 5, Captain, and tell me what that indicates the summer freeboard to be?
A. 11 feet two inches.
Q. 11 feet two inches?
A. Right.
Q. What would a corresponding draft be to a freeboard of 11 feet two inches?
A. 27 feet 11 1/2 inches.
Q. 27 feet 11 1/2 inches?
A. Yes.
Q. I show you Exhibit 17-B which is before the Board, indicating the current load line for the Fitzgerald, and I ask you to tell the Board what the permissible load line or freeboard was for the Fitzgerald currently in effect?
A. Well, at this point, she couldn't load any deeper than her winter marks.
Q. What were the summer marks?
A. Pardon?
Q. What was the summer freeboard?
A. What is the summer freeboard?
Q. As permitted by the load line certificate?
A. This says 11 feet two inches.
Q. The same as in your loading manual; is that right?
A. Right.
Q. As I understand your testimony, in 1958 the Fitzgerald was permitted a freeboard of 12 feet 6 3/4 inches.
In October of 1973, which is also currently in effect, the permissible freeboard was 11 feet two inches, some one foot four and three-quarter inches greater than what she was when she was built.
A. That's because the rules were changed.

Q. What rules are those, Captain?

A. The load line rules.

Q. When were they changed?

A. At the time the draft was changed, and I don't know exactly when it was.

Q. Do you know how long the Fitzgerald has been permitted to carry a freeboard of 11 feet two inches?

A. That's correct.

Q. Do you know how long the Fitzgerald has been permitted to carry a freeboard of 11 feet two inches?

A. I don't recall. I would have to refer to records.

Q. Have there been any structural changes or modifications?

A. Not to affect that, no.

Q. In the Fitzgerald?

A. That's right.

Q. That would permit an increased freeboard based on those considerations?

A. No, sir.

Q. It is your testimony then, Captain, that this increase in freeboard came around because of a change in load line regulations?

A. Right.

Q. Or the application thereof?
A. Right.

Q. Captain, again, please be seated and make yourself comfortable.

These are very long ships, Captain, as I guess the Fitzgerald had the reputation of being the biggest vessel on the Great Lakes at one time; is that correct?

A. That's right.

Q. You have 21 hatches for loading cargo. The distribution of cargo was quite critical.

A. You say it was?

Q. You say distribution of cargo in a vessel of that size is quite critical; isn't that correct?

A. That's right.

Q. What would happen, Captain -- well, let me ask you this: The mate is loading the ship. He is the one responsible for loading the cargo on the ship?

A. Right.

Q. What guidelines, what parameters, what indications does he use to be sure that his vessel is properly loaded, fully loaded, but properly loaded?

A. Well, it is based on the original capacity plan when the ship came out, and in more recent years with the loading manual and experience.

Q. Do you think if you follow the loading manual you would have been properly loaded?
A. Right.
Q. Does a loading manual indicate how much should be placed in each hatch?
A. Yes.
Q. Exactly, or is there a variance?
A. Well, there is a variance.
Q. How much variance?
A. Oh, I would say maybe 50 tons.
Q. Between each hatch?
A. Yes.
Q. How does a mate know when he has got a full cargo on board?
A. By reading his draft marks.
Q. And where are they located?
A. Forward, aft and midship.
Q. He has draft marks on the bow of the vessel?
A. Yes.
Q. And he reads those?
A. Yes.
Q. In the case of the Fitzgerald, let's say, loading to a maximum, you indicated now that the permissible was 27 feet 11 1/2 inches?
A. Right.
Q. The load is by the bow down to those marks; is that correct?
A. Well, the whole ship.
Q. Okay, but the bow --
A. Keeping in mind to keep the vessel a little bit deeper by the stern for better handling.
Q. How much do you normally allow?
A. Four to six inches.
Q. So it is a little lighter in the bow and a little deeper in the stern; is that correct?
A. Not necessarily.
Q. How about this four to six inches?
A. In a general statement, yes, but it might not be right in the bow.

It could be a couple of hatcheshack where you lighten up.
Q. Let's assume he is on an even keel. Assuming the Fitzgerald is loaded to full capacity permitted by the load line, he loads to 27 feet 11 1/2 inches forward and 27 1/2 feet 11 1/2 inches aft and he is on an even keel.
A. It should be the same in midship.
Q. The same?
A. Right.

Q. That would indicate what, Captain? Would it indicate that the ship was properly loaded?
A. This draft that you are talking about now, are you referring to this particular trip?
Q. Well, I am referring to -- no, Captain, a hypothetical trip that he could load to his summer marks, which you indicated before would be 11 feet two inches freeboard or equivalent to a draft of 27 feet 11 1/2 inches.
A. I would normally feel that he would probably be loaded normally 27 feet nine inches forward and deeper aft.
During the course of your voyage, of course, you are using fuel and your stern comes up.
Q. Where are the fuel tanks on the Fitzgerald?
A. Just aft of the last cargo hatch.
Q. Are these double-bottom tanks or other kind of tank?
A. They are independent of the ship's structure. What I mean is, one side is not common with the shell. We've got them on all sides of it.
Q. How would a mate know that the vessel was, say, fully loaded? How would he know that it was in a stressed condition one way or another, because of loading?
A. Well, if he made a mistake loading, obviously it would be in a stressed condition.
Q. How would he know; what mistake would he have to make?
A. I would say that he wouldn't know.
Q. What indications are there on a ship to the operating personnel that the vessel is in an unstressed condition or an ideal condition, let's assume?
A. I guess I can't answer that.
Q. Is there any way that you people have to know this?

How would you know, not only on the Fitzgerald, but any
ship, as a professional man or responsible for the loading,
a mate, a master, how would you know?

A. Well, do you want to be a little more specific with
your question?

Are you saying maybe a foot or two deep on one end or
what?

Q. Heavily stressed, almost unsafely stressed, how would he
know that the vessel was in that condition either because
of ballasting or loading or anything else?

A. Well, ballasting, of course, you would know what water
you had in your various tanks.

Q. But how does that tell you, then? Just the water
being there, would that be an indication that she was
heavily stressed?

A. It really doesn't tell you other than the fact that
you do have your distribution wrong.

Q. Captain, could you give me the capacity in tons of
the No. 2 ballast tank, the starboard ballast tank?

A. I would have to refer to the document.

Q. Please refer to any notes that you may have.

Is it the No. 2, you say? No. 2 starboard?

A. Yes, No. 2 starboard is 1095.

Q. 1095 tons?
A. Right.

Q. Assuming a loaded ship, Captain, if you will, fully loaded, 27 feet 11 inch draft, and we take No. 2 starboard ballast tank and we fill it with water, just that tank alone, the Fitzgerald; how much would that vessel list, in your opinion?

A. Well, I would say possibly 15 inches.

Q. 15 inches to starboard?

A. But, I feel that, rather than me trying to give you good answers, that we should have a naval architect here or have it calculated.

Q. Fine. I appreciate that I can get it from the naval architect, but I am talking about the operation of the ship. Captain, I would like to get some answers.

A. Frankly, I have never been on a ship that was loaded with water in one ballast tank, which was full on one side.

Q. But is it possible to load up one tank without loading any other ballast tanks?

A. Sure, but normally you wouldn't put water in a loaded ship on one side.

Q. Let's say we have had a collision, Captain; that would fill it up, too, would it not?

A. Right.

Q. Let's say the vessel was unfortunate enough to have a collision; you would have to make some estimate as to what
your damage was going to be; right?
A. Right.
Q. This is what you were indicating by your answer here which would go over about --
A. 15 inches.
Q. Loss of 15?
Do you have any idea how much of a stress that would put, longitudinal stress that would put on the Fitzgerald?
A. No, I don't.
Q. Do you think that the people on the Fitzgerald, the captain, chief mate, who are the two people according to your testimony that would be most conversant with the cargo and vessel characteristics, do you think they would know this information?
A. I really don't think they would know how much stress there would be.
Q. How about the listing after loading up No. 2 starboard tank, do you think they would have a good guess on it?
A. If they have the water, I think they can check it. They are right there; right?
Q. They can put it in and check it?
A. Right.
Q. Do you know if there are any -- is there any information available to the master or to the mate or to any engineer or any operating personnel that would give them this
information on board the ship?

A. I would say no. In a situation that you are describing, one tank on one side full of water, if this condition existed, the people on the ship would know how many inches over it is. I am trying to give you an answer to the best of my ability.

Q. If that accident had occurred or some condition occurred, they would know?

A. They would know, sure.

Q. After the fact, so to speak?

A. Right.

Q. How about if we load No. 2 starboard and No. 2 port ballast tanks full of water, does the port ballast tank also hold 1095 tons?

A. Yes, sir.

Q. Do you know what the longitudinal stress of a vessel would be, the Fitzgerald?

A. No, I don't.

Q. Assuming she is in a fully loaded condition?

A. I would assume it would be minimal because this ship was loaded. She wasn't down to her winter marks.

Q. Where were her winter marks, Captain?

A. 17 feet nine inches.

Q. How did you arrive at that?

A. From the loading manual.
Q. From the loading manual?
A. Yes.
Q. What does the load line certificate indicate for freeboard, for winter marks?
A. 11 feet six inches.
Q. We have a freeboard of 11 feet six inches. What draft would that give us on your capacity plan?
A. 27 feet nine inches. I think if you will check, we were loaded to -- what? -- 27 feet six inches?
Q. 27 feet, you are referring to Exhibit 9, which is this bill of lading now?
A. Right.
Q. 27 feet two inches forward, 27 feet six inches aft?
A. It's five inches less than your draft.
Q. You are in the business to carry taconite, Captain. Why was she loaded less than the permissible draft?
A. Because of the local conditions.
Q. I don't understand.
A. In other words, we had plenty of water out in the lakes.
Q. Right.
A. But, Lake Superior, Lake Huron, they are connected by the St. Mary's River and you have draft restrictions in the river and also the St. Clair River.
Q. What is the draft restriction on this voyage?
A. I really don't know.
Q. You are assuming that the draft restriction was 27 feet four inches or thereabouts?
A. No, apparently it was less than 27 feet nine inches.
Q. How could we find out what the draft restrictions were if there were any?
A. We could find out.
Q. Would you let me know in the morning?
A. Yes.

CAPT. ZABINSKI: That's all I have.

REAR ADMIRAL BARROW: Captain, do you want to sit down and rest for a few minutes because I have several questions I want to ask.

EXAMINATION

By Rear Admiral Barrow:

Q. Just going back if we might, for a couple of minutes, to the openings in the spar deck, and you may have testified to this, but I would like it, perhaps, repeated. What is the normal position on those mushrooms after ballasting and deballasting?
A. Open, which would be up.
Q. Left up at all times?
A. Mushroom would be up.
Q. At all times?
A. They are not open at all times.
Q. Now, you have pumped your ballasts and you are loaded
and preparing for a voyage.

What is the position of the mushroom; is it down or up?
A. Up, depending on the weather conditions and weather report.

If you have good weather, you won't close them. If there is adverse weather, you close them.

Q. And in this particular situation, crossing the lake during a storm such as the one that we had here, would you have suspected those to have been closed?
A. Yes, sir.

Q. What other openings are there in the spar deck which leads below either to the tunnel or into the cargo holds?
A. On each end of the tunnel there is an air vent. Each ballast tank has a sounding pipe, which is about an inch and a half pipe with a cap on it.

Q. Is that all?
A. The spar deck.

Q. Also to the cargo holds themselves, what openings are there there?
A. There are scuttle hatches, but they are closed.

Q. How many scuttle hatches are there?
A. There are, I think, two per compartment and she has three compartments, one on either end of the --

Q. When you say compartments, what do you mean?
A. Through the mid-body part, forward end, and the No. 1
hold, you would get access through the forward cabin.

Through the aft end of the No. 3 hold, you would have
access through the other side.

Out of the spar deck, you have the scuttle hatches.

Q. Would you speak up, please.
A. It doesn't show them on this particular drawing.

Q. But that is your recollection?
A. That is my recollection, yeah. I don't see them on
the photograph.

Q. What size are those scuttles, to the best of your
recollection?
A. Oh, about 30 inches by five feet, maybe, if this ship
has them. I don't want to say positively.

Yes, here is one. It is the same height as your
regular hatches.

Q. Rectangular scuttles, are they?
A. Right, with a 24-inch combing.

Q. How are they secured?
A. They are hinged. They have clamps, like a door.

Q. Are there additionally round scuttles or just the
rectangular ones?
A. There are some round ones on some of the hatch covers
themselves. I couldn't tell you without looking at the
drawing.
Q. Are those quick-acting or are they secured?
A. Secured. I imagine on here it is with a wing bolt similar to what you use on a port line, this type of thing.

Q. You mentioned that the cargo hold has three compartments.
A. Right, with a screen bulkhead dividing the cargo space into three sections.

end Tk12
Q. Those are non-watertight screen bulkheads?
A. That is correct.
Q. And your bilge suction from the cargo hold is where?
A. Aft of No. 3.
Q. That's the only one that drains the cargo?
A. Port and starboard.
Q. Can you tell me if this vessel, when she was last dry-docked, the Fitzgerald.
A. March of '74, I believe. That would appear in the American Bureau records, which you have.
Q. You have had no noncredit drydockings or periods?
A. That is right.
Q. The loading manual is made up for a dual-belt loading?
In other words, the sequence is dependent upon and the values for stresses are made up on the basis of dual belt loading? Is that in actuality the kind of loading system that you always use?
A. Not always, no. Sometimes there are more than two belts, and sometimes chute docks.
Q. Would you refer to the loading manual and see if there are also stresses for other kinds of loading, other than the dual belt?
A. I don't know if I quite follow what you are driving at here.

This is primarily the distribution of cargo, no matter
whether it comes over a belt or out of a chute.

Q. But I think you will find, if you read the manual as a whole, that the values for the stresses are dependent upon the sequence of the loading and the loading equipment?

A. Right, but even when you load it at the chute dock, you don't take all the cargo in that particular hatch at one shot. In other words, you load all your hatches to the amount that they have in the pocket, and then you shift the boat and go through the same thing.

In other words, you are not getting the full impact in one hatch at one time. That is the point I am trying to make.

Q. Exhibit 9 is a bill of lading for bulk cargoes, and basically, this piece of paper has railroad weights of the pallets that were placed into the Fitzgerald for this specific voyage.

Is this the only piece of paper that you or management gets, which indicates the loading of these particular ships?

A. Yes. As far as I know, that's the only piece of paper. Now, I am not in the traffic department. They might get more correspondence.

If you notice in the column to the right, it gives the ship weight.

Q. There is no check, for instance, by the company itself on whether or not in actuality the ships are following the loading manual by having some sort of report and distribution
of cargo and this sort of thing?

A. Not on ore cargoes.

Q. Do you recall when the inflatable life rafts were first placed on board the Fitzgerald?

A. On the Fitzgerald?

Q. Yes.

A. I don't recall the date. We would have to check the records to find that out.

Q. What system of putting that inflatable raft in the water was there on the Fitzgerald?

A. We had a free-floating arrangement.

Q. Not a hydrostatic relief?

A. No.

REAR ADMIRAL BARROW: Do you have any questions?

COMMANDER LOOSMOORE: Yes, sir. I have a summary of the information that is to be provided, which I think can be given at the end of his testimony.

REAR ADMIRAL BARROW: Give it at the end.

Captain Wilson?

CAPTAIN WILSON: Nothing.

REAR ADMIRAL BARROW: Captain Zabinski?

BY CAPTAIN ZABINSKI:

Q. I have a couple of questions on the liferaft arrangements, Captain.
Where were they stowed, these inflatable liferafts?

A. To my best recollection, and we can check this out, but one was on the bridge deck or the Texas deck, as we refer to it on the Great Lakes, and one was on the boat deck aft.

Q. Do you recall where the forward one was in relation to the bow? Was it on either side or what?

A. It would be just after the pilot house on the starboard or port. I am not sure.

Q. Would it have been more to one side than it was to the center line, as you recollect?

A. I don't recollect.

Q. Do you know what kind of releasing gear, if any, was on it?

A. Free-floating, as I told the Admiral.

Q. Do you think that's a better way than the hydrostatic release?

A. I do.

Q. Why?

A. We started out with hydrostatic, and we thought this was better, and we went to free-floating.

Q. Why do you consider that better?

A. There would be no malfunction in the hydrostatic release. You are eliminating a possibility of a malfunction.

Q. Do you review the servicing reports pertaining to the liferafts?

A. They come over my desk. Most of them do, yes. They are
taken off in the fall of the year when the ship lays up
and is serviced, inspected and put back down in the spring.

Q. What we have here is an accident.
I wonder if you would venture an opinion for us.
The vessel had 29 people aboard. We have recovered
two inflatable liferafts, one lifeboat and half of another
lifeboat, and yet, we don't seem to have any people.

Can you tell us what your opinion is?
A. From what I heard about the storm, it was a wild storm,
and, of course, you haven't had any other witnesses appear
to describe it.

I just feel that with this amount of wind, as you
probably heard, it was up to 80 miles an hour at times.

This is what other ships reported in the area.

MR. MURPHY: Eighty knots.

A. Eighty knots, rather. The seas breaking over the ship,
I could see where normally with a liferaft you would board it
in the water.

I just think that they couldn't make it, although they
should have had their lifejackets on, but we didn't find any
bodies with lifejackets on.

Q. Do you have any explanation or do you have any idea as
to what might have happened?
A. I don't have any idea what may have happened, but it must
have happened awfully fast.
Q. It happened fast?
A. Right, because, as I said, we have not found any bodies with jackets on.
Q. Previous disasters we have had where there were a large number of victims recovered who had lifejackets on, you are aware of that?
A. Yes.
Q. In this case so far today, with all the search going on, the vessel carried, according to a certificate of inspection, a considerable number of lifejackets.
A. Right. We probably had -- I haven't reviewed it, but I would say probably 49 jackets. She had 200 percent lifeboat capacity, two 25-man rafts.
Q. The certificate of inspection called for 83 adult lifejackets that were probably on board.
A. Yes.
Q. How were they stowed? How were these jackets stowed? Can you tell us how they were stowed on the Fitzgerald?
A. They were stowed in the rooms and overhead, usually. There were jackets in the pilot house, in the bridge, and jackets in the engineroom spaces. And jackets in the lifeboats.
Q. Do you have a deck locker with spare jackets in them as some vessels do?
A. We didn't have that.
Q: You did not have that on the Fitzgerald?
A: No.
Q: We have a large number of jackets, and I don't have the exact number, but a large number of lifejackets were recovered.
   Where would they have come from?
A: From the lifeboats.
Q: Normally, how many lifejackets are in a boat?
A: Pardon?
Q: Normally, how many lifejackets are in a boat?
A: I would say probably four, but I am not positive. They were the flat type that were recovered which normally are under the ports of the lifeboat.
Q: Are these normally kapok or cork?
A: I don't believe these were kapok.
Q: Or cork?
A: I don't believe these were kapok. They could have been. I didn't take a good look.
Q: Does your company favor any special type of lifejacket, cork versus kapok?
A: We have been using -- well, the latest ones are the styrofoam type. I am not sure.
   We favor the best we can get.
Q: Being Coastguard approved?
A: And they are inspected every, once a year as you know.
Q: And the last annual inspection was when?
A: April of this year.
Q: Did you have to replace any lifejackets during that inspection?
A: I really don't know whether we did.
Q: Could we reconstruct that information?
A: Yes.
Q: Could you do that for us, or how would you find out?
A: I could find out.
Q: Would you do that and let the Board know and tell us how many jackets had to be replaced at the last annual inspection?
A: All right.
Q: We have the communication from the Master, evidently, sailing out of Duluth that he needed repairs to the FM radio.
A: Right.
Q: Are you aware of that?
A: Right.
Q: What repairs did he need, if you know?
A: Well, we are undergoing a change in our communication system on the Great Lakes where we are going to be able to have a touch-tone telephone, you might say, where a vessel can dial directly ashore or vice versa, and we have put this on in addition to our normal equipment, which is, and you have a letter there, that points out -- we have had four
means of communication. This is number five. The dialing
system, or touch-tone thing was just installed.
They have not gotten all the bugs out of it, but this is
just an extra added accessory.
Q When he says FM, he is talking about this touch-tone
installation?
A Right, and we have other FMs on there, VHF.
Q How do you know whether it was the touch-tone or --
A Because Lorain Electronics told me. They knew about it,
and they have been having bugs in all these dialing systems.
Q Did the Master call them from Duluth about the problem?
A Yes. This message came through Lorain. They are
quite aware of it.
Q But they are the ones that have been doing the
servicing on the Fitzgerald?
A Right.
Q We referred previously to a draft, 27 feet 2 inches
forward and 27 feet 6 inches aft.
Do people at the loading dock, such as Burlington
Northern, do they come down and read the ship's draft?
A Not all the time. The ship's personnel reads it to them.
Q You don't know the circumstances here, whether the
people actually read them, or whether it was called up to them?
A No, I don't.
Q Does anyone in the company analyze the loadings of the
vessel to see that they conform with this new manual that you
have since 1972?
A. No.
Q. Captain, what went wrong on the Fitzgerald in your
opinion?
A. Maybe I am on the wrong end of the stand.
Personally, I feel that about all we know is what we
heard from the Anderson or the Salty, and I feel those people
should have been up here first. Then we could analyze their
statements.
Now, we have heard that the ship has a list.
We heard that probably air vents were broken off or
air caps were broken off. We're just guessing.
It seems strange to me that the air vents were broke off.
The fact that you have the railing bent seems strange to me.
I mean, this thought went through my mind; that there could
have been a big log that washed on deck.
We don't know whether that railing was bent in or bent up.
If the railing was bent and the vents were off, a log could
have come aboard and sheared off the vents.
Q. Would such an incident, in your opinion, cause
sufficient damage to ultimately sink the Fitzgerald?
A. I really don't know. If the vents were sheared off
flush with the deck, then obviously you would get a lot of
water down there. But this is just hearsay. We really don't
know. We know that she had a list. We are positive of that.

Q. How do you know that?

A. From what the Captain of the Anderson indicated and also
    from the Coast Guard.

    I mean, this is one theory that I could come up with,
    because these fence rails are not that -- you know, there is
    not much resistance. I don't see how water could bend those
    things, and I can't see how water can knock off an air vent,
    so it had to be some kind of mechanical damage.

    About the only thing is if there are logs floating
    around, every once in a while somebody hits one with their
    propeller. I mean, this is a rarity, but it is possible.

Q. Let's assume that the air vents, both air vents to each
    tank, and you indicated it had two air vents?

A. Yes.

Q. The ballast tanks?

A. Yes.

Q. Let's assume where both air vents were somehow damaged
    and we put on the ballast pumps as we indicated. We have
    four ballast pumps.

A. Those ballast pumps have a capacity of 6000 GPM, but
    actually they had 7000 in capacity.

Q. Do you think all the ballast pumps that the vessel has
    would keep up with the ingress of water?

A. I think they would more than keep up, but I don't know.
Unfortunately, we don't have any witnesses to say exactly what happened.

I don't know whether the pumps were going --

Q. I am asking you for an estimate of flooding through two broken vents and the capacity of your ballast pumps, whether you think it could keep up or not?

A. Oh, yes. Sure, yes.

Q. How about three pumps? Would they keep up with the ingress of water with two broken air vents?

A. Yes. I would say two could take care of the vents, or even one. I would guess even one. I can't imagine water coming in that rapidly that a pump couldn't take care of.

CAPTAIN ZABINSKI: That's all I have.

BY REAR ADMIRAL BARROW:

Q. I have one question, and that deals with the radio equipment.

Can you confirm for me that in the forward house there are two battery-powered radios?

A. Yes, there are.

Q. And what are those?

A. One is VHF and one is AM.

Q. Each one having its own batteries and battery-charging operation?

A. Right. The AM is the emergency radio telephone that was mandatory here a few years ago.
Q. In actuality, for most all of the communications on the Lakes, what system do they use?
A. Well, it has swung over pretty much to VHF now. In fact, this is the last year AM radio will be on the Great Lakes.

REAR ADMIRAL BARROW: Does counsel have any questions? Mr. Murphy, do you have any questions?

MR. MURPHY: Yes. I have just two short questions, please.

BY MR. MURPHY:

Q. Captain, you have earlier described in your testimony the trade of this vessel from Toledo to Silver Bay. I understand on this relationship she happened to go to Superior; is that correct?
A. Yes.

Q. Is there any significance in that, or would you explain the reason why she happened to go there rather than Silver Bay? Tell us for the record?
A. It is just another customer that we are servicing.

Q. The order on this occasion was out of Superior rather than Silver Bay?
A. To Detroit, two different customers.

Q. Do you have a flagship in your fleet?
A. Well, yes.

Q. What ship of those in the fleet is generally designated
as the flagship?

A. I should have said we did, because the Fitzgerald was the flagship.

Q. And why was she designated as the flagship?

A. She was the largest and the newest.

Q. And considered also to be the best?

A. Yes.

Q. And with respect to the Master of the Fitzgerald, is it a fact that you consider your most experienced and best person to go on the flagship?

A. He was our top skipper.

Q. Captain, after the vessels are loaded and are en route to their destination, is there a location where an agency of the United States Government checks as to whether or not their drafts are proper and their load line requirements are complied with?

A. Well, going through the same SaulteLocks, the Corps of Engineers checks the drafts.

Q. Is that done on a regular basis?

A. Yes, every trip.

Q. And what happens if the draft is not correct or the load line, if the load line is not complied with? What happens?

A. Well, I assume they would probably notify the Coast Guard, and the Coast Guard would notify us.

Q. You are notified; is that correct?
A. Yes.

MR. MURPHY: I have no further questions.

REAR ADMIRAL BARROW: Mr. Schuchmann?

MR. SCHUCHMANN: No questions.

REAR ADMIRAL BARROW: Commander Loosmore, you have one more item or a summary?

COMMANDER LOOSMORE: Yes, sir.

BY COMMANDER LOOSMORE:

Q. Did you say that the Master does have information on board with which he can calculate the stability situation of the vessel?

A. I said no.

Q. He does not?

A. No. The ship had a stability test when it came up. That is either with the Coast Guard or American Bureau, which could probably be dug up.

CAPTAIN ZABINSKI: If I could interrupt, I would appreciate this being brought in as part of the documentation and presented to the Board or information that the vessel was not inclined to have this. I am very interested to see this.

THE WITNESS: I was not with the company when she was built. It started in 1958, and I started with the company in 1962, I believe.
Q. I would like to ask the same question with respect to longitudinal stress. Is that information available to the Master?

A. No.

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

(Discussion had off the record.)

REAR ADMIRAL BARROW: Back on the record.

I think at this point I would like Commander Loosmore to summarize, if he can, the additional information which you are going to provide.

COMMANDER LOOSMORE: It was stated that bills of lading could be provided for voyages, other than the voyage in which the vessel was lost.

I think perhaps we would like to see the bills of lading for the '75 season, if possible.

Could you provide information on the characteristics on taconite as a cargo, and particularly angle of repose information if that is available?

MR. MURPHY: I think, if I may respond to that, the best evidence of that is the testimony by the witness and perhaps other witnesses with respect to being qualified to present that information.

REAR ADMIRAL BARROW: I believe this witness has testified he didn't know what the angle of repose was.

MR. MURPHY: That's correct. If I am
incorrect, please correct me, but I believe that would
have to be testimony of mates and other people who are,
in fact, accustomed to loading vessels and have made
those observations. Is that correct?

THE WITNESS: Of course, when you
are talking about the angle of repose, you are talking
about a cargo with sides on it, and it is not like a
big pile out in the field. That's one thing.

MR. MURPHY: We'll ascertain whether
such information may be available.

BY COMMANDER LOOSMORE:

Q The Captain said he would provide information on the
daily fuel consumption of the Fitzgerald.

Again, I would think this would be for the '75 fuel-
consumption season?

A Excuse me. I might point out, Commander, when you load
cargo of taconite or regular ore, the dock trims it either
with a chute going up or down or a belt unloader which is
movable.

The cargo is trimmed, so it is not like you are making
one big pile with a peak on it.

Q The Captain said he could provide stability test
information?

A If we have it. I will see what's in the records.

COMMANDER LOOSMORE: It was mentioned
earlier in the proceedings that messages, copies of the messages from the vessel to the home office would be provided?

MR. MURPHY: For what period, sir?

COMMANDER LOOSMORE: I believe we were talking about the particular voyage from wherever it had gone to Superior.

BY COMMANDER LOOSMORE:

Q. Captain Jacobsen was going to provide the date upon which the vessel was converted from coal to oil and records of when the load line was changed, the load line requirements were changed, when the load line for the particular vessel was changed.

That is what I think we would like you to provide.

A. We have the data conversion in those American Bureau documents.

Q. I can't tell from my notes whether you said you would provide information on what the loading sequence was or whether the loading manual provided it?

A. The loading manual provides it.

Q. Could you point out where in that information it is?

A. As I pointed out before, this shows how much goes in a particular hatch.

As far as the sequence on this particular trip, this is a chute dock. I don't know the size of those pockets.
We have tried to get this information, how many tons
in a pocket to make one, as they call it, a run, where you
had it every hatch, and then you shift and pick up another.
I don't have this.

I tried to get it from Burlington Northern.

Q. Will you try to see if you can get this?
A. I tried to get it, but they didn't have how much they
put in each hatch opening.

Of course, you are not really familiar with the
situation, but let's say that, well, each pocket had 300
tons, so you drop your chutes down, and you put 300 in each
hatch. You move the ship down a boat length, and then,
assuming there are more 300-ton pockets, you keep going.

They don't have a record of how many chutes there are
for a particular hatch. We should be able to furnish how
much they had in the pocket.

Q. Is it fair to say then that there is no record of how
much was in each hatch?
A. I would say so.

Q. Would you please say that? Let me make it a question.

Is there a record of how much cargo was placed in each
hatch?
A. No.

Q. Is there a record of how much cargo was placed in each
hold?
Q. You were going to provide information on the draft researching for this voyage.

THE WITNESS: Are you making notes of this?

MR. MURPHY: Yes.

Q. And the dates on which the inflatables were installed?

A. Originally or when they were inspected?

Q. Installed originally.

A. Originally?

Q. I believe you testified they were inspected at the beginning of this season.

A. Right.

Q. And the exact location of the forward inflatable liferaft?

A. Yes.

Q. And the details on the installation of lifejackets?

A. Yes. All right.

MR. MURPHY: Replacement, you mean?

COMMANDER LOOSMORE: Let me elaborate.

Q. Captain Zabinski asked you to provide information on jackets which were replaced at the last reinspection.

If I understand you correctly, you said that there would have been a different kind of jacket stowed in a different place specifically?
A. I thought it was a different kind than in the lifeboats. The ones they removed were from the lifeboats, the kapok. Those were under the ports.

Q. So we could tell where it came from by the type of jackets?

A. The latest ones are like a horseshoe. These were the previous type. The latest ones would have come around your neck.

Q. Are you prepared to say right now that jackets of a certain type were stowed in a particular location of the vessel, or would you --

A. I would rather not say at this point. I did not spend much time looking at the equipment, because we are being hounded by newspaper reporters and TV men.

Q. Do you know whether that information is available?

A. Available?

Q. Whether your company has records of what kind of jackets were aboard and where they would be?

A. Where they were stowed?

Q. Yes.

A. I looked at our recess, as you know, on our inspection certificate, and you have a bunch of cards strung out. We do not keep copies of that. That goes directly to the ship. I am quite sure it is not in duplicate, is that correct? This lists all the equipment.
Q. Would you please look into the records that you have in the company and see if you can determine what types of PFDs were on board the vessel?

Where, if there was more than one type, if you have any records, would a particular type be stowed?

A. I will see what we can find.

COMMANDER LOOSMORE: Off the record.

(Discussion had off the record.)

CAPTAIN WILSON: We wanted to just see if the Captain was referring to what we were referring to, which is the 840 AA, which lists the equipment on the vessel.

There is one for the machinery and --

THE WITNESS: But it does not come in duplicate. There is just one. At least we don't have it in the office. It goes to the ship, is that correct?

CAPTAIN WILSON: Yes; that's correct.

MR. MURPHY: Maybe we could ask the Coast Guard if they have a copy of that, and if so, that it be produced.

COMMANDER LOOSMORE: This type of PFDs unfortunately are not listed on that particular record.

MR. MURPHY: Thank you.

CAPTAIN WILSON: So that will not give
you the answer we are seeking; if there were different
types of jackets in the boats than someplace else.

MR. MURPHY: May we know what PFDs are?

COMMANDER LOOSMORE: Personnel flotation
device. They are no longer calling them lifejackets.
That's it, sir.

REAR ADMIRAL BARROW: I might ask at this
time if there are counsel for interested parties who
would like to give me a written, any written questions
which they might like to put to this witness.

If you just indicate to me whether or not you have
any questions, then I will go on from there.

REAR ADMIRAL BARROW: Do you have the
questions ready now?

MR. WAESCHE: It is not a question,
it is a request for information. I would request
information with respect to the last soundings at the
loading berth in Silver Day, the last soundings taken
at the discharge berths in Toledo.

BY CAPTAIN ZABINSKI:

Q. Captain Jacobsen, then, to follow up here, what are the
procedures for the soundings? Can you sound the ballast
tanks?

A. Can you sound them?
Q. Can you sound them, yes, sir?
A. Yes.
Q. Can you sound a cargo hold?
A. We don't have sounding wells in the cargo holds, to answer your question.
Q. Do you periodically, during the course of a day, take soundings of ballast tanks?
A. We have, as I pointed out, we have these gauges in the engineroom which are visible at all times.
Q. Are the indications on those gauges recorded in any log, any book or record of any kind?
A. They are recorded in the bridgeroom and engineroom.
Q. If you took soundings by hand, in addition to that, are they also recorded?
A. Yes, they are.
Q. Where would they be recorded?
A. Same place.
Q. In the engineroom and the deck log?
A. Yes, sir. Well, we have a slate board, you might say. It is on the wall on the engineroom and it is marked down on a chart.
Q. That is also recorded in a log book?
A. No.
Q. Just on the slate board?
A. Right.
Q. Is there any record kept, permanent record kept of the soundings on a particular day? This is of the ballast tanks.
A. It is customary that they don't. When they resound or come up with new soundings, they erase the old one and put on a new one.

Q. So it is your testimony, then, Captain, that on lake vessels and primarily, specifically to the Fitzgerald, that normal procedures were not to record permanently the daily soundings which were taken?
A. Right.

MR. WAESCHE: That really wasn't my question, but my question was the depth of the water at the berths themselves.

In other words, was there sufficient water at the berths for the vessel always to remain afloat?

REAR ADMIRAL BARROW: Oh, I see. Thank you, Mr. Waesche. I appreciate that.

BY REAR ADMIRAL BARROW:

Q. Do you understand the question, Captain? Are soundings taken at the berth prior to the time the vessel is launched?
A. Not the usual dock that you normally go through. He would not take soundings, no.

Q. Would he take soundings if he was going into a strange berth, let's say, or a new berth?
A. Normally we would sound it from a small boat ourselves,
if we were going into a place that was questionable, before
we send a ship in there.

Q  Do you have any record or would you have any records
of soundings that you had taken at the last loading berth
which was Burlington Northern?

A  No, I don't.

Q  Do you know what the depth of the water is there?

A  No, I don't.

Burlington Northern would probably furnish that
information.

Q  Does the ship's crew, do you have operating instructions
for the ship's crew to sound the berth to see how much water
is, in fact, under the keel?

A  If there was any question about water, it would be
transmitted. I mean, they would inquire from, say, the
agents in this particular case or the dock. They do have,
most of these docks now do have PHF radio phones. They can
talk directly to the ships. It might be a matter of a
telephone c-call to the dock manager, "How much water do you
have in the docks?" And he would say "30 feet," and that
sort of thing.

Q  Is it the normal practice for the crew to verify this
amount, the amount of water that is given?

A  If the captain is not familiar with the port, he would
inquire, but this is a dock where a lot of ships, big ships, 
load and it is more or less common knowledge for operating 
personnel to know.

Q. Do you have any information or any records about 
requiring soundings to be taken at your last discharging port?

A. No.

Q. Where was that? Where was that last port of discharge?

A. I am not sure whether it was Toledo -- it was Ashtabula.

Q. What dock in Ashtabula?

A. A and B.

Q. What do you know about the water depth there at A and B 
Dock in Ashtabula?

A. What do I know about it?

Q. Yes.

A. I know that it must be, I would guess, at least 28 feet 
or more.

Large ships frequently visit there during the summer.

Ships have been loading deeper during, let's say, past months, 
than they are during this time of year.

REAR ADIRAL BARROW: All right.

MR. WAESCHE: Thank you.

REAR ADIRAL BARROW: Thank you very much.

Now, I think that what I would like to do is ask 
Commander Loosmore a question. I think you had a 
resolution of the exhibits to some of the interested
parties.

MR. HANSON: Your Honor, I have a few questions of this witness before he is released and I have reduced them to writing.

REAR ADMIRAL BARROW: Fine. Would you bring them forward?

MR. HANSON: I also have a request for the production of certain documents from the Captain's company, and I would like to just briefly explain several of the requests.

The Board has requested repair lists and I would like to add to that the invoices pertaining to the repairs.

The Board has requested the crew list for the date of the sinking of the vessel. I would like to request the crew list going back two years. We might learn something very valuable from some of the previous ship officers and crew members.

I would like to have all insurance inspection reports and recommendations and correspondence, the operators' standing orders to the Fitzgerald, all Coast Guard records, including the vessel's casualty reports, including letters of transmittal from investigating officers going back to the year the ship was built, and all drydock examination books since the ship was built,
and the annual inspection books and records going back
ten years and all requirements written by the Coast
Guard Inspectors relative to the drydock examinations
and all damage survey and inspection reports and
related requirements going back ten years and any prior
disciplinary records of the Master including any informal
warnings issued by the Coast Guard office for speeding
on either the Detroit or St. Clair River, any records
in the possession of the owner that might be helpful to
this investigation.

REAR ADMIRAL BARROW: Are you going to let
us see what you have just read?

MR. HANSON: I have given you a copy
of that also. It has been reduced to writing together
with the questions to the Captain.

REAR ADMIRAL BARROW: Let's take a ten-minute
recess and reconvene at approximately ten to five.

(Recess had.)

REAR ADMIRAL BARROW: Gentlemen, let's be
seated and get started again.

Let the record show that we reconvened at 4:56.

There were two sheets of paper passed to me prior
to our recessing.

One of them was a request for production of a list
of some 15 items.
For the record, with regard to that, I am not going to respond to each one of those individually at this time. I will say that a good part of what Mr. Hanson, attorney for the interested party, has asked for here, will be produced in time and in good time.

One of the things that we are responsible for is determining from what is available, what is pertinent to this investigation, and a good part of this including much of the Coast Guard records and so forth are pertinent to the investigation. We will keep this list in mind as we proceed with the investigation.

There are some individual questions which Mr. Hanson has raised and I will ask Commander Loosmore if he would proceed with those that we have talked about.

EXAMINATION

BY COMMANDER LOOSMORE:

Q. Captain Jacobsen, to your knowledge, has it ever been a practice of the Fitzgerald to sail on any of the Lakes with hatches open?

A. A practice?

Q. A practice, yes, sir.

A. It has probably happened at one time or another when they were painting combings, at a time when the weather is good.

Q. To sail with hatch covers on?

A. With a cover off to paint a hatch combing.
Q. Would it be a practice to sail with hatch covers on, but not secured?

A. I would think, in any event, there would be some clamps on. I am not saying they would all be on.

As I pointed out earlier, it would be every other one or they would, maybe, skip two, or if you look at that photograph to your left, it shows some on and some off.

When the ship is loaded with cargo, all of the clamps would be on.

Q. Would you repeat that, please?

A. When a ship is loaded with cargo, you would have all the clamps on. In a lake condition, you could have 50 percent on, possibly, unless the weather report was such that a prudent master would require all the clamps to be put on.

Q. Was it a practice on the Fitzgerald to leave the gangway door on the fantail open while underway on the Lake?

A. It could be left open at times, yes, but as I say, any prudent master sailor is going to have everything down if the weather report is bad and the weather wasn't very good when they left Superior.

Q. Where is that door in relationship to the engine or generator room?

A. The generator is over here. I believe it is back in this area (pointing).

Q. At the same level, but aft?
A. Yes.

Q. All right.

A. We can check the machinery arrangement.

Q. All right.

A. I would say within 20 ships in the fleet, you can't tell where everything is on each particular ship.

Q. Thank you, Captain.

Do you have any knowledge of the physical condition of the Master on the Fitzgerald?

A. As far as I know, he was in good health.

Q. Do you know whether he was seeing a doctor?

A. I do not know.

Q. Or taking medication?

A. I do not know that either.

Q. Do you know whether the Master intended to retire at the end of the 1975 season as reported?

A. The last word I heard, he was going to sail this year and also next year.

Q. If he had been planning to retire at the end of next year --

A. That would be 1976.

Q. At the end of the 1976 season, but do you know what his reasons would be?

A. No, not really, other than putting in a good many years sailing. He was what, 63? I would suppose he felt he better
start enjoying life a little bit, more than sailing.

Q What was the next cargo commitment for the Fitzgerald?

A I don't know. I could find out, but I don't recall what
the next order was.

COMMANDER LOOMSORE: Could we add that to
the list of things to find out, please?

MR. MURPHY: Yes, sir.

BY COMMANDER LOOMSORE:

Q Where was the Fitzgerald bound on the voyage in which it
was lost?

A Detroit.

Q Where specifically in Detroit was it due to unload?

A Great Lakes Steel.

Q When you determine where the next cargo was, would you
also determine the location of that, please?

A The location of the dock?

Q Yes, where it was to pick it up.

A Oh, all right.

MR. MURPHY: In other words, the
loading port and the loading dock and the type of cargo?

COMMANDER LOOMSORE: Yes.

BY MR. LOOMSORE:

Q Do you know the type of lifeboat davits that the
Fitzgerald had?

A We submitted a drawing on the lifeboat davits.
Q. The drawing is No. 1131322, marked Exhibit 6(c). On a casual glance, I don't see what type of lifeboat releasing gear this had.

A. Do you know offhand?

A. I would say, I think it was Rottmer Releasing Gear. This is just an arrangement.

REAR ADMIRAL BARROW: At any rate, this specific information will be introduced when we have other witnesses who I think can determine that right from the specific inspection records.

BY COMMANDER LOOSMORE:

Q. Could you describe, though, were the lifeboats secured?

A. It is not on this drawing either.

A. They have inboard gripes. I don't know. Well, I wouldn't hazard a guess at this moment.

CAPTAIN ZABINSKI: You are not certain?

THE WITNESS: Once we find out the type of gear and type of securing, maybe we can find out.

BY COMMANDER LOOSMORE:

Q. Would you also provide that information, then?

A. Yes.

Q. We may ask you to speculate on whether or not the lifeboat could have floated free.

A. Well, the fact that they were both off of the ship and they had been retrieved, either a portion or a boat, they had
to float off.

COMMANDER LOOSMORE: That's the list.

That's it.

CAPTAIN ZABINSKI: I have a couple of questions, Captain.

EXAMINATION

BY CAPTAIN ZABINSKI:

Q In your job description, you indicated that that also had to do with personnel matters, is that correct?

A Well, to the extent that the personnel department works under my wing, you might say.

Q What does the company require in the way of physical examinations of their employees? I am talking now about the crews of the vessels.

Do you require a physical examination of the officers and crew?

A Yes, we do.

Q How often?

A Once a year.

Q What part of the year? Is there a special time?

A Usually in the spring is when we try to examine the people and periodically if new employees come aboard.

Q To your knowledge, is there any reason that any of the crew on the Fitzgerald were not fit to sail from a physical standpoint?
As far as I know, they were all physically fit.

What is the policy. What is the company policy in regard to illness, if a seaman becomes ill during a voyage or in some other way develops a physical condition, what is the company policy on that?

Depending upon the seriousness, if it is something that appears to be serious and the ship is in the middle of the lake, we would call the nearest Coast Guard Station and they in turn would patch us in with Stanton Island by radio and telephonic communication.

Is this for medical advice?

Yes. Depending upon the situation, advice, evacuation or treatment or whatever.

Have you ever had to do this on the Fitzgerald in the past year, to your knowledge?

I don't recall on the Fitzgerald that we have had to do this. We have done it with other ships.

How about if a seaman is not that sick that he requires evacuation by helicopter or otherwise, what are the procedures when the ship comes to shore?

We would dispatch him to a doctor.

A company doctor?

Not normally public health.

Public health?

As the first shot.
This is a normal Master Certificate, this type of thing?

Right.

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

REAR ADMIRAL BARROW: Fine, thank you.

MR. MURPHY: Nothing.

REAR ADMIRAL BARROW: Any others?

COMMANDER LOOSMORE: No, sir.

REAR ADMIRAL BARROW: Captain, thank you very much for your testimony. You are cautioned not to discuss your testimony with any other person except your counsel until after the investigation is over.

Thank you.

MR. MURPHY: May the Captain be excused?

REAR ADMIRAL BARROW: He may. I don't think we have further need, but there is a possibility and in which case we will let you know about it, but thank you very much.

(Witness excused.)

REAR ADMIRAL BARROW: I would like Commander Loosmore at this time to take care of a few technical details on exhibits.

COMMANDER LOOSMORE: I have spoken to the recorder and I have arranged for the recorder to have
access to the exhibits. Any of you who want copies of
the exhibits, please contact the recorder and he will
arrange to make copies of them for you.

This access for the recorder to the exhibits is
for purposes of copies for those of you who are here
and will, of course, be done on a basis so as not to
interfere with the deliberations of the Board.

REAR ADMIRAL BARROW: There was one additional
piece of information that some of the news media had
wanted and that was a list of prospective witnesses.

Has that list been made up?

COMMANDER LOOSMORE: That list will be made
up from Lieutenant Schotwell and will be available
tomorrow morning as soon as we know who precisely we
have.

CAPTAIN ZABINSKI: Who is the first
witness tomorrow?

COMMANDER LOOSMORE: At the present time,
we are planning to have the former Master of the
Fitzgerald, Captain Peter Puller.

REAR ADMIRAL BARROW: Fine. Thank you very
much.

Let the record show that we recessed at 12 minutes
past 5:00. We will reconvene at 10:00 o'clock
tomorrow morning.
(Whereupon, at 5:12 P.M., the hearing in
the above-entitled matter was adjourned,
to reconvene at 10:00 o'clock A.M.,
Wednesday, November 19, 1975, at the same
place.)

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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, Auditorium
Federal Office Building
1240 East Ninth Street
Cleveland, Ohio

Wednesday, November 19, 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
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Cleveland, Ohio 44113

and

Arter & Hadden, by
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and

Bradley, Eaton, Jackman & McGovern, by
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On behalf of the Toledo Trust Company:

John J. Schuchmann
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Toledo, Ohio 43604

On behalf of Cargo Aboard the SS Edmund Fitzgerald:

Bigham, Englar, Jones & Houston, by
Donald M. Waesche
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New York, New York 10038

On behalf of Seafarers' International Union
and James Pratt and John Poviach:

Ned 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
REAR ADMIRAL BARROW: Good morning. Let the record show we reconvened at 10:12 a.m.

Commander Loosmore, call your next witness.

COMMANDER LOOIFMORE: The Board would like to call Capt. Peter Pulcer, please.

MR. MURPHY: Mr. Chairman, before this testimony is commenced, I would like the record to show that Capt. Pulcer has been produced voluntarily on behalf of Oglebay-Norton Company.

We have brought him up here from Florida, where his home is now, at our own expense at the request of the Coast Guard to produce a witness who can inform the Board with respect to the characteristics of the Steamer Edmund Fitzgerald.

Capt. Pulcer having been the last prior master of the vessel, we have produced him in response to the Board's request in that regard.

REAR ADMIRAL BARROW: Thank you very much.

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PETER PULCER

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

EXAMINATION

By Commander Loosmore:

Q. Would you please state your name, address and occupa-
tion?

A. Capt. Peter Pulcer, Master, 10137 - 42nd Avenue, South
Boynton Beach, Florida.

Q. Capt. Pulcer, you have not been designated as a party
in interest to these proceedings?

A. No.

Q. Do you hold a Coast Guard license or document?

A. Yes, I do.

Q. Could you describe that license for us?

A. I have an unlimited license, first-class pilot's limited,
all tons.

Q. For what service?

A. All the Great Lakes. That would include Cape Vincent,
Duluth, Gary and Tonawanda.

Q. And how long have you held that license?

A. Since 1932.

Q. Do you recall what issue is current, sir?

A. I don't know.

REAR ADMIRAL BARROW: Do you have the license
with you, Captain?

THE WITNESS: No. I didn't bring it with me. In fact, I let them run out. I never renewed them.

Q How old are you, sir?

A 66.

Q And you stated that your occupation was master. Are you currently employed as a master?

A No, sir; I am retired.

Q How long were you employed as master?

A As a master?

Q As a master, yes, sir.

A 26 years for Oglebay-Norton.

Q Of those 26 years, were any of them involved with mastering the Fitzgerald?

A Well, I had six years on the Fitzgerald as a master.

Q Six years?

A That is right.

Q From what dates?

A Well, they had been from the 1st of April to the 10th of December, 12th of April to the 10th of December and that's the way they run all through.

Q For what years, do you recall?


I think I was finished in December the 18th of 1971.
Q  Yesterday, Capt. Pulcer, we heard testimony from
Capt. Jacobsen from Oglebay-Norton that concerned some
of the details of the operation of the vessel.

    There were several areas which he discussed and he
said that he would need someone who had operated the ship
to elaborate on those.

    The Board has several questions concerning the opera-
tion of the vessel which we would ask you to answer as
well as you can, based upon your operation during the
period when you were master, between, as you have testi-

    One of the areas of questioning concerns the procedure
in loading and offloading the vessel. When you were
master, was the vessel carrying any taconite?

A  Yes, sir.

Q  Where did you unload taconite?

A  In Toledo, in Cleveland.

Q  Where did you take it, the cargo, on board?

A  To Silver Bay.

Q  Was it always Silver Bay?

A  Most of the time. I think I was only in Duluth, I
think, once or twice. That's all.

Q  When you loaded the cargo, who was supervising the
loading?

A  The mates, the first mate.
Q. Was it always the first mate?
A. Always.
Q. Was there a set sequence of loading?
A. Well, yes, they had a loading pattern.
Q. Who made up that loading pattern?
A. Well, the mates made it up and they had a loading book, recording the tonnage that goes in each hatch.
Q. They had a loading book, sir?
A. They had a loading book. I mean, they kept track of all of the tonnage in every hatch, what they put in through the ship.
    They called it a loading book.
Q. A loading book. Was that a log or instruction book?
A. Just a little loading book that the mates have, you know what I mean.
Q. Did they have instructions on how to load?
A. No.
Q. Was that a record?
A. A record for every load for every different drafts and all of that. You know what I mean, like the summer draft and you go to intermediate summer draft -- well, you load less tonnage through the ship, and so forth.
    They made out a pattern of every load. They would make out a pattern just how they was going to load the ship.
Q. Did they make out that pattern how they were going to load the ship before the loading, then?
A. That's right. Every trip they would make out a list and give how many tons go in each hatch.
Q. Was that list kept?
A. I guess so. I think so. I think the first mate kept the list. Then he put it in this little loading book for every load, to keep that in the record.
Q. Did he have a manual which showed him how to prepare that loading list, or just experience?
A. Just experience.
Q. Did you as master have any guidance from the company or from the naval architect that showed you how to load the vessel?
A. No.
Q. Did you ever take the loading information and try to calculate the load that the vessel had?
A. You mean --
Q. The log or the sag or the hull stress?
A. The way you loaded it, you have been doing it for years and you know you can't stress the ship by loading her. You load her, see, and you put a run through the ship and you have the first couple of runs, and then when you are trimming your ship, you load your ends and your holding hatches so that you don't put no stress on your
ship.

Q  All right, Captain. You said you know that you can't stress the ship. What do you mean?

A  I didn't say you can't. Pardon me, not that you can't. You can, if you load it wrong.

Q  What did you mean by can't?

A  Well, you just don't do it. According to our experience on the ship, in loading the ship, like I said, we load it carefully so that we would not stress the ship.

Q  And what papers, what manuals, what guidance did you have in order to tell you how to do this?

Did you have anything other than your experience?

A  Just my experience from time to time, ever since I started sailing.

Q  How did you know when you did it wrong?

A  We never did.

(Laughter.)

Q  How would you have known if you had done it wrong?

A  Because the boat wouldn't have the right draft.

Maybe it would have a hog.

Q  Did you measure the hog?

A  Well, you would, because you would have to be able to tell the draft.

Q  How would you be able to tell that?

A  By looking at your draft marks and your load line.
Q. After loading, did you always check the draft marks?
A. Yes. It was read all the time while we were reading the boat.
Q. Were those written down some place?
A. They were always in the log after we finished loading.
Q. How about the intermediates when you were doing the loading?
A. No. You would keep that in mind telling the mate how much and telling the guys where to put the cargo, and where to bring it right down to the -- you keep track of your tonnage in every hatch that was loaded.
Q. Was he keeping track of each load that went into the hatch or was he keeping track of the total amount in each hatch?
A. The total amount in each hatch.
Q. Was this written some place?
A. That was written down on his loading sheet, the loading sheet that he made out.
Q. Is that the thing, the loading sheet, the thing in the book?
A. No. He made out a loading sheet himself every trip.
Q. Yes, sir; the first mate?
A. The first mate, right.
Q. Do you know what became of those; were those kept?
A. The mate kept them all the time, because if another
mate came aboard next year, he could go through the
records and see how it was loaded before.
Q. Were those ever sent ashore, do you know?
A. I think we sent them to the -- I think it was at the
end of the year. I know they were all kept aboard the
boat.

After he made his sheet out and loaded the ship,
then he put that in his book, the tonnage, in every hatch.
Q. Yes, sir. When you got all through, was the cargo
distributed evenly along the length of the ship?
A. You couldn't do that, because in the midship,
you can't put that much cargo in the midship. It would
break it in two. You have to load the end a little heavier
than the center of the ship.

You put a run through, say four or five hundred tons
in each hatch, and then you go back and put another run
through and then the third run, and you are trimming
your ship.

You load more in the ends. You put it in the hatch
where she will go down aft and not come up forward.
You can't go ahead and put the same amount in the middle,
because she will go this way (indicating).

CAPT. ZABINSKI: Let the record show
the witness indicated that it would sag.
A. (Continuing) Yes, and you have to keep them on level.
You watch your midship line and your pencil lines. If they are even on each end, you will have no sag in the ship.

Q. Did you do the same sort of thing when you were ballasting after you were offloading?

A. No, we just run ballasts in the side tanks, so much water for such and such a draft.

Q. How much water? How did you know?

A. Well, we knew how much water to put in the tank. We made up ourselves a chart as to how much water we had in the tank. Then we knew from trip to trip, like if I wanted to put water in it, I would know that she would be 12 feet forward and so many feet aft.

You had to keep the wheel down, about 17 feet aft to cover the wheel.

Q. Would you as a general rule then have calculated the amount of ballast that you wanted to take aboard, or did you pump the tank --

A. We run it in by so many feet in each tank.

Q. Feet of --

A. Water.

Q. And who did that?

A. The mates would tell them. I would tell them how much water I wanted to have put in. They come up and asked me, "What do you want?" Like on the Fitzgerald at Toledo, I
had to have her down 12 feet to cover the bow thruster
That was it. You put your wheel down 12 feet, unless
there was wind or anything like that, and then maybe I
would then put it down 14 foot. If I was out in the
lake getting a storm, I would plug her full.
Q. Did you take on ballast or have ballast while you
were offloading?
A. Take on ballast?
Q. Yes, sir. Did you offload and take on ballast at
the same time?
A. Yes, you have to do that to keep her down. You see,
she is a pretty high ship. The Hewletts can't get into
the ship, so you can't let her get up too high.
Q. And who supervises that operation?
A. The mate on deck on watch.
Q. The mate on watch?
A. That's right.
Q. So that wouldn't necessarily be the first mate?
A. No, not unloading the ship, no.
Q. Although the first mate, I think you said, would
always supervise the --
A. Loading.
Q. All right. Well, now, you have got the ship full of
ballast and you go to the loading. Do you know that
you must have to take the ballast off?
A. That's right.
Q. Do you do that before you get to the loading dock?
A. No.
Q. When?
A. After we dock, and they start loading, then we start taking ballast out.
Q. Who does that?
A. The mate tells the engineers to pump, pump the ballast out. He says to start pumping. If you wanted to hold water like when you get into Silver Bay, you would have to hold the water in forward, because you are loading that; so you wouldn't get her up too high so the rigs couldn't get in.
Q. Did you do the same kind of thing with the consumables aboard, the fuel and feed water and --
A. The feed we knew. We were getting 110,000 gallons of fuel.
Q. Where did you ordinarily fuel?
A. When I was aboard, I fueled in Toledo most of the time while we were unloading.
Q. All right. Then you would have to think the fueling into this whole trimming process, wouldn't you?
A. Well, that wouldn't matter. You had your fuel tank, and you still had to put your ship down to draft to cover your propeller.
Each trip maybe we would put on maybe 45,000 gallons of fuel oil.

That would only put the draft about six, seven, eight or nine inches, but you would do it when you were loading. You wouldn't even know it. It didn't make no difference.

Q. How about feed water; when would you take on feed water in this process?

A. All of the docks had feedwater and we try to carry -- the only time we carried feed water was coming down the river. We always allowed that when we loaded the ships that we might want 15 or 16 inches of feed water to take it in and out of port.

Q. What did you do during the other times?

A. What's that?

Q. You say you were concerned about having feed water aboard when you were in the river.

What did you do when you were steaming in the lake for feed water?

A. You get it right out of the lake.

Q. You didn't store any in the ship at all?

A. You carried all of the ballast you wanted. We had nine tanks that we would take it out of and we would take it out of that tank if we needed feed water.

Q. Okay. Just regular ballast water was feed water?

A. Right.
Q. When you got all through with the loading, with
the ballasting, did you do any stability calculations
with the vessel?
A. No.
Q. Do you know whether there were any done?
A. You mean every time we loaded?
Q. Ever.
A. We had stability tests when she was built. That's
about all I know about.
Q. Do you know, in the six years you were master, did
you ever see any records of a stability test?
A. No.
Q. Was there anything that you recall on board the
vessel that told you anything about that?
A. No.
Q. Were you on board when the vessel was converted from
coal to oil?
A. No; no, sir.
Q. Do you know when that was done?
A. I think the next winter after I got off or the next
year after. I am not quite sure.
Q. Was it a coal vessel when you were on board?
A. Yes, she was a coal burner.
Q. Okay. Captain, do you recall what kind of
communications capability you had on the bridge? Do you
remember what radios you had?

A. We had an AM and FM telephone, ship to shore, and also an emergency, a battery set.

Q. What was that?

A. A regular radio telephone, but it operated by battery in case our power failed, and you could still use it. You can make calls on our battery set.

Q. Where was it located?

A. Right in the pilothouse.

Q. Did you ever use it?

A. Yes, we used it every watch. They would make test calls with it to see that it is working right.

Q. You have testified that you always took the draft in the course of loading and it was always recorded afterwards.

Was there any limitation on the draft that you are aware of?

A. Oh, yes. If you had enough water, you would load it to the marks that it called for, like summer, intermediate, and then winter draft.

Q. Was there any other limitation in the trip that you had to worry about or was the load line always doing it?

A. There was a load line for the water and the river.

Do you mean for a draft or whatever?

I had no trouble for four or five years that the water
wasn't enough that I couldn't load it on to her marks.

Q  Had there ever been a time when the load line was not controlling?

A  You mean that I couldn't load her to the draft line?

Q  Yes, sir.

A  No, no, not that I know of.

Q  Were there any structural problems?

A  No.

Q  Any that occurred during the time that you were master, any structural failures or difficulties?

A  No.

Q  Did you have any damage or any accidents with the vessel at all?

A  Oh, I have had a couple of bumps.

Q  Was there anything that required that the vessel be taken out of service?

A  No, no.

Q  Captain Jacobsen testified yesterday that there were traffic lanes on Lake Superior.

A  Right.

Q  He said that it was his opinion that the company policy was to generally adhere to the traffic lanes.

Did you follow that regularly or did you kind of drive where you wanted to?

A  No, we always try to abide by the lake area course
rules unless weather caused us to deviate from our course.

Q. What kind of weather would cause you to deviate?

What would be a circumstance which would cause you to deviate?

A. A storm warning, high winds.

Q. What would you do about it?

A. I would sneak up toward the shore some place and head off of the course and head into it.

Q. Get off of the course?

A. Yeah, go toward the lee of the lakes.

Q. Okay. So if you had, for example, a storm out of the north, then --

A. I would go up the north shore.

Q. When you did that, did you tell anybody you were doing that?

A. No.

Q. There wasn't a routine which required you to do that?

A. No, sir.

COMMANDER LOOMIS: Sir, I believe that's all I have.

REAR ADMIRAL BARROW: Capt. Wilson?

EXAMINATION

By Capt. Wilson:

Q. Captain, I have heard a lot about you, and this is the first time I have met you. I wish it was under different
circumstances.
A. Right.
Q. Just a few things.

When you are loading or discharging a vessel, is trim important?
A. Yes, the docks are unloaded properly so that they don't strain her.
Q. Is there any problem if the vessel is not in trim when you are either loading or discharging? Do you have any problem with the loading or discharging operation?
A. No, no.
Q. In the time that you were on the vessel, did you ever, did the vessel ever snap a deck line or a fence line?
A. No, sir; no.
Q. Never did?
A. No, sir.
Q. Did you keep it fairly tight?
A. What's that?
Q. Did you keep the deck line fairly tight?
A. Yes.
Q. How did the vessel handle in a loaded condition?
A. Very good, very good.
Q. You didn't have any problems at sea?
A. Never; she handled like a good little girl. That's all I know.
Q. I imagine you were on the vessel for a period of time here, so you were master in storms on Lake Erie?
A. Yes, sir.
Q. Can you tell us a little bit about, since you do have quite a bit of experience up there and half of the vessel is experience, what are the storm conditions like on Lake Superior? What are the patterns?
A. Well, the only thing I can say is that a storm is a storm.
Q. What type of wind shifts do you have in the storm patterns on Lake Superior; are they fairly rapid?
A. Yes and no. Some yes and some no. Sometimes you have storm warnings 24 and 30 hours before the development.
Q. Before you depart, do you get the weather conditions and forecasts?
A. We always get them every six hours.
If we are in port, like say at noon, and the mate would come up and get his weather report and we are loaded at 2:00 o'clock in the afternoon, well, we have our noon weather report about what the weather report was for the past six hours or 24 hours.
Q. Does the weather contribute to your selection of courses across Lake Superior?
A. Oh, yes; in heavy weather, yes.
Q. Captain, what are trim lights?
Well, they are electric lights to show you if there is any list in the ship in loading. We have a set forward and aft, and also we have a trim gauge on the cabins. They're small, about like that, about that big (indicating). They're like a clock, but the lights, you can use them when you are loading and you can see the lights. There are two reds and two greens and a white.

Q Where did you say these were located?
A They're on the spar in the aft and forward spar.

Q How were they operated?
A Automatically, when you turn them on, they operate with the list of the ship.

You would get one light or two lights and you know you had more list.

Q Captain, you mentioned that during the period you were on the vessel that the river water was high and basically your load line marks were a good determining factor.

You could load to your marks without any problems?
A That's right.

Q How high was the water; how much did you have?
A Well, the rivers are for 27 foot drafts, to load down to 27 feet.

At certain times like now for the last few years, the water has been up, so you have more free water, but you
don't load your boat any more than what it is designed for. You can load to within 18 to 24 inches of the bottom.

CAPT. WILSON: I believe that's all I have.

REAR ADMIRAL BARROW: Capt. Zabinski?

EXAMINATION

By Capt. Zabinski:

Q Capt. Pulcer, you have served as mate aboard the Fitzgerald?
A No, sir.

Q You say you were with Oglebay-Norton 26 years?
A 35 years.

Q 35 years?
A Yes, I was a master for 26 years with them.

Q I see. Okay. And did you serve as mate on any of Oglebay-Norton's ships?
A Yes; when I started, yes.

Q When was the last time you served as mate, Captain?
A 1944.

Q During that time you --
A I was a master.

Q As master, Captain, did you check the drafts, let's say, would you check the drafts personally before the vessel left port?
A Yes.

Q On occasion?
A. On occasion.
Q. Would it be frequently or infrequently?
A. Frequently. After loading, I would go down and check them.
Q. Would you do that for any specific reason or just because you happened to be there?
A. Just as a routine; right.
Q. A force of habit maybe?
A. Force of habit, right.
Q. Not that you were concerned about the draft?
A. No. I just wanted to see for myself sometimes.
That's all.
Q. Have you ever found a vessel, or have you ever had an occasion when a vessel was overloaded, either accidentally --
A. No, sir; never.
Q. -- or they may have delivered too much product to you? Have you ever had experiences of this type?
A. Which?
Q. Where they delivered too much ore to you?
A. No, no.
Q. You had mentioned these trim lights and so forth. You mentioned there was a white light.
When does that white light show up, Captain?
A. When she is dead center.
Q. Right on keel?
A Right on the button.
Q Right on even keel?
A Yes.
Q Is this forward and aft or transversely?
A Both ends. I say, they have the white light on each end.
Q But does this white light indicate that the vessel has no list or that it has no difference in trim?
A No list.
Q It has nothing to do with how the vessel is trimmed by the bow or by the stern?
A No, no.
Q Now, you say there is a red light or a green light on the center side of this --
A A white light.
Q Now, you say there are two on each side?
A Yes, sir.
Q How much list has to develop before either the green or the red light shows up?
A The first light will show up within an inch or two.
Q Can you give us any degrees of list as to how many degrees of list that would be?
A Maybe three, four or five degrees.
Q Three, four or five degrees?
A Yes.
Q. When you mention an inch or so, what would you mean by --
A. Maybe about 10 degrees.
Q. About 10 degrees?
A. Yes, sir.
Q. How about the second light? How much of a list would it have to have for the second light to go on?
A. Maybe 15 or 20 degrees.
They have very seldom let the second light even light, because they are watching them all the time.
Q. In your experience as mate, let's say as a mate or if you could tell me specifically on the Fitzgerald, in your estimation, how much weight, how many pockets or what amount in tonnage would it take to light up one of the lights either red or green?
A. 25 or 30 tons or so.
Q. Less than a pocket then?
A. We never loaded out of pockets in Silver Bay. That was all coming out of silos on a belt.
Q. I see. And if you loaded 25 or 30 tons on one side and didn't compensate on the other, in your opinion, the red or green light would have --
A. And the loaders up there would watch the light, too. As soon as they seen it, they would shift.
Q. Is that the loader's responsibility to keep her on an
even trim?
A. Sure. They have to watch. They just can't go ahead and load it and let her tip. They have to watch them, too.
Q. The mate watches them, too?
A. Absolutely.
Q. Does he stop and correct it?
A. He would have it stopped, and he would tell them to pull it outboard or --
Q. How about when you sail; do you ever sail when either the red or green light might be on?
A. They maybe flicker with the movement of the ship, but we turn them off when we leave.
Q. Do you ever leave with either one or the other lights on?
A. It is pretty even when they start flickering a little bit.
Q. Well, you indicated that either first the red or the green light would go on when it was about three or four degrees; is that correct?
A. That's right.
Q. Do you mean that that light would flicker alongside the dock?
A. Oh, yes. They are very sensitive.
Q. When you say three, four or five degrees, would you know, in order for the first light to come on and flicker,
would that be for the Fitzgerald or is that for some other
ship?
A Well, I don't know. I had been on the Middletown, and
we just had the trimmers.
Q But I am trying to get an idea, Captain, of the
Fitzgerald. I wanted to get your best estimate of when
the light would go on on the Fitzgerald.
Would it be three, four or five degrees as you
mentioned previously?
A Oh, yes.
Q How did the Fitzgerald handle in heavy weather,
Captain?
A Well, I never had any trouble with her. She handled
beautifully to me.
Q You had her in loading conditions in heavy weather?
A Oh, yes, sir.
Q Have you been in any bad storms with the Fitzgerald in
the years you have been with her?
A I have been in some pretty good storms.
Q Have you ever experienced in these storms any heavy
weather damage of any kind?
A No, sir. I never have, no.
Q It is your testimony then, Captain, at the time
you were on from 1966 to 1971 through '71, that the
Fitzgerald never experienced any heavy weather damage?
A  No, sir. I never did.
Q  You never had a fence break because of heavy weather?
A  No.
Q  Or hatch covers get broke?
A  No, sir.
Q  What is the procedure or what was the procedure when you were on the Fitzgerald about hatch covers, Captain?
A  What were your instructions to the mates?
Q  Well, we always had them on before we left the dock, because like at Silver Bay or any of those docks, when we loaded, we could keep up the hatches and we would only have maybe three or four hatches left when they were finished loading.
Q  We would wait and then put them on.
Q  Now, you say that you have them on. Would that mean that the dogs were on, too, all the dogs?
A  Yes, sir.
Q  Would they be secure?
A  Yes, sir.
Q  Would that be when you were loaded or light, or one or the other?
A  Maybe every other one, unless you run into heavy weather, and then you put the rest on.
Q  Let's say a sudden storm came up, Captain, a squall or something of that type and you were loaded.
Did the deckhands come out and secure those other
dogs that were not in place?

A  Yes, sir.

Q  Could they do it in safety, Captain, in your opinion?

A  Absolutely.

Q  How about heavy spray with the Fitzgerald? Did you
ever experience any heavy spray while you were aboard
the Fitzgerald in a loaded condition?

A  Heavy spray? Yes. I have seen them coming down the
deck.

Q  And you have taken on some blue water, I guess?

A  Oh, yes.

Q  A good amount of it?

A  Quite a bit.

Q  In the heavy weather, would this be a condition
while you were going full speed, or would that condition
of taking on seas occur when you were also at a reduced
speed?

A  At reduced speed, you wouldn't take on as much sea.

Q  What was the speed of the Fitzgerald, Captain?

Could you give us an idea of what the normal cruising
speed was?

A  About 16 - 1 or 2. That's about the most.

Q  How many turns was that, if you know?

A  I think she turned about 81 or 82 revolutions.
Q  That would give you 16 knots?
A  16 miles per hour, not knots.
Q  Did the Fitzgerald have a bow thruster on there while you were on there, Captain?
A  The last two years.
Q  When was that bow thruster installed, if you recall?
A  I can't remember now.
Q  But your best recollection, it was on there a couple of years before?
A  About '69.
Q  When did you use that bow thruster?
A  Making the docks, making the Soo locks, and that's about all you use it for.
Q  Could you use it out, say, in Lake Superior in an open run?
A  I have never had no occasion to use it, so I never did.
Q  Would it be effective, let's say -- let's say four knots, would it be effective going on four knots, Captain?
A  Oh, yes.
Q  Would it be effective going 16 miles per hour?
A  No; I don't think so.
Q  What would you say was the speed that it would become ineffective?
A  Anything over four or five miles an hour.
Q. Was there any change in the ship's handling characteristics, and I am talking now about the way she responded in a heavy sea, when this bow thruster was installed?
A. No.
Q. About the same as she was before?
A. Absolutely.
Q. Were there any special operating instructions after the bow thruster was installed about proceeding at a reduced speed at any time or any sea condition or anything of that sort?
A. No, sir.
Q. Did you ever have any hatches get carried away on the Fitzgerald when you were on her?
A. No.
Q. Did you have any experience with hatches carrying away with any vessel you were on?
A. No, sir. I had not.
Q. Captain, I am interested in loading ore. You have carried taconite, Captain?
A. Yes.
Q. Did you carry it while you were on the Fitzgerald?
A. Yes, sir.
Q. What is this taconite? Would you describe it for me?
A. It is processed iron ore.
Q. They process this ore out of a raw --
Q. It is pellets, little round pellets?
A. Yes.
Q. Do you have any idea how many cubic feet the stowage factor would be?
A. I don't know.
Q. Where could I get that information?
A. I don't know.
Q. As a mate, do you think any of the mates on the Fitzgerald were ever provided this information?
A. I don't think they would even know.
Q. How about the angle of repose; do you know what the angle of repose is, Captain?
A. Do you mean the list?
Q. No. The angle of repose of a ship of cargo. Do you know what that term means?
A. No.
Q. When this taconite is loaded, in your experience, can you give me some kind of an idea of how it combs up and what the angle might be?
A. We spread it out to be as level as possible.
Q. How do you level out a cargo of that type?
A. When you are loading, you work from out the inboard side, from the inboard to the outboard side to keep it level.
Q. You do this with the loaders themselves?
That is right, yes.

How about when you have chutes that aren't able to be moved from side to side?

Yes, but you can raise them and lower them.

And you can spread it out fairly well that way?

Yes.

Do you ever send people down to the hold to spread it out, Captain?

No, sir.

Is it important that it be spread out flat?

Yes.

Why is that?

Well, if you ever get in any storm, you don't want your cargo to shift.

Would this taconite shift in a bad storm?

I have had no experience with it, except with my experience, as much as I rolled, I have never had any experience where it shifted.

Have you ever heard of any ships that this taconite shifted on?

No.

But you took that precaution anyway?

That's right.

Do you have any idea how much a ship would have to list or roll for this stuff to move, Captain?
Can you give us any estimate on that?

A. I wouldn't know. The only way I would ever know is if she went down in a storm and rolled. That's the only way I would ever find out, but I never had that experience.

Q. The loading essentially is up to the mate as to how he loads and so forth?

A. That is correct.

Q. Do you give him your approval on how he intends to load a particular cargo, Captain?

A. Well, not exactly, no. He has the pattern of loading the ship, and I know what he is doing. That's all there is to it.

Q. Is it because you had worked with this man for so long that you know what he is going to do?

A. Well, yes. They all have enough experience that they know what they are doing.

Q. Have you ever in your experience as a master countermanded or told a mate to do it differently than the way he had it lined up? I am talking about the loading of cargo?

A. No, not exactly. We have discussed it, you know, how to load, and that was it. We did it the best way we could.

Q. How about ballasting? You do have, a master does have a say on how that goes; is that right?

A. That's right, how much water I want in there for weather
Q. How about where the water goes; were you interested in that?
A. Which?
Q. How about water, where the water goes, the ballast water, where that goes?
A. Yes.
Q. You tell them you want five feet here or 10 feet there?
A. That's right, yeah. We would tell the engineers where to put it. We would tell them how many feet to put in. They had their gauges back there and the mate goes down and tells them they want 13 feet in that tank, 14 in that tank, 15 and 16, and a trimmer to that trim.
Q. Where are these gauges that you are talking about?
A. Right in the engine room on the bulkhead by the ballast pumps.
Q. On the same level as the ballast pumps?
A. Right.
Q. Can he see the lights if he is standing by the ballast pumps? Can he see those gauges?
A. They are right there by the valves where you shut off your tanks.
Q. Are those gauges reliable?
A. They are mercury gauges. You can tell within an inch of the water in the tank.
Q. We have had some indication that they also make hand soundings on those tanks.

Can you describe that procedure for us, Captain?

A. Yes. On every watchman's watch, they sound the ship before he goes off watch. Every six hours or every four hours, it is done.

They bring the sounding up in the pilothouse and they put it on the sounding bores.

Q. And also put it in the engine room?

A. That is right.

Q. Is that sounding -- what is it? Is it chalked?

A. Yes, marked down. It is chalked. The board is made up for the tanks.

Q. What does he sound, Captain; what compartments does he sound?

A. He sounds every tank.

Q. Every ballast tank?

A. Every ballast tank.

Q. Fuel tank?

A. No, not the fuel tank.

Q. How about water tanks?

A. The which?

Q. How about the feed water tanks, does he sound those, too?

A. No; the engineer takes care of that. He don't go
down there.

Q. Well, in a loaded condition, all those tanks would normally be empty; is that right?
A. Right.

Q. And if water started to show up, why, the mate would take some action; is that right?
A. If it would show up in the gauges or when they sound them.

Q. How much can those pumps, ballast pumps, handle, Captain?
A. Oh, they pump that ship out in about two hours, an hour and a half.

Q. How much ballast would that be with all of the tanks full?
A. Between 16 and 17 thousand tons of water.

Q. Do you put it in at the same rate?
A. Yes, you can pump her up in a couple or three hours.

Q. Is there a sequence in which you load these ballast tanks, that the engineer loads the ballast tanks?
A. Well, yeah. We tell them what to put in each tank and that is the way they run it. They open up the valves consecutively or they put the water in each tank.

Q. Well, let's take a hypothetical situation, okay?
You tell them you want ballast in 2, 4, 6 and 8 starboard tanks and port tanks; okay?
A Right.
Q Do you tell the engineer to put so much water in 2, so much in No. 4 and so much in No. 6 and so much in No. 8?
A Yes, sir.
Q All right. Do you tell him to wait until you get so many feet in No. 8 before you put any in No. 6 or any special instruction of that kind?
A No.
Q You let the engineer use his judgment; is that your testimony?
A Yes, we tell him what we want in the tanks and in each tank and that is it.
Q The sequence in which he loads and the amount which he loads, you leave that up to him?
A That is right.
Q You have discussed loading. Do you discuss each loading with the mate?
A The loading? No.

MR. MURPHY: Pardon me, sir. Just for the record, we are talking about running in ballasts and talking about loading and the mate loading the ship with cargo.

May we make the record clear? We are talking now with respect to the running of ballast water in the tanks; is that right?
CAPT. ZABINSKI: We are talking about loading cargo, counselor.

MR. MURPHY: All right.

CAPT. ZABINSKI: Loading cargo?

THE WITNESS: Yes.

By Capt. Zabinski:

Q Do you discuss each loading with the mate?

A Not necessarily, no. He knows what draft to load her and that is our draft that we can load the ship in, and he makes out his chart and he loads her to that draft.

CAPT. ZABINSKI: I would like counsel to check and see if there is a copy of the loading book or loading records at the company for any part of this year and previously.

MR. MURPHY: I understand from the captain's testimony that he is referring to a personal notebook that the mate kept for his own personal use, and I'd appreciate it if the Board would interrogate him on that point.

I think that will develop to be the case.

CAPT. ZABINSKI: That is my understanding of the testimony, but we will clarify it right now.

By Capt. Zabinski:

Q Captain, in response to Commander Loosmore, you indicated that the mate keeps a loading record.
A. That is right.
Q. Or sheet of some kind?
A. Yes, and enters it in the book.
Q. What does he note on that sheet? Does he note the number of buckets or pockets?
A. Tons.
Q. Tons that he has loaded?
A. In each hatch.
Q. In each hatch; okay.
You mentioned a book, that the mate also notes it in a book.
A. That is right.
Q. Now, is this record, loading record that you mentioned, is that the same as the book or is that a different document?
A. No, that is the same as the book. It is in the sheet and he keeps it in the book and keeps a record.
Q. So he has a book and he has this loading sheet?
A. That is right.
Q. What happens to the book?
A. They stay aboard the boat.
Q. That is the mate's personal book, is it, or is it a ship record?
A. Well, it is a record of the loading, and the next mate comes aboard and he can check it.
Q. It is left to him?
A. Yes.
Q. In other words, it is not something that the chief mate takes with him?
A. No.
Q. How about these loading sheets, what happens to them?
A. Well, I guess he keeps them from one trip to the other, but after he enters it all in the book, he don't need it any more.
Q. Do you know if a copy of that is provided to the company?
A. No.
Q. You don't know?
A. No.

CAPT. ZABINSKI: This is, counselor, what I would like to check.

MR. MURPHY: I will check it, sir.

By Capt. Zabinski:

Q. Captain, I would like to touch upon some procedures now. We have touched upon hatches and I would like at this time to touch upon vents, going into the tanks.
A. The which?
Q. Vents going into the ballast tanks.
A. Yes.
Q. On the Fitzgerald.
A  Right.
Q  Could you describe those vents for me, please?
A  Well, they are eight-inch vent pipes with a big
    bell on them, that screw up and screw down.
Q  Can you screw them up and down by hand, Captain?
A  Yes.
Q  What happens when you screw it down?
A  It closes them.
Q  What happens when you screw it up?
A  It opens them up.
Q  Let's say you keep screwing this thing up and you have
    the cap in an open position, can you take it off completely?
A  No, I think they have a stopper on it.
Q  You think they do? Are you sure of that or is that
    just your best recollection now?
A  As far as I know, they have a stop on it.
Q  They have a stop on it?
A  That is right.
Q  Now, you load at the berth and you are proceeding out
    to sea on the Fitzgerald for sea.
    Do you normally keep those open or closed?
A  We would only close them up in heavy weather.
Q  Why do you keep them open as a rule, Captain?
A  Is there any reason?
Q  I mean, I am trying to get an idea of why you keep them
open or closed, if you would tell us.

A. You have to have them open to run the water ballast in
the tanks or you wouldn't get any water in the ballasts,
and if they are closed, you can't pump them up. You
won't get any air in there. That is what they are for.

Q. Assuming we are going along in a loaded condition,
Captain, and the weather is not bad, there are times
when they would be open; is that correct?

A. That is right.

Q. Now, where would the water come from if you were in a
loaded condition?

You wouldn't take on additional ballast if you were
down to your marks, would you?

A. No.

Q. Why would you leave them open, then?

A. Because you have no weather -- you have no stormy
weather or nothing.

Q. What water do you anticipate pumping is what I am
trying to ask. What water would you anticipate pumping?

A. I don't follow you.

Q. Well, the ballast tanks are empty.

A. Right.

Q. And you are fully loaded.

A. Right.

Q. You know you are not going to take on any more
ballast or take on any ballast or you would be below your
marks; right?
A  Right.
Q  So why do you need to worry about the ballast pump
being able to pump out?
A  You won't have to worry.
Q  I beg your pardon?
A  You won't have to worry about it.
Q  Why do you leave them open then?
A  Because if there is no heavy weather or nothing, you
know you are not going to ship any water or anything on
board the boat. That is the only reason.
Q  Let's take a hypothetical situation. If this vent
was closed --
A  Yeah.
Q  -- and you sustained some collision damage or struck
an object under water and the ballast tanks began to flood
accidentally, if the vents were closed, could you pump
that out?
A  To a certain extent.
Q  But, being closed, it would impede its being able to be
pumped out completely?
A  Oh, I think so, yes. You wouldn't pump it out as fast.
Q  How heavy does the weather have to be for you to proceed
with them closed, Captain?
A. I always close them in the fall of the year.

Q. Fall, starting in October or September?
A. September, or last of September.

Q. There was some previous testimony about shipping blue water. If we shipped water, could that find its way into the vents if they were open?
A. Not very much.

Q. How high are those vents off of the spar deck?
A. About 18 inches off the deck, maybe not that much.

Q. Have you ever experienced in rough weather that these vents were torn off or in any way damaged?
A. No, sir; no, sir.

Q. They are pretty sturdy; is that your testimony?
A. That is right, yes.

Q. Pretty heavy pipe, is it, Captain?
A. Yes.

Q. How about that cap, is that a pretty substantial thing?
A. Oh, yes. That is, I would say, quarter-inch steel or more.

Q. In response to Cdr. Loosmore's question about damage, you indicated that the vessel had a couple of pumps.
A. Yes.

Q. This is a touch in the dark some place?
A. That's right.
Q. I gather from your testimony that you didn't consider these as being serious, something that affected the seaworthiness of the vessel; is that right?
A. Right.
Q. What is the procedure? If you bump a dock, what is the procedure about reporting that to the company? Do you report every one of those to your company?
A. That's right.
Q. Do you report those to the Coast Guard?
A. Well, yes, if you did think that you done any extent of damage, we would report it, that's right.
Q. How about the American Bureau?
A. We would tell them, too.
Q. When would you report it and when wouldn't you report it, Captain?
A. Well, if I thought that I had done damage that would amount to anything or any damage enough to be surveyed that I had done, any real extensive damage.
Q. Is there a monetary amount that would cause you to repair or, for instance, that you would report it or you wouldn't report it?
A. No; at any time that I have ever touched a plate or anything, I would report it.
Q. In the time that you were on board, do you recall how many bumps you may have had to report to the Coast Guard?
A. Oh, in Lake Erie, I have had 24 to 28 inches plus.

Q. Captain, I would like to direct your attention now, if we can, mostly to Lake Superior and you indicated in your testimony that when heavy weather came, you usually -- let me rephrase that.

You indicated that normally you follow the recommended track lines; is that correct?

A. That is right.

Q. And you indicated that the only time you deviated from that was in heavy weather?

A. Right, that's right.

Q. And then you would go to the lee shore?

A. That is right.

Q. And if the winds were from the northeast, Captain, which shore would that be?

A. That would be the north shore.

Q. If the winds were from the north, which would that be?

A. North shore.

Q. If the winds were from the northwest, what would that be?

A. You have to go northwest as far as the north shore, up to about Isle Royale.

Q. How far off the north shore would you go? How far off the track would you deviate toward the north shore, let's say, in heavy weather, Captain?
A. Oh, I would say that I used to stay maybe five or six
or 10 miles off of shore, maybe 15, maybe less.

REAR ADMIRAL BARROW: Let's take a 10-minute
recess, please.

(REcess had.)

REAR ADMIRAL BARROW: Let the record show we
reconvened at 11:33. Would you continue, Capt.
Zabinski?

CAPT. ZABINSKI: Thank you.

By Capt. Zabinski:

Q. Captain, I am going to stand by the chart. You can,
too, if you want to.

I am not familiar with the names because I am a stranger
to Lake Superior.

You indicated before that during the northeast or
northerly wind you would favor the northern side of
Lake Superior?

A. Yes.

Q. How close to the northern shore would you come,
Captain? Let's confine our comments now to past Keweenaw
Point.

How close to the north shore would you come?

What would your track line be, generally?

A. I would run within five or six miles.

Q. Would you pass between the Isle of Royale and the
north shore?
A. I have, a lot of times.
Q. During very bad weather?
A. Yes.
Q. How about over at Michipicoten Island; did you pass north of that?
A. Do you mean northeast?
Q. Yes.
A. Lots of times.
Q. Would they have to be unusual winds?
A. Northeast or north.
Q. How about between Caribou and Michipicoten?
A. I went through that a lot of times.
Q. Would that also provide you a heavy lee in heavy weather?
A. Yes.
Q. You would cut between there?
A. Yes.
Q. I notice below that Caribou Island, and I am referring to Lake Superior, Chart No. 9, there is a place called Southwest Bank. What can you tell me about Southwest Bank?
A. Well, it is shallow water.
Q. How shallow?
A. 13 fathoms.
Q. How about Southeast Bank?
A. You have a seven fathom spot there.
Q. Do you have any other shoal spots around Caribou?
A. There are all kinds of them here. There are 13 fathoms here, six fathoms, and here is 15 fathoms (indicating).
Q. All around Caribou Island?
A. That is right.
Q. How about Chummy Bank; what is Chummy Bank like?
A. Well, it is a nine-fathom bank.
Q. In very bad weather, you would divert to take advantage of the lee shore in the vicinity of one of the banks, Southeast or Chummy Bank, where the water shoals up quite a bit; is that correct?
A. Yes.
Q. What is your experience about the sea condition where the water is deep and where one of these shoals occurs?
A. What happens there is you get an awful undertow. You get quite a roll going through there, because the water is washing.
You don't know which direction the undertow is running underneath.
Q. How does that undertow affect the ship, Captain?
A. It just rolls, and you don't know whether you can turn it around to get out of it or not.
Q. What do you mean by undertow, Captain? What is
undertow?
A. You get an undertow from these banks. The water washes up, and then it goes back, and it goes around in circles as far as I can tell.
Q. Is it an effect of the underwater body?
A. Yes.
Q. This has nothing to do with the height of the sea?
A. No, but they all go different directions.
Q. The salt water seamen talk about the ship smell of a bank. Do you use that term up here?
A. No, but I know what they mean.
Q. Do you smell them at all?
A. Yes.
Q. Do you smell them when the weather is rough?
A. Oh, yes.
Q. How about the sea condition of the height of the waves when you are in the vicinity of one of these shoals; is that different from where it is in deeper water?
A. No, I don't think so.
    I never paid no attention to that to notice it.
Q. In your opinion, does it peak up more, less, or not any different from around one of these shoals than it does out in deep water?
A. I don't think it makes any difference.
Q. It is still very rough?
Q. In the worst condition that you have experienced, Captain, on the Fitzgerald in your many years of experience, how many seas, or what would be the length of an average sea, would you say, in very rough conditions?
A. Do you mean the height or --
Q. The distance between them?
A. 30 or 40 feet.
Q. No. I am talking about the length between two seas.
A. I don't know. Maybe 100 feet, maybe less.
Q. How about the height?
A. I have seen them 20 feet and higher. I have seen them come up higher than the aft cabin.
I have seen them roll along higher than the aft cabin.
Q. Do they come aboard the ship?
A. Sometimes they do, and sometimes they don't, but they roll up on your stern. Some of them will come along the deck.
Q. How about if they are on your beam, Captain; would they roll aboard the vessel?
A. Oh, yes. They would roll on the ship side if they were higher than the deck, if you know what I mean.
Q. How about heading into them?
A. Well, heading into them with a ship like that, you just check her down and try to avoid water coming
The less speed you have, the less water.

CAPT. ZABINSKI: Thank you very much, Captain.

EXAMINATION

By Rear Admiral Barrow:

Q. Captain, you testified in several cases about the maximum sea conditions. I think you have stated that you have been operating on the lakes where you had seas that were up to 30 feet in height?

A. Well, I don't know if I have ever been in 30-foot seas.

Q. What would you say the maximum sea conditions have been in any voyage that you have made?

A. I would say between 25 and 30 feet. I won't say just exact.

Q. Were the distance in crests on the order of 100 feet?

A. Right.

Q. I would like to try to get a little bit of a feel as to how the vessels handled and operated in that particular kind of a situation.

Could you describe for me the action of the Fitzgerald when you had a sea of this kind perhaps from a quartering, with the sea on the quarter?

A. Well, she rolled very good in the quarter.

Q. Can you describe the motion of it?
A. She would raise. I have seen her roll too much.
She would roll to a certain extent, but the seas on the quarter, they would come aboard and roll along the deck.
I had never seen any damage done.
Q. But you say the ship would not under those conditions roll appreciably?
A. What do you mean?
Q. Would they roll five degrees or 10 degrees?
A. Oh, yes. They would lazy roll. She would roll all of that, five or 10 degrees.
Q. What is the maximum roll that you have experienced on the Fitzgerald?
A. Well, I don't know; I never measured it.

(Laughter.)

Q. Tell us, approximately.
A. 30 degrees.
Q. Up to 30 degrees?
A. Yes.
Q. During the period of time that you were master of that vessel, had you under certain weather conditions, either sea or wind, stayed in port as opposed to going out to sea with her?
A. I have. I have laid in for weather.
Q. Under what sort of conditions?
A. I didn't feel the weather was right. I didn't feel
like going out there.

Q. Was there any specific intensity of sea weather or sea condition in which this happened?

A. Maybe 50 or 60 mile an hour winds, or storm warnings, something like that.

Q. I think you have indicated that customarily you checked your weather reports every six hours?

A. That's right. They are every six hours, and then you get your 2:30 afternoon report with respect to directions and the velocity of the wind, and your ship's report of wind all over the United States.

Q. Where did you get these reports from?

A. Lorain, the Lorain radio station.

Q. And what information was in those particular reports? Your maximum winds?

A. Right, wind and direction.

Q. What additional information?

A. The height of the seas.

Q. You did get a marine forecast?

A. You would get them from the ship's report.

Q. Did this information come from the Lorain radio station?

A. That's right. We would radio them every -- say, like after 12:00 o'clock, after the weather report. Then these weather station ships send in the weather report in to
Lorain.

Then they make up the weather sheets, and they broadcast that at 2:30 in the afternoon and 2:30 in the morning, and I think 8:30 at night, every six hours.

Q. Those were actually reported on-scene weather conditions?
A. Right.

Q. How about forecast conditions? Were these sent out?

Did you get those?

A. Yes, sir. That was every six hours.

Q. Every six hours a marine forecast of predicted sea conditions?

A. Right, a weather report; yes.

Q. Generally, have you found that the predicted sea conditions, the predicted velocity was fairly accurate?

A. Yes.

Q. For Lake Superior as a whole, would the forecast be for the lake as a whole, or would it be separated into particular parts of the lake for forecast conditions?

A. For Lake Superior, they would give it in halves, the west half and the east half.

Q. For the weather conditions?
A. Yes.

Q. Was the Fitzgerald a weather reporting ship?
A. Yes.

Q. What particular kind of equipment was aboard the
Fitzgerald for purposes of reporting?
A. Well, we had radar and telephones.
Q. What measuring devices were there on board the Fitzgerald for recording weather and reporting?
A. Well, a weather indicator.
Q. An anemometer?
A. Yes.
Q. Did the Weather Bureau put these pieces of equipment on board?
A. Yes.
Q. And did they maintain it?
A. Yes.
Q. Was it often checked or checked at all for accuracy?
A. Well, I have had it checked a number of times.
Q. You did?
A. Yes.
Q. I would like to talk just for a few minutes, Captain, about the life-saving equipment which was on board the Fitzgerald during the period you were there.
Could you describe it for me, please, the life-saving equipment, primarily?
A. Well, we had two lifeboats and inflated life rafts on each end, and all your ring buoys. You always had your life jackets in every room. To meet the inspections and specifications, everything was right up to date.
Q. What kind of lifeboats were they?
A. I think they were 20 or 25 persons each.
Q. How were the inflatable life rafts launched?
A. How were they launched?
Q. How were they to be launched?
A. They were inflated.
You had to pull the lock to let them get off the deck.
Do you know what I mean? You could throw them overboard.
If you did that, the lock would break, and then they would inflate.
Q. What sort of launching apparatus was there for the lifeboats?
A. Electric motors.
Q. Electric motors?
A. They were electric operated.
Q. Can you describe for me the procedure by which you would put one of the lifeboats in the water from the Fitzgerald?
A. Well, you would hoist them up with your power, and then you had your cranks to crank them out by hand.
Q. They were actually cranked out?
A. Yes.
Q. And then how would you lower them away?
A. By the winch.
Q. Could you give me some sort of an estimate on how
long you think this would take from the time that you wanted to put a boat in the water until the time it could be waterborne?

A. Well, we have done it in five or six minutes; had a boat in the water.

Q. Is this from the time that you had the covers on until actually you placed the boat in the water?

A. Over the side, right.

Q. What kind of releasing gear was there on the boats?

What kind of hooks?

A. They had the regular hooks. I can't even explain it now. It was snap-on hooks that released automatically.

Q. A snap-on hook?

A. It went over the hook.

REAR ADMIRAL BARROW: I think we can get specifically that information as to what kind of releasing gear there was from other witnesses.

MR. MURPHY: Yes.

By Rear Admiral Barrow:

Q. Can you tell me whether or not there were any orders issued by the operators relating to lifeboat drills on board the Fitzgerald?

A. Well, we always had them every week.

Q. Were there any standing orders, any orders from the company, from the operators, on the --
A  No. It was a Coast Guard regulation.
Q  You held drills once a week?
A  That's right.
Q  And what did those drills consist of?
A  Everybody assembled to their stations and had to get
the lifeboats over the side.
Q  Did you actually once a week place the lifeboats in
the water?
A  No; we just picked them up and swung them over the
side and brought them back in.
   The only time we had that -- we would do that in
ports. You lower the boat into the water and train your men.
We did that maybe a couple, three times a year.
Q  Was there any sort of instruction given to the crew
for these lifeboat drills?
A  Each one had their station, and they had a card under
their bunks.
Q  Did you carry out instructions at that time?
A  As to what the stations were and what they were sup-
posed to do.
Q  What sort of alarm systems were there on the Fitzgerald?
A  We had electric alarm bells.
Q  General alarm?
A  A general alarm.
Q  And they were powered from where?
A. Batteries.
Q. And where were they located?
A. Forward and aft under the pilothouse and back aft.
Q. In both locations?
A. Yes.
Q. Would the alarm bells on the aft deck sound if for any reason the power line was broken between the aft section and the forward section?
A. I don't know if the power line was broke, I don't know if you could do it, because you put the switch on up in the pilothouse.
Q. Was your answer you don't know whether they would or not?
A. That's right.
Q. In addition to the general alarm system, were there other communications systems? Was there a public address system or anything like that?
A. Yes, we had a public address system on board.
Q. Where was the power supply for that?
A. From the engine room.
Q. From the engine room?
A. Yes.
Q. The speakers were located on the main decks as well as below, throughout the ship?
A. Yes, there was on the windlass room, one on each side
of the forward end, one on each side of the after cabin
and one on the fantail.

Q. Did you have any special procedures to be followed
on the Fitzgerald during rough seas? During rough weather,
were there any instructions that were either in written
form or passed orally as far as the crew protection?

A. No, sir.

Q. All right.

REAR ADMIRAL BARROW: Do you have any further
questions? Counselor, do you, Mr. Murphy?

MR. MURPHY: Yes, I have some
questions, Mr. Chairman. I was wondering if,
perhaps, we might take a noon recess before we start
or would you prefer that we keep going?

I have a number of questions.

REAR ADMIRAL BARROW: I think we would like
to go on through probably until around 12:30.

MR. MURPHY: I see. Very well.

EXAMINATION

By Mr. Murphy:

Q. Captain, you were asked whether or not in bad weather
you had taken a number of courses along the north shore
and you described some of those courses that you had
followed.

Did you on those occasions ever follow a course
along the northerly shore and pass south of Isle Royale?

A. Yes, lots of times, yes.

Q. Captain, I still have it not clear in my mind with respect to the sheet that you referred to that the mate used in loading the vessel and then putting the information into the small book that you described that generally was left on board the vessel.

Would you describe that sheet and what that was?

Was that something that was a form from the company put out, or was that a scratch paper that the man used?

A. A scratch paper that the man used himself.

Q. It was a scratch paper that the man made out and what did he do with it, then?

A. He would enter it into the loading book.

Q. To the best of your knowledge, what happened to that scratch paper afterwards?

A. He kept it. The scratch paper? I don't know. He might have threwed it away.

Q. Was it a form that was retained? Was it a form that was sent to the office, as far as you know?

A. No.

Q. So, as I understand your testimony, that was a scratch paper that he used for his own use?

A. That's right, that's right.

Q. You have also mentioned in response to several
questions that in the course of the time that you were
sailing the Fitzgerald up to 1971, when you retired,
that the depth of the water in the rivers generally was
adequate to permit you to load your vessel down to your
marks?
A. Right.
Q. Do you have any knowledge as to what the depth
of the water has been since that time? Have you followed
that at all? Do you know what it is?
A. I haven't paid that much attention, but I know it
has come up a little higher, I think.
Q. The fact is that you don't know what the depth is now,
is that true?
A. I don't know now.
Q. So you don't know now, for instance, on this par-
ticular voyage that we are concerned with here, you don't
know whether or not the Fitzgerald would have been able to
load to her marks; is that true?
A. No, sir, no.
Q. Did I understand your testimony to be that if you
were running in heavy seas and you were running into the
sea, that you generally would slow down to reduce the
effect of the weather against your vessel, but if you were,
in turn, running with the sea, that you did not necessarily
have to slow down?
A. No

Q. What was your practice running with the sea, Captain?

A. I kept it going the normal speed.

Q. There was some questioning with respect to the
trimming device on your ship, the lights and so forth,
and the number of degrees that any flash would show.

What was your practice when you were sailing a vessel
as to leaving a dock with any list? Would you leave
with any list at all? Would you leave with a list?

What was your practice?

A. I tried to leave with no list, as close to the white
light as we could.

Q. So your practice was to prevent any list, if possible?

A. That's right, yes.

Q. Captain, how many vessels did you sail as master,
approximately?

A. Harry D. Ewig, McFarland, Richardson, Buckeye,
R. C. Norton, Middletown and the Fitzgerald.

Q. When sailing as master of any of those vessels, was
there ever any indication when you were in heavy weather
when a part of the fence rail was either laid over or lost?

A. Yes

Q. Captain, I am going to ask you to assume that there
were sustained winds to the vessel and aloft at up to 58
knots as the vessel, the Fitzgerald, was in this portion of
Lake Superior with the wind out of the west (pointing).

CAPT. ZABINSKI: Counselor, you are indicating Michipicoten Island, is that correct?

MR. MURPHY: In the vicinity of Michipicoten Island or Caribou Island or even South Caribou, in that general area, with the wind out of 290 degrees, and the vessel would sustain winds to 58 knots and gusts in excess of 70, or in excess, and I would like you to assume that a portion of the fence rail of the Fitzgerald, I think the starboard fence rail, was either lost or bent over and two of the vent caps were lost.

Do you have an opinion as to whether or not the seas resulting from that type of a wind could have caused that damage?

THE WITNESS: Yes.

By Mr. Murphy:

Q. What is your opinion?

A. The seas running over the deck would have bent them down.

Q. You are referring to bending the fence rail?

A. That is right.

Q. How about with respect to the mushroom caps on the ballast tank air vents, what would happen to it?

A. That would happen, too, with the pressure of the sea
coming on that.

Q. You were asked some questions with respect to a loading book or loading manual and you mentioned you did not have one when you were aboard as master, and there has been introduced into evidence in this case a loading manual which was dated and issued in 1973. Was that loading manual on board at the time that you were aboard?

A. Not in 1973, I wasn't there.

Q. You had left prior to that time, is that correct?

A. That is right.

MR. MURPHY: Excuse me one moment,

Mr. Chairman.

(Pause.)

MR. MURPHY: Just one further question,

Captain.

By Mr. Murphy:

Q. You were interrogated with respect to damage that occurred on the ship over the years that you sailed it and you mentioned, I think, that there had been some damaged plates.

Was there ever an occasion when you were in a collision with another vessel while you were sailing the vessel?

A. Yes.

Q. What was the nature of that damage?
A. Well, I was passing the Hochelaga

Q. Just the nature of the damage, Captain, the nature of the damage to your ship?

A. He come in to me and hit me on the starboard side.

Q. Whereabouts? In what area was it damaged?

A. It was about the seventeenth hatch down, in that vicinity.

Q. Was that damage subsequently repaired?

A. Absolutely, right.

Q. How long after that repair was made did you sail the vessel?

A. I don't remember when I had the accident.

Q. All right, I see.

A. I forgot.

MR. MURPHY: I have no further questions.

REAR ADMIRAL BARROW: Any questions by the Board? Commander Loosmore?

CDR. LOOSMORE: Yes, I think I have three short questions.

EXAMINATION

By Cdr. Loosmore:

Q. Captain, you testified that there were no structural repairs, no structural damages or no repairs.

How did you, as master, keep track of what went on in
the way of repairs during the winter season when the vessel was laid up?

A. How did I keep track of it?

Q. Yes, sir, or did you? Were you informed?

A. I was informed by the company what they done over the winter. The ship was inspected every time I took the ship into lay-up dock. The Coast Guard, the American Bureau and their inspectors would see if there was any damage or anything that was supposed to be repaired.

Q. Did you prepare requests; did you make those up?

A. No, the only thing I have done was if I had any winter work to do, any changes or anything like that that I know of.

Q. How did you tell the company about that?

A. Put it on the work list and sent it to the company.

Q. On a winter work list?

A. Yes, we always make out a winter work list about what we want done or if we want something changed, something like that; you know what I mean. If there is anything that should be done that we see with our own eyes, and it is inspected and it is repaired during the winter.

Q. Then did they follow it up and tell you what they had done?

A. Yes.

CDR. LOOMISMORE: Counselor, I believe the winter work list was one of the pieces of
information that was discussed yesterday by
Capt. Jacobsen; is that correct?

MR. MURPHY: That is correct, sir.

By Cdr. Loosmore:

Q Captain, were there on board the Fitzgerald, when you
were on board, any alarms which would sound if water got
into what was an otherwise empty ballast tank?
A Not that I know of.

Q Captain, you testified that in heavy weather, the
Fitzgerald would roll approximately 10 degrees maximum.
Is that what you said, a 10-degree roll was about all it
would roll?
A It would roll more than that, I think. I never
mentioned it, but she had always come back for me. That's
all I can say.

Q At another point, you said approximately 30 degrees,
I think.
A Right. I have seen it. I have walked the walls
already. I can tell you that.

Q At the same time the vessel was rolling, it is prob-
ably pitching as well, wasn't it?
A Well, yes.

Q Can you tell me how much, in a good heavy blow, how
much it would pitch?
A Which way are you going now?
Q. If you looked aft, could you see over the top of the aft?
A. You could always see the top of the aft.
Q. Can you see the horizon over the top of the after house? Halfway up?
A. Oh, yeah, but the light, you can see the horizon at all times. If you pump her out in the lake, you can see the horizon because you have to keep your stern down, see.
Q. But loaded in a heavy blow, how much did it pitch?
A. How much she went up and down?
Q. Yes.
A. That's hard to tell. 10 to 15 feet, maybe. I couldn't tell you. I couldn't tell you just how much. It was high enough for me.
Q. You talked with Capt. Zabinski about the chart up there and you mentioned a nine-fathom bank and a six-fathom bank. Would you have taken the Fitzgerald loaded over a six-fathom bank?
A. Well, I would try not to.
Q. In heavy seas, would you have?
A. No, I think I would stay away from it.
Q. How about a nine-fathom bank?
A. Nine times six is 54. That's 54 feet of water. That's pretty safe, then.
Q. It is fair to say that you wouldn't be concerned about a nine-fathom bank?
A. I wouldn't be afraid to touch it.

CDR. LOOSMORE: Thank you very much, Captain.
REAR ADMIRAL BARROW: Captain Wilson?
CAPT. WILSON: I just have a couple more questions, Captain.

EXAMINATION

By Capt. Wilson:

Q. You mentioned before the ballast gauges in the engine room. Was there a separate gauge for each ballast tank?
A. Oh, yes, yes.

Q. So that if you had water, if you had ballast, you could tell in any tank if it had ballast or any liquid in the tank?
A. Yes, we have the mercury switches and gauges for each tank.

Q. So there was no need to switch a gauge from one to the other; you could read each one?
A. No, sir.

Q. You mentioned that you would try to load without a list.

Were there any occasions where you ever did load and had a list because of errors on the loading cranes or for
any other reason? I am talking about a slight list; I am not talking about 20 degrees.

A You mean loading at the dock?

Q Yes, sir.

A Yes, loading at the dock.

Q Then did you attempt to correct the list by taking on some ballast?

A We do that on purpose sometimes, when we are sucking out the ballast tanks so the water will go into it.

Q Yes, sir. I misunderstood you or you misunderstood my question.

After you completed loading, not the list that you would intentionally put on the vessel during the loading operation, but you have now completed loading.

A Right.

Q And you find that the vessel has a slight list.

Have you ever had that condition?

A No.

Q Or do you always head out with a white light?

A White light, as close as we can get it.

Q If you weren't exactly on the white light, you wouldn't take on ballast or anything to get a perfect condition?

A No.

Q You mentioned or you talked about 100 feet between
crests of the seas on a storm.

The Fitzgerald was 730 feet. That would mean, then, in that storm condition, out of 100 feet that you mentioned, you would have seven seas alongside of the vessel, seven crests?

A. You could have, yes.

Q. Could you have less than seven, or do you remember?

A. I don't know. That's hard to judge or watch for.

Q. You never in the time that you were on the vessel had a condition where you only had, say, two?

A. No, no, I never did look.

Q. Or even three?

A. I don't even remember. I have never had any trouble.

Q. Less or more than three, say?

A. I never remember.

Q. Or possibly less than seven?

A. That is right.

Q. During the storm conditions, did you ever notice any flexing in the vessel?

Were you ever able to see, for instance, the hatch covers working?

A. I never seen the hatch covers working.

Q. Not working free of the combings, but have you seen the crests working their way along the deck?

A. Yes, I have seen the crests work. They've got to
give. If they don't give, they are going to break.

Q. Approximately, and I realize this is approximate, and we are talking about estimating and something that you weren't looking for, but how much would you say they worked otherwise?

Would there be a couple of inches between the adjacent hatches or a foot?

A. I think they have been more than that. I think they had been a couple of feet.

Q. Between adjacent hatches?

A. Not adjacent hatches, but I mean, throughout the whole ship.

Q. Throughout the whole ship?

A. Yes.

Q. So the lowest versus the highest would be a two-foot differential?

A. Yes.

Q. So then possibly your after house would be two foot below your lower house due to flexing?

A. Right.

Q. You mentioned there have been occasions when you laid in for weather. Is this light and loaded?

A. Yes.

Q. You have laid in in a loaded condition, or have you held in for weather because of a loaded condition?
Otherwise, have you gone out or had occasions when you were in a load condition and you laid in for weather?

A. Yes, I would stay in the lee of the land. I have stayed alongside Isle Royale up and down.

Q. Stayed in the lee?

A. Yes, stay in the lee along Island Royale running back and forth there.

Q. Is it more prevalent to lay in for weather in a loaded or light condition?

A. More in light conditions.

Q. Why?

A. Well, your boat is more stabilized when they are loaded, more than when she is light. It would be more flexible when she is light.

Q. So she would work more in a light condition?

A. Right.

Q. Would there be a difference in the wind effect on a vessel? Would she be harder to handle, harder to handle in a light condition rather than a loaded condition?

A. It could be in some ships, but you could put her down to 18 feet forward with ballast and it's just like a loaded ship.

Q. Have you ever taken on ballast in a loaded condition in order to put her head down any more?

A. No, sir.
Q. Either forward or aft?
A. No, sir.
Q. So you essentially, due to weather, when the vessel is in a loaded condition, you never had occasion to adjust the ballast?
A. No, sir.
Q. Take on ballast?
A. No.
Q. You mentioned the various times where you would take the Canadian lee because of weather, and of course all of the testimony you have given has been based upon the lake survey chart No. 9 that we have posted here, and is that the chart you use?
A. Yes, that's it.
Q. That chart?
A. That's it.
Q. Even in the area of Isle Royale, is there another lake survey chart?
A. We have a bigger scale chart like that, too, Isle Royale and going into Thunder Bay.
We have sections there that are on a bigger scale.
Q. And these are all lake survey charts?
A. Yes, sir.
Q. Do you use any of the Canadian charts?
A. I have them on board, if I am going in the Canadian
harbor or something that I don't know.

Q. Those are harbor charts?
A. Yes.

Q. But the eastern end of the lake or up around --
A. Them are just as good as theirs.

Q. So you stick to the lake survey?
A. Yes.

Q. But you do have the Canadian charts aboard?
A. That is right.

Q. You keep both sets of charts corrected for any changes in navigation?
A. Yes, and always have.

Q. Is that the Canadian and lake survey charts?
A. Yes, I always keep a Canadian chart for the harbors, the Canadian harbors that I go to. I never kept a full set. These are places that I went to.

Q. Yes, sir, I understand that.

Did you keep the Canadian lake charts aboard? Did you have Canadian lake charts aboard the vessel or just the harbor charts?
A. I can't recall if I had the full lake, but I have them in Thunder Bay and up there where we were apt to go into.

Q. You have quite an extensive history, and I wouldn't ask you to cover it all, but you mentioned quite a number of the boats that you have been on, quite a number, as a
master.

How many of these were self-unloaders? You were on a crane boat at least once?

A. Yes. They were all crane boats.

Q. They were all crane boats until --

A. Until I got on the Middletown. I was on the Ewig, the McFarland, the Richardson, the Buckeye and the Norton. Those were all the boats, and the Norton was a self-unloader and a crane boat.

Q. So you had the crane boats and the Norton, and that's a self-unloader. Then you were on the Middletown; that was the next one you mentioned?

A. Yes.

Q. And she is a flush deck?

A. Right.

Q. When did you go on her?

A. 1963.

Q. '63?

A. Yes.

Q. As master?

A. Right.

Q. And you were on there until --

A. I was on there three years.

Q. From '63 to --

A. Actually, '65. In '66 I took the Fitzgerald.
Q. That was in '66?
A. Yes.
Q. And you were on there to the end?
A. Yes.
Q. Where did you serve as a mate?
A. I served --
Q. Not all of them.
A. -- the Ewig, the G. G. Post, and I became a master
when I was on the Ewig.
Q. We have some people in here that we may have lost in
the language.
Is there a difference in the mate's job on a crane
boat, for instance, as far as loading and discharging goes?
A. I don't think so, no. It is different cargoes.
Q. You still have to ballast and deballast?
A. Yes, the same thing.
Q. Do you have a problem with trim and list while you
are ballasting and deballasting?
A. No.
Q. So it is a little different, but you have the same
thing?
A. Yes.
Q. On the Middletown or the Fitzgerald, have you ever
had water in the cargo hold when you had taconite aboard
at any time due to fracture in the side tank or bucket
damage?

A. Never.

Q. Even from rain or weather; you have never taken any?

A. No. I never seen the water in the cargo. That was always dry.

Q. So you always had dry cargo?

A. Right.

Q. You never had the occasion to even unload in a thunder squall?

A. We have, but we pumped it out. We have loaded in rain and stuff like that, but I think the ore would soak up a little bit of that water.

Q. So not enough that it gave you any problem?

A. No, sir.

Q. You mentioned that you sent the weather in to Lorain?

A. Right.

Q. Every six hours?

A. Yes.

Q. You sent it in immediately after --

A. It was supposed to be in by 1:00 o'clock, into the station.

Q. By 1:00 o'clock?

A. That is right. Then at 2:30 --

Q. And then 1:00 and then 7:00?

A. Yes.
Q. So it would be in by 1:00 o'clock, and then you would get the weather --
A. Back at 2:30.
Q. At 2:30. So the weather could be as fresh as an hour and a half?
A. Right.
Q. And it could be as old as six hours, since you did it every six hours?
A. Yes.
Q. On the charts, how often did you fix your position, say, in the open lake? How often did you --
A. Check our courses in a fixed position?
Q. Yes.
A. At every check point.
Q. Would you give us a few examples of the check point?
A. Our hauling points were like at Devil's Island. The next one was Outer Island. You don't change there. You change course at Eagle Harbor, and you change course at Copper Harbor and you change course at Manitou.
Q. So at your turning points, you check that?
A. That's right, and if you pick up a shore on your radar, like on your radar you could pick up the south shore, and check your distance, just to make a check on it.
Q. So that would be something the mate on watch would do?
A. That's right.
Q. What did you use for navigation; did you use radar?
A. Radar or a gyro-compass.
Q. To fix your position at the turning points, did you rely on your radar fixes at the shore, or did you have other aid for navigation?
A. We would use a sightless -- you know what I mean. We would take a sight bearing on your light.
Q. A sight bearing on your light?
A. Yes.
Q. How do you do that; what did you use for that?
A. With a slight bearing. We used to take a 45-degree angle, and then you time her from the time she was 45 degrees to the time you were abreast, and that would give you the distance you were off.
Q. That plus your radar?
A. Right.
Q. You would check your radar at the same time?
A. That's right, and you also have your direction finder.
Q. And you would use the direction finder?
A. Yes.
Q. Did you generally make two or three checks?
A. Yes, more than that.
Q. You wouldn't rely just on one means?
A. No.
Q. And then would you DR your position? Would you keep a
running track line, and the mate would put an approximate position down?
A. Yes.
Q. And how often would you do that?
A. Well, like between points, if you had gotten out of sight from Manitou to Whitefish to Caribou, you don't have anything but Caribou Island that you would be close enough to check bearing.
Q. What would you rely on, for instance -- you pointed out some of the shoal areas. In heavy weather then, bad storm conditions, you would pretty much rely on your radar for your position?
A. Yes, sure.
Q. Because you couldn't pick up the lights?
A. Yes.
Q. And you would have the direction finder also?
A. Yes.
Q. So you relied pretty much on radar and the direction finder rather than visual?
A. Yes.
Q. When you said you took the bow on the bearings, you didn't rely on any sort of gyro-compass?
A. Oh, yes.
Q. What did you take your bearings with?
A. You have a compass card, and you have a bearing
indicator. You put it on the square. You have been aboard the boat.

That's all you have to know, or take them on the direction finder. Your signals come in, and you take your 45-degree bearing, and then you get it to beam. Then you find your distance off. That's if your radar is not working.

Q. Did your direction finder have a gyro repeater, or were you using relative bearings?

A. I think it was relative bearings.

Q. So you would get it off the bow?

A. Yes, that's all I had.

EXAMINATION

By Capt. Zabinski:

Q. Captain, I would like to direct your attention back to the boat launching that you described for the Admiral as to how you launched the lifeboats.

A. Yes.

Q. Would you go through that procedure again for me, please; how you launched from the cradles, how you launched the boats outboard?

A. Do you mean to get them over?

Q. To get them over, yes.

A. Well, she had electric winches. You would raise them up.
If I am not mistaken, she had an electric crank to
 crank them out.

Q Now, Captain, did you have to first raise the boat
 before you could swing it out?
A No, we didn't have to; no.
You push them right out.

Q You could crank that out and the boat would go?
A Yes, sir.

Q In other words, if the vessel had suffered a power
 failure and you couldn't operate the winch, you still
 could have launched the boat successfully, is that correct?
A That's correct, by hand.

Q What means of communication with other vessels in
 the event of distress were on board the Fitzgerald?
A Your radio telephones is all I know.

Q Did you have any flares?
A Yes, you had flares in the pilothouse.

Q Anything else, Captain?
A Well, the only thing, in the daylight, the only thing
 in the daylight is to put the American flag upside down.

Q Captain, in Lake Superior, if you had a northeast
 or northerly wind, does that change the level of the lake
 at all if the wind blows for a considerable period of time?
A I don't think it would be very much. Maybe a foot
 or so. It is much more in Lake Erie.
Q. Much more in Lake Erie?

A. Yes, it blows it right out. It doesn't affect it around the locks. I have never seen it over seven or eight inches.

Q. Captain, what do you think, in your opinion, went wrong on the Fitzgerald?

A. That is hard to say. I wasn't there, and I can't really tell you.

Q. Captain, if I told you that the last communication indicated that the vessel had a list, what would that mean to you?

A. Well, she was taking water or something.

Q. If I said it had a list and was using the ballast pumps, what would that mean to you?

A. It would mean that she was taking on water.

Q. If I said the fence was laid over, what does that mean to you?

A. Bent.

Q. Not necessarily broken, but bent over?

A. Yes.

Q. If I said the vents were open, what would that mean to you?

A. If you said the vents were torn loose -- well, the vents were torn loose.

Q. Do you think, Captain, that there could be enough
water under certain conditions into those vents to put
the Fitzgerald into trouble?
A. It could list her a little bit more, but I don't
think it could sink her.
Q. What do you think could cause her to sink, given
those conditions?
A. A big sea could wash aboard her and list her more;
maybe crack her. There could be a number of things that
could happen.
Q. Are you talking about exceptional seas?
A. Yes, it could pile aboard her.

CAPT. ZABINSKI: I have nothing further.
REAR ADMIRAL BARROW: I have several questions,
Captain.

EXAMINATION

By Rear Admiral Barrow:
Q. If you had a ship in a heavy storm and heavy seas,
and you wanted to reduce the stresses on it, and I am
talking about in a loaded condition now, and you wanted to
reduce the stresses to a minimum, would you head into the
seas or would you try to assume another kind of position
with relation to the seas in order to reduce those, accepting
maybe the rolling stresses?
A. Well, I hope I could put the sea over the stern,
so she wouldn't roll. Do you know what I mean?
You would be riding a lot quieter.

Q. In a loaded condition, then, you would think the stresses on the loaded carrier would be less if you had the seas on the quarter or somewhere from the stern?

A. More over the stern.

Q. You would not under any circumstances, for instance, put it with the seas on the beam?

A. Absolutely not.

Q. How about off the bow; would you have more stress if it were on the bow?

A. Driving into it and working into it.

Q. If you were in a situation where you had the seas from the stern and you wanted to bring the ship around, and again I am talking about in a loaded condition, and you wanted to bring her around with the sea on the bow, under conditions that we just expressed here with sea conditions on the order of 20 to 25 feet and winds up to 68 or 70 knots, would you have any trouble coming around?

A. I think you would. I don't think I would want to do it.

Q. Do what?

A. Turning around with the sea and wind.

Q. What would be the problem?

A. She maybe would get in the trough of the sea and wouldn't come out.

Q. Do you have some considerable experience on other ships
as well as the Fitzgerald -- I know you have ridden out
many storms on the lakes.

Under conditions I just described, 20 or 25 foot seas,
and perhaps 80 knots, would you have a concern for the
Fitzgerald as far as her strength or capability to with-
stand that storm?
A. I wouldn't be concerned about it.
Q. You would not?
A. No.
Q. You have had no conditions in all your years of
experience on the lakes where you have been concerned about
the Fitzgerald, the six years you were there, as far as
her capability?
A. No.

CAPT. ZABINSKI: I have a few more
questions.

EXAMINATION

By Capt. Zabinski:

Q. Captain, we had this tragic accident involving the
Fitzgerald. We had 29 people aboard?
A. Yes.
Q. She was fitted with two lifeboats, two inflatable life
rafts, life buoys and eighty some odd life jackets, and
yet today we have not recovered any survivors or victims.

Why not, Captain, in your opinion?
A. That is something I don't know. I couldn't tell you whether she got swamped or what. That's a big mystery.
Q. Would that indicate to you that something sudden happened; that they didn't have time to prepare? Would that be a fair statement?
A. That is correct.
Q. Do you think such a possibility could have occurred?
A. It could have.
Q. If she broke in two, would the crew have had time to get out?
A. I don't think so.
Q. How about if she capsized?
A. No.
Q. Do you think whatever developed, it happened suddenly?
A. That is correct.

CAPT. ZABINSKI: Thank you.
REAR ADMIRAL BARROW: Mr. Schuchmann?
MR. SCHUCHMANN: No questions.
REAR ADMIRAL BARROW: Are there interested parties who have any questions they would like to submit to the Board?
MR. WAESCHE: I have a few.

EXAMINATION

By Rear Admiral Barrow:
Q. A few other questions, Captain, and we may have covered
this in part, but do you recall how many occasions, on
vessels where you served as master, that you had a
following sea situation in the order of 20 or 25 feet?

Would you give an estimate or do you have any idea?

A. I can't say.

Q. I am talking about the Fitzgerald now, specifically.

A. Every fall you do run into a couple of storms.

Q. Then your answer would be on several occasions?

A. Oh, yes.

Q. Have you at any of those times suffered any structural
damage under those conditions?

A. No, sir.

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

You are warned not to discuss your testimony
with any other person until the conclusion of your
investigation.

MR. MURPHY:

Mr. Chairman, as you
know, the Captain has come up from Florida.

Is he free to return home?

REAR ADMIRAL BARROW:

Do you have any further
need for this witness?

CDR. LOOSMORE:

No, sir.

REAR ADMIRAL BARROW:

Yes, sir, and we appreciate
him coming up.
You have stated for the record that you paid for this witness to appear before this Board.

I would say that there are provisions for payments of witnesses to appear before the Marine Board.

MR. MURPHY: Thank you, Mr. Chairman.

It was not my intention to emphasize that aspect on the record. I just wanted to point out for the Court and for the record that he was voluntarily produced.

REAR ADMIRAL BARROW: Thank you.

We will recess at this time at 12:42.

We'll start again at 2:00 o'clock p.m. Thank you very much.

I have one announcement to make. This can be off the record.

(Discussion had off the record.)

(Thereupon, at 12:42 p.m. a luncheon recess was had to reconvene at 2:00 p.m. this date.)

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REAR ADMIRAL BARROW: All set? Let the record show we reconvened at 2:13.

Call your next witness.

CDR. LOOSMORE: The Board calls Mr. Raymond R. Waldman.

Mr. Waldman, would you please raise your right hand?

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RAYMOND R. WALDMAN

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

MR. WAESCHE: Can you ask the witness to keep his voice up?

EXAMINATION

By Cdr. Loosmore:

Q Could you please speak up and state your name and address and occupation.

A Yes; my name is Raymond R. Waldman. I am meteorologist in charge of the Noah National Weather Forecast Service Office in Chicago, Illinois, and I reside at 4221 Saratoga Avenue in Downers Grove, Illinois.

Q Mr. Waldman, the record shows that you are not a party in interest in these proceedings.
A. Yes, sir.
Q. Do you hold a Coast Guard license or document?
A. No, sir.
Q. How long have you been employed by the National Weather Service or involved in that sort of work?
A. I have been involved in the meteorological field for 33 years, which includes 19 years weather forecasting experience in the Great Lakes.
Q. How long have you been meteorologist in charge in Chicago?
A. For a little over a year.
Q. Where were you before that?
A. I was in Milwaukee for two years and in Cleveland for 19 years before that.
Q. As meteorologist in charge, what do your duties involve?
A. My duties involve the supervision of all National Weather Service activities in the Chicago area, including those at the forecast office and also for the State of Illinois.
Q. Does your office prepare or have -- let me put it this way: To what extent does your office influence weather forecasting or data reporting for the Great Lakes?
A. The National Weather Service Forecast Office, which I had in Chicago, has a responsibility to provide
marine forecasts for Lake Superior and Lake Michigan.

Q. Then is it fair to say that any marine forecast
that involves the Lake Superior area where the Fitzgerald
was lost would have come from your office?
A. Any forecast for the open lakes portion of Lake
Superior would have come from my office.

Q. Mr. Waldman, would your office also have handled
the reports of what the weather conditions were on Lake
Superior?
A. Yes. We depend on the receipt of Coast Guard obser-
vations; that is, the weather observations, taken by
the Coast Guard stations along Lake Superior, and we also
depend on the weather observations provided by the ore
carriers. That is, we use this data plus data from many
other types to prepare our forecasts.

Q. By ore carriers, do you mean from the vessels which
are on Lake Superior?
A. Yes.

Q. We asked you to bring with you information concerning
the state of the weather on the 10th and the 11th of
November in the Lake Superior area, and particularly in
the eastern part.
A. Yes.

Q. Could you describe what you have and what the weather
conditions were for the morning, afternoon and evening of
November 10th?

A. Yes, I could. The storm that affected Lake Superior on November 9 and 10 was a very intense storm.

During the period which you ask about, winds began to increase on Lake Superior at 1:00 p.m. Eastern Standard Time, Sunday, the 9th, and except for a brief period Monday morning, on November 10, continued very strong through Monday evening, Monday, November 10.

Rain and some thunderstorms and squalls occurred on Lake Superior between 1:00 a.m. Eastern Standard Time to about 9:00 a.m. Eastern Standard Time on Monday, November 10, 1975.

There was also some snow along the northern shore of Lake Superior during the afternoon of Monday, November 10.

The strongest winds that we had reported to us, that is, from either a Coast Guard station or from a vessel that cooperates with our observational system, was from the west-northwest, and this is an average of the winds taken over a period of time.

The period of time would have been 3:00 p.m. Eastern Standard Time, Monday, November 10 to 7:00 p.m., Monday, November 10.

The average wind was from the west-northwest at 40 knots to 56 knots with gusts to 66 knots.

We also had in observation from the Arthur Anderson
at 7:00 p.m. Eastern Standard Time, Monday, November 10, 1975, winds from the west-northwest at 50 knots with waves of 16 feet.

MR. WAESCHE: What was that?

THE WITNESS: 16 feet.

MR. WAESCHE: 16?

THE WITNESS: Yes.

By Cdr. Loosmore:

Q Based upon this information or whatever else you had, can you tell us what was forecast for that period?

A Yes. The forecasters at the National Weather Service Forecast Office in Chicago raised the gale warnings on Lake Superior as of 4:39 p.m. Eastern Standard Time, Sunday, November the 9th, 1975.

The gale warning was increased to storm warning as of 2:00 a.m. Eastern Standard Time, Monday, November the 10th, and storm warnings were kept up on Lake Superior from 2:00 a.m. Eastern Standard Time, Monday, November the 10th, until 1:00 a.m. early Tuesday morning, November 11, 1975.

Q How long were the storm warnings maintained?

A The storm warnings were maintained for approximately a 17-hour period before the time of the tragedy.

Q How long thereafter?

A And they were kept up until 1:00 a.m. early Tuesday
morning, November 11th.

Q. How were these forecasts disseminated?

A. They were disseminated on the marine circuit, and via that circuit they get to the Coast Guard and to the radio telephone stations, who in turn broadcast storm warnings to the vessels on the lakes.

They were also disseminated over the NOAA Weather Radio System and we have three such systems on Lake Superior, one at Duluth, one at Marquette and one at Sault Ste. Marie.

Q. Do you have a transcript of what was broadcast on the NOAA Weather System? Or do you have any other records?

A. I have forecast records. I have a complete record of all of the forecasts prepared from 10:34 a.m. Eastern Standard Time, Sunday, November the 9th, through 10:39 p.m. Eastern Standard Time, Monday, November the 10th, and normally the forecast that is indicated, the official forecast, in plain language, the marine forecast for Lake Superior is used by our NOAA Weather System.

Q. Sir, may I see that, please?

A. Yes.

(Witness hands document to Cdr. Loosmore)

Q. I notice that these are copies. Where are the originals of these records held?

A. The originals are at the National Weather Service Forecast Office in Chicago in the files there.
Q. Are you the custodian of those files?
A. Yes.
Q. Are you prepared to testify as to the authenticity of these documents?
A. Yes, I am.
Q. And they are authentic?
A. Yes, they are.
And you have there both the narrative, both marine forecast for Lake Superior and the Mafor forecasts.
Q. What does that Mafor stand for?
A. That is a good question.
Q. I guess a better question is, what is its significance? What is a Mafor forecast?
A. It is the coded forecast. It is a forecast put in a code so as to make it -- facilitate broadcasts of this type of important marine information by radio telephone statons. It is less time consuming for them to broadcast the code.

Q. All right. On the sheets you have handed to me, there seems to be two sheets.

This is the plain language sheet.
A. On the sheet following is the code.
Q. The one with the numerals, so that for this one here -- they are not necessarily for the same time, are they?
A. No, they are not.
The narrative or plain language marine forecast is put out and immediately followed by the coded forecast.

CDR. LOOMORE: At this time, Admiral, I would like to request that these, I believe, 16 sheets be marked Exhibit 20 for identification.

REAR ADMIRAL BARROW: They will be marked for identification as 20.

MR. MURPHY: May we have the pages, please, marked, sir?

REAR ADMIRAL BARROW: We'll mark for identification consecutively 20-A through whatever it ends up to be.

CDR. LOOMORE: These are 16 sheets which have been marked as 20-A through 20-P.

(Pause.)

MR. MURPHY: We'll question on these later. Thank you.

CDR. LOOMORE: You have no questions on these, Mr. Murphy?

MR. MURPHY: Not at this stage. I would like to question the witness on them if the opportunity arises.

REAR ADMIRAL BARROW: Do you have any objection to the introduction?

MR. MURPHY: I have no objection to
what the witness testified; that they are copies of the originals from records which I assume are in his office.

REAR ADMIRAL BARROW: All right. They will be admitted into evidence as Exhibit 20. (Exhibits 20-A through 20-P were marked for identification and made part of the record.)

REAR ADMIRAL BARROW: I would like to note just a moment that counsel for Party in Interest Capt. McSorley is not present in the room at this time. Go ahead.

MR. MURPHY: I was just informed by my associate that apparently he is not planning to be back this afternoon.

He didn't tell us that.

REAR ADMIRAL BARROW: Very well. Proceed.

MR. MURPHY: Excuse me, Mr. Chairman, I notice another party sitting at the table. I would like to know if he is a party in interest?

UNIDENTIFIED PERSON: No, I am not a party to these proceedings.

REAR ADMIRAL BARROW: Would you take a seat in another part of the room, please?
By Cdr. Loosmore:

Q. Mr. Waldman, how often in your experience with weather in the Great Lakes and particularly at sea, how often would a storm like this one, which came up on the 9th and 10th of November, occur?

A. I can only make an estimate, out of experience, and I would say that it would be that we have intense storms on the Great Lakes, and drawing on my experience, an average of about four or five times a year.

November is a particularly critical month for storms.

Q. Are you saying that a storm of this intensity with winds 40 to 60 or 50 and gusting to 60, and waves at 16, can be expected more than once each year?

A. No, I am not saying that; I am saying that we do have roughly four or five significant storms in one fall through spring season, and to really answer that I would have to search the climatological records to compare this storm to any other.

I can draw from my memory and, drawing on my memory, I recall stronger winds than we had reported to us during the November 9th and 10th storm having occurred.

There have been cases of stronger winds that were reported than on November 9th and November 10th.

Q. Do you get one storm each year that is as severe as this one?
A. I think there are years that we do not get this kind of storm, definitely.

This kind, we might get through several seasons without getting this intense a storm. So it is not something that I would say that happened every year since the time that we have been keeping records.

Q. In the 33 years that you have been involved with weather on the Great Lakes, would you say that it has happened once or twice, or could you estimate a number?

A. It certainly has happened more than three times that I can recall right now.

Q. You said that you received information from the vessels which are transiting the Great Lakes.

A. Yes.

Q. Do you keep a record of which vessels send information?

A. We do not, but I would like to advise the Board that we do have a specialist from the National Weather Service in the audience, the port meteorological officer, and that was one of his duties, and I believe he could answer that question.

Q. Okay. Obviously what I was getting at was whether or not we had any information from the Fitzgerald before the loss.

A. Yes.

Q. You understand that there is such information?
A. There were weather observations from the Fitzgerald, definitely.

Q. And you say that this port meteorological officer is in the audience?

A. He is in the audience today.

Q. Who could testify today?

A. Yes.

CDR. LOOSMORE: We will call him in just a minute.

MR. MURPHY: May we have his name for the record, please?


Q. Mr. Waldman, I notice that there are wave heights in these Major broadcasts.

A. Yes.

Q. What is the source of that information?

A. The source of that information is based on a calculation that the weather forecaster makes considering the strength of the average wind and the wind direction and the period of time that the wind blows from a given direction at a certain strength, and what we are trying to indicate -- our wave forecast indicates the expected wave heights at the downwind end or side of the lake, this being the area where the wave heights are expected to build up to their greatest heights.
Q. Obviously you are reading from something here.
A. Yes.
Q. What is that?
A. This is the decoding material that we give to people in the marine community or to people who are interested in any kind of shipping or boating activity on the Great Lakes, so that they can decode our Mafor weather forecasts.

Our Mafor weather forecasts are in a code and these decode them for them. It also explains when, at what times and by whom these Mafor winds are broadcast.

Q. Is that distributed by the National Weather Service?
A. Yes, it is.

Q. In your calculations of wave heights, do you have any measurements of wave heights that you use to check your calculations?

Do you have any data to support the calculations?
A. Well, we take a close look at all the weather observations that we get from the Coast Guard stations along the shores of the Great Lakes, and we also use the weather observations that the carriers make available to us.

Q. Are there any wave height measuring devices which you draw on in this?
A. No, there are none.

We depend on the observations for the real actual reports of those kinds of conditions.
Q. Do you use satellite photographs in connection with this?
A. We use satellite photographs to detect clouds and the movement of major weather systems, such as low centers, or warm or cold fronts; but the temperature data, and as far as -- that is, there is nothing in the satellite pictures that would help us to forecast the wave heights or to determine what the actual wave heights are.
Q. I notice from this Exhibit 20 that the first broadcast, it is at 9:30 a.m., Sunday, and the next one is at 3:30 and so forth, CST, Sunday, which indicates approximately a six-hour frequency?
A. That's correct.
Q. Do you broadcast special broadcasts in between?
A. In the event that we should increase a warning from a gale warning to a storm warning, we will put in a warning in between the routine issuance times, and then this would be given special dissemination.
Q. Was a special given when this warning increased at 2:00 a.m. on the 11th?
A. Yes.
Q. And we have a copy of it here?
A. Yes.
Q. And that is marked 20G, "Change Gale Warnings to Storm Warnings Immediately"?
CDR. LOOSMORE: That's all I have.
REAR ADMIRAL BARROW: Capt. Wilson?

EXAMINATION

By Capt. Wilson:

Q. You mentioned that you made checks, correlations between the forecast conditions and the conditions actually reported, I believe?
A. Yes.

Q. In the case of forecast winds, how close do these turn out to be between the conditions reported by the vessels and the forecasts for the same period?
A. They usually come, on the average, our forecasts turn out to be quite accurate and quite comparable to the reports we receive.

Q. How do the carriers that report determine the wind direction and velocity; do you know?
A. They have anemometers and wind vanes, and they have mates or ship crew members who are trained to take weather observations.

I think I should say that the port meteorological officer who handles that specific program is in the audience.

Q. Then he would also be the one to ask questions concerning the equipment itself?
A. Yes.
Q. Is there a means, if I can recount what you said, it is six hours between broadcasts?
A. Yes

Q. How often are the broadcasts --
A. No, a weather radio is a continuous broadcast program at most stations, not all, but at most.

So Noah radios the Lake Michigan forecast, and it would be the narrative type forecast that I am talking about. It would be broadcast once every five minutes, 24 hours a day.

Q. Every five minutes, 24 hours a day?
A. Yes.

Q. Now, at what frequency is that broadcast?
A. Either on 162.55 megahertz or 162.40 megahertz.

Q. You mentioned, I believe, that November was a critical month for storms.

I am not sure I understood whether you were speaking as to severity of the storm or frequency of the storms?
A. I would say both severity and frequency, because it is what we call a transitional month where we are well into the fall, and we begin to have intrusions of cold air from the north, and we have the kind of collision of air masses that is conducive to the development of intense low pressure systems which produce strong winds.

Q. Then they are the type of storms that you can forecast
they are not the unusual odd situation type that comes up as you have during the summer?
A. A well developed storm is often easier to forecast than one that develops extremely rapidly, so generally, I would say yes; that often in November we do have well developed storms that are easier for the forecaster to cope with.

CAPT. WILSON: Sir, that's all.
REAR ADMIRAL BARROW: Capt. Zabinski?

EXAMINATION

By Capt. Zabinski:
Q. Who would use these coded forecasts that you turn out, Mr. Waldman?
A. They are very widely used in the marine community and by ore boat carriers.

Q. And as I understand this NOAA Weather System, this is a narrative, a continuous narrative?
A. Yes, it is.

Q. And is it updated with any frequency?
A. It is updated whenever the situation requires; for example, when a warning is issued, it is immediately updated.

Q. And is this NOAA Weather System used by the mariners, by the ships, to your knowledge?

Do they have these frequencies is what I am asking.

A. I believe that some do, but I really don't know how
extensively it is used.

Q. Do you have any indication of the temperatures that may have existed, air temperatures that may have existed on the 9th, 10th and the 11th?
A. I know what the temperatures were at the time.
Q. Are they in this exhibit? Would they be included?
A. No, they wouldn't be, but they would be on our weather maps and we could make them available for the record.
Q. Do you have a weather map of this on which you based your forecasts for the 9th, 10th and 11th?
A. Yes, we do.
Q. Could a copy of those be provided to the Board?
A. Yes.
Q. These are the actual charts you make to forecast from?
A. Yes.
Q. Do you do these singularly, or do other people assist you, or is it a joint effort? How is that worked by the forecaster?
A. The forecaster who has the responsibility for preparing the marine forecast usually prepares his own map, and we call it a work map, because we allow the individual meteorologist to put the data on that map that he feels he needs to do the forecast, although there are certain requirements for plotting data when it comes to the Great Lakes.
For example, we require that all of the ore carrier
ship observations are plotted and that all the Coast Guard
weather observations are plotted, but outside of that,
there can be some variation from meteorologist to meteorolo-
gist.

Q How could I obtain an indication of what the sea water
temperature was, or the temperature in Lake Superior during
that interval of time?

Is that part of your service, or do you have to go
somewhere else to obtain it?

A It is not part of our service to measure or to record
the water temperature of the Great Lakes.

It is usually done by city water intake, at city water
intake locations that are located offshore.

Q Did you use these in your forecasts?

A We definitely take into account that data, yes.

Q You indicated in your testimony the time of the
tragedy. I think you used that expression. What time
was the time of the tragedy, as you know it?

A As we know it, it was some time after 7:00 p.m.

Eastern Standard Time.

Q On the 10th?

A But we, of course, we only have whatever information
that was provided from other sources.

Q And that was on what date? What date was that that
you assumed the tragedy to have occurred?

A. On the same date. In fact, at about 9:00 p.m.,

between 8:00 and 9:00 p.m. Eastern Standard Time on

Monday, November 10th, we were told that this might have

occurred.

Q. Do you recall where you received that information?

A. I was at home and I was informed by one of my meteorolo-
gists, who had received the message from the Detroit Weather
Service Forecast Office, who in turn had received it


Q. You have a good network going, haven't you, Mr.

Waldman?

I am interested in getting some idea between your
forecasts and actual conditions.

I am sure periodically you must take some kind of a
simultaneous -- or make some kind of a simultaneous evalua-
tion between your forecast at a given hour because the
conditions could change from hour to hour, and observations.

Do you recall when you may have made such an analysis?

A. The last analysis that was made previous to the

sinking of the Fitzgerald was made between noon, 1:00 p.m.
Eastern Standard Time, and 3:00 p.m. Eastern Standard Time,

Monday, November the 10th, and right after 3:00 p.m., the

forecaster began actually writing down in narrative form

the forecast for Lake Superior, which he had to issue at
4:39 p.m. Eastern Standard Time that same afternoon.

So we used all of the data that was available before 4:39 p.m. Eastern Standard Time to prepare this forecast.

Q. I see. I had in mind a different question, but I appreciate your answer to that, which was responsive to something else.

My question was, you make a forecast and some time later you receive the results or the weather reports from the ships at a given time.

A. Right.

Q. Do you correlate or try to determine how close your forecast was to the actual conditions for a given hour?

A. Yes, we do.

Q. Do you know when you last may have made such a determination?

A. Last night to be exact.

Q. Well, before the storm?

A. Before the storm?

Q. Yes.

A. Well, this is done routinely on a daily basis.

In other words, there is an after- cast that follows.

When a meteorologist prepares forecasts on a certain date, his first duty on coming back the following day is to after- cast or look into the forecast that he has made, that he had made the previous day, to see and to take into
consideration all of the information and to study all
of the information available to see how well his forecast
was, and how accurate his forecast was.

Q. Your testimony, as I understand it, then, is that
this is done on almost every forecast?
A. Yes, it is.

Q. Was there one -- was there an after-cast made for the
9th, 10th and 11th?
A. Yes.

Q. Are those available to us?
A. This is an informal procedure, and an after-cast
involves an individual meteorologist study of all of the
weather information available to determine how accurate
his forecast was, and also discussion with other meteor-
ologists at a daily group discussion that we hold routinely
each day, at 11:00 a. m., noon, Eastern Standard Time,
and exchange information.

In other words, it is a group discussion thing.

Q. Rather than a prepared report?
A. Right.

Q. Could you narrate for us what the general content of
the after-cast was for your forecast, let's say, on the
last forecast on the 9th?
A. Yes.

Q. What time was that forecast?
The last forecast?

On the 9th.

Did you say on the 9th?

Yes, sir.

The last forecast made on the 9th would have been made at 10:39 p. m. Eastern Standard Time on the 9th.

Yes, sir.

And the following day on the 10th, we felt that we had determined quite accurately the path of the storm center and also we were quite pleased that we had put up gale warnings from 7:00 p. m. the night before and that we had changed those warnings to storm warnings at 2:00 a. m. earlier that morning, November the 10th.

You hoisted gale warnings at 7:00 p. m. and storm warnings at 2:00 o'clock the next morning?

Yes.

2:00 a. m. on the 10th?

Right.

Now, do you know what time, or in your critique, did you find out what time the reports indicated that gale winds did actually occur?

Yes, based on the 1:00 a. m. Eastern Standard observations from vessels on Lake Superior, we realized that we did have verification of gale force winds.

Did you have verification of storms? That is the
difference in wind force between gale and storm?

A. The winds for gale warnings are 34 knots to 47 knots and storm warnings are winds of 48 knots, in excess of 48 knots, and there is no upper end to the storm warning limit.

That is the highest category warning that we have for the Great Lakes forecasting.

Q. What time did you get verification on the storm warnings, actual storm winds reaching storm conditions?

A. I think, if you don't mind, I would like to refer to a map that I have here.

Q. You sure can.

A. The sum of the vessels' observations that were received at 1:00 a.m. Eastern Standard Time, November the 10th, indicated a wind of storm velocity and the maps that we have, based on weather observations, again vessel observations, beginning at about 10:00 a.m. in the morning, Eastern Standard Time on November 10th, also indicated winds in the storm warning category.

The 7:00 p.m. Eastern Standard Time map of vessel observations again indicated winds of storm warning category.

Q. That is 7:00 p.m. on the 10th?

A. Yes.

Q. 7:00 p.m. on the 10th?

A. Yes, and we also had an observation from the Arthur Anderson at 7:00 p.m. Eastern Standard Time, Monday,
November the 10th, and they reported a wind from the west-northwest at 50 knots with 16-foot waves.

Q. When did the winds abate or reduce from storm to gale again?

A. Late the evening of Monday, November 10th.

Q. Was that forecast?

A. Yes, it was.

Q. What time was the forecast on that?

A. You have the forecast, so to get the exact time, I would have to refer to that.

(Handing to witness.)

A. In the forecast that we issued at 4:39 p. m. Eastern Standard Time, Monday, November the 10th, storm warnings were in effect for the eastern half of Lake Superior, and we indicated northwest winds 38 to 52 knots with gusts to 60 knots early that night, diminishing to 28 knots to 42 knots late Monday night, November the 10th.

Then we indicated that they would diminish further the following day.

Q. You say late Monday night.

What would that mean to a sailor?

A. Late Monday night would mean after midnight and between midnight and between 6:00 a. m. early Tuesday morning.

Q. But did you have another forecast out at 10:39 on the 10th or thereabouts?
A. Yes, we did.

Q. What was the forecast at that time?

A. At that time, we changed the storm warnings to gale
  warnings, from Eagle Harbor on Lake Superior eastward,
  and we were then forecasting northwesterly winds 34 to 45
  knots with gusts to 50 knots, diminishing slowly 25 to 40
  knots during Monday night, and 15 to 25 knots Tuesday
  morning.

Q. Do you separate Lake Superior in your forecast or
does the same forecast cover the whole area?

A. We have frequently, since it is such a large lake,
divided it in two parts, and at times we have divided it
in three sections for forecast purposes.

Q. But these forecasts that you have read for the 9th
and 10th were general forecasts for the whole Lake Superior;
is that correct?

A. I read you only the forecast for the eastern half of
Lake Superior.

Q. Thank you.

CAPT. ZABINSKI: That's all I have for
  a while.

REAR ADMIRAL BARROW: Thank you, Mr. Waldman.

EXAMINATION

By Rear Admiral Barrow:

Q. The Fitzgerald departed her loading point at, I believe,
about 1:15 p. m. on the 9th.

At that time, and I will give you back these so you can refer to them, but tell me, what were the forecast conditions for Lake Superior on the following day?

MR. MURPHY: Incidentally, just for a matter of correcting the record, Mr. Chairman, I think the message which was read into evidence was that she departed at 1420 on the 9th and Superior Piers at 1452.

REAR ADMIRAL BARROW: Fine, thank you.

By Rear Admiral Barrow:

Q. The Fitzgerald left Superior Piers at 1452, so I would be interested in your findings and in telling me what the forecast was at that time.

A. At that time, the forecast that we issued at 10:34 a.m. Eastern Standard Time read as follows: South-southeast winds, eight to 16 knots this afternoon, becoming southeast to east and increasing to 20 to 33 knots tonight and becoming east to northeast 28 to 38 knots Monday; cloudy, occasional rain tonight and Monday, waves one to three feet increasing to three to six feet tonight and four to eight feet Monday.

So we were indicating a gradual increase of winds and an increase in the waves.

Q. This basic forecast continued through the 9th?

A. No. It was replaced by another forecast issued at
4:39 p.m. Eastern Standard Time, Sunday, November 9th.

Q. And what sea conditions were predicted then, the forecast at that time?

A. In that forecast we indicated that gale warnings should be hoisted at 7:00 p.m. Eastern Standard Time. Would you want me to read the whole forecast?

Q. The sea conditions, yes.

A. We were indicating that waves would be continuing to increase and would be five to nine feet on Monday.

Q. And then I believe you testified that on the following morning, storm warnings were substituted?

A. Yes, at 2:00 a.m. Eastern Standard Time, early Monday, November 10.

Q. And what were the maximum sea conditions predicted at that time?

A. At that time we were forecasting waves of eight to 15 feet, beginning with that warning.

Q. In actuality, your reports feed back from the ships that were on the lake during the day of the 10th. What were the maximum sea conditions which were reported to you on that day?

A. We did have waves of 16 feet reported at 7:00 p.m., which would be Eastern Standard Time, by the Anderson on Monday evening, November 10th.

We had waves of 13 feet reported at the Grand Mara
Coast Guard Station, and we had 10 foot waves reported near Copper Harbor.

These wave reports were all as of 7:00 p.m. Eastern Standard Time, Monday, November 10th.

Q. Your maximum reported condition was 16 feet?
A. Yes.

Q. And you may have answered this already or may be referring it to someone else, but did you indicate you did have a report from the Fitzgerald?
A. Yes, we did.

We did have a report from the Fitzgerald at 1:00 a.m. Eastern Standard Time, November 10, 1975. Again, I would like to say that Mr. Kennedy, the port meteorological officer, has made a thorough study of all the weather observations received, and I think he could add something very helpful in that area.

I certainly don't have the expert knowledge that he does in that area.

Q. How many forecasters do you have, Mr. Waldman?
A. We have 20 meteorologists.

Q. 20 meteorologists?
A. Do you mean how many forecasters prepare a marine forecast?

Q. That was the question I was coming to.
A. I have 15 who prepare marine forecasts.
Q. 15 who prepare marine forecasts?

A. Yes.

Q. And a total of 20 --

A. A total staff of meteorologists of 21.

Q. How do you differentiate between the two; do they have separate qualifications?

A. Do you mean between those who prepare marine forecasts and those who do not?

Q. Yes, sir.

A. All of the forecasters within two groups prepare -- are required to have a knowledge of preparation of marine forecasts as well as other forecasts.

Q. And how do they acquire that knowledge? Is that an on-the-job training in addition to their formal education?

A. In addition to their formal education, it is an on-the-job training type of situation.

Q. Any length, in the specific length of time that they would have to go through in order to qualify for marine forecasts?

A. Yes. A meteorologist would have to be in training for at least a year before he would be preparing this kind of forecast.

Q. Do you have one meteorologist on duty at all times, or what is your arrangement with regard to that?

A. We have a minimum of four meteorologists on at all
times, 24 hours a day, seven days a week.

Q. Is your process for preparing marine forecasts today essentially what it was, say, five years ago or have you had improvements within the last five years?

A. The fact that we are able to use satellite pictures helps a great deal in determining the movement of such things as low pressure centers and fronts, and we get a satellite picture once every half hour.

Q. But basically, as far as you know, your reporting points are approximately the same, or have you made improvements in the scope of the operation within recent years?

A. I think our experience has been raised, and I believe that we have more people with longer experience making the forecasts than we did during that period of time.

I don't think, outside the addition of satellite information and possibly weather-radar information, that there has been any other important change, as far as the tools which we use in making the forecasts are concerned.

There has been a tremendous improvement in our ability to communicate our forecasts to the users.

Q. Your judgment is that the system which you have in operation now in covering Lake Superior is a good system for the mariner and provides him with all the necessary information from a weather standpoint that he needs?

A. Yes, I believe it is.
I believe we certainly could use more vessel observations than we have, and we could use observations of temperature pressure, wind speed and direction, from fixed locations in the Great Lakes.

We now depend, that is, for the open waters, we now depend on vessel observations, and the vessels, of course, are always moving.

We have very few places from which we get weather information from a fixed point on a continuous basis, so we have an urgent need for that kind of information.

Q. Has there been such a plan put forward, Mr. Waldman?
A. Not that I know of.

REAR ADMIRAL BARROW: Mr. Murphy?

MR. MURPHY: Thank you, Mr. Chairman.

EXAMINATION

By Mr. Murphy:
Q. Mr. Waldman, my name is Thomas Murphy, and I will be questioning you.

I am here at this proceeding on behalf of Oglebay-Norton Company.
A. Yes, sir.

Q. You mentioned that your average forecast, your average highest readings are 40 to 56 knots and gusts of 66, if I am correct. From that may I assume that is an average of a number of stations?
A. That was selected from a station that was located from Stannard Rock, which was the closest continuous reporting speed and wind direction of one reporting station to the Fitzgerald.

Q. So you are referring to an average from a station, rather than an average from several stations?

A. Yes.

Q. And would you be good enough, sir, to approach this chart, which the Board has mounted on this easel and point out to us where Stannard Rock is located?

A. Yes. Stannard Rock would be right here.

CAPT. ZABINSKI: Have it identified for the record.

Q. Would you be good enough to stand aside?

This is Survey Chart No. 9. There is an object needed and indicated as Stannard Rock Light, and that is where that station is located?

A. Yes.

Q. Is that a manned station or automatic station?

A. Automatic.

Q. Do you have any idea, sir, based on your knowledge, as to approximately how far that station is from Caribou Island, for instance?

A. That would be about 70 miles.

Q. And do you have any idea how far that station from
Copper Mine Point is, approximately?
A. Yes. That would be about 100 miles.
Q. All right, sir. Thank you.
Do you have with you the actual readings that were received from the Stannard Rock Station?
A. We have a record of those readings for just a brief period, and I think that we can supply -- now, I am in charge of the Chicago office. We would not have a permanent record of that, but I believe that within our Weather Service somewhere, if not right here in Cleveland, Ohio, we would have that record.
Q. Have you seen that record?
A. I have seen a portion of it only.
Q. All right. In the normal course of events, where would that record be received first? First, where would it be received, and in what manner would it be received?
A. I would like to say that this is somewhat out of my area, and I believe that we do have people in the audience today --
Q. Mr. Kennedy?
A. Yes, and probably someone else who could really very accurately answer that question.
Q. But in any event, those are automatically transmitted to some recording station?
A. Definitely. They do come into my office, and we do
use that.

Q. So what you receive is someone else's report of the
readings from the mechanical device, or do you actually
see the readings from the mechanical device?
A. We see only the printed record; in other words, a
teletyped copy of what is read off of some read-off device.
Q. And who would have actual measurements as recorded by
the recording device?
A. I believe it is the Weather Service at Sault Ste. Marie,
but again, I would rather refer to one of my colleagues
who could give an accurate answer on that.
Q. If those are received at Sault Ste. Marie, would they
be retained at that station or forwarded to another
station?
A. Eventually they would be forwarded to the National
Climatic Center in Asheville, North Carolina. They have
the responsibility for keeping all the records from all
over.
Q. When you say eventually, I gather you are not sure
as to what period of time it takes --
A. Do you mean the length of time --
Q. When you say "eventually they would be forwarded," --
A. Normally they are forwarded, the originals are
forwarded after one month of records. It is within the
10 days of the next month that the previous month is
forwarded.

Q    If your information is correct, you would expect those readings still to be at the Sault Ste. Marie Station; is that correct?
A    To the best of my knowledge, correct.
Q    You have not been informed otherwise?
A    That is correct.
Q    Where is the next closest recording station to the area of Caribou Island or Copper Mine Point?
A    It would be the Weather Service at Sault Ste. Marie, and we also have another reporting point at Whitefish Bay and another at Grand Mara, and that is a Coast Guard facility.
Q    Referring to the recording station at Whitefish Point, do you know whether that is a manned station or an automatic station?
A    That is an automatic station.
Q    And do you know where the readings from that automatic station are recorded?
A    At the Weather Service Office in Sault Ste. Marie, but again I am a meteorologist, and mainly I am involved in the administration and forecasting.
Q    And they also would be in the same category, to the best of your knowledge, following standard procedures, they still should be at that station, if that is where they
were recorded?
A. That is correct.

Q. Are you familiar at all with the manner in which they are recorded?

A. No, I am not.

I am concerned about getting the data, so that it could be used on our forecast program; that is my main concern.

Q. Have you received any information to indicate whether, with respect to either one of those stations, the wind and weather conditions were so severe on this occasion that there were periods when those stations were not reporting?

In other words, there was some sort of malfunctioning? Was there any report made to you?

A. I have heard there was a period in which the information from Whitefish Point was curtailed because of damage due to winds or due to the weather.

Q. Due to the storm and weather?

A. Yes.

Q. Is that a customary situation with respect to recording stations, in your experience?

Let me put it to you this way: Isn't that unusual? Doesn't it require a very intense and severe storm to have that happen generally?
CAPT. ZABINSKI: I don't think that is a proper question.

MR. MURPHY: In what respect, sir?

CAPT. ZABINSKI: I think there are many malfunctions that could occur.

If you would qualify your question, this thing could malfunction for many reasons other than storm indications that you indicate.

MR. MURPHY: May I have the witness' answer, sir, or would you prefer that he be directed not to answer?

REAR ADMIRAL BARROW: Perhaps you could put it a little more definite as to what kind of malfunction you are talking about.

MR. MURPHY: I would be happy to, sir, but I would like to state for the record that, to the extent this proceeding has progressed so far, there have been numerous questions based on speculation, leading questions, assumptions, opinions, and I have intentionally not objected, because it seemed to me the whole point of this hearing was to obtain each witness' free observations without adhering to usual evidentiary procedures.

I would like to be permitted to proceed along that line, unless the witness feels it is being
unfair or for some reason it is a question he can't
answer.

REAR ADMIRAL BARROW: Go ahead and repeat
your question, if you would, Mr. Murphy.

By Mr. Murphy:

Q. What I am really trying to learn, sir, is: Based upon
your experience with these automatic recording stations,
I am assuming in my question that the equipment is designed
to withstand the normal storms that it would be expected
to record; otherwise it couldn't record these very high
and severe winds and so forth.

I would like to know if, in your experience, it doesn't
take an exceptionally severe and intense storm for the
storm to put one of these stations out of commission if,
in fact, that's what put it out of commission?

MR. HOCHMAN: Before the witness
answers, we do have that information.

REAR ADMIRAL BARROW: Just a minute. You
are out of order. What is your name and who are you?

MR. HOCHMAN: Martin Hochman, and
I am an attorney with the National Oceanographic and
Atmospheric Administration, which includes the
Weather Service.

I am informed that we do have that information
as to why the information was not being received
from that reporting location for that period of
time, which this witness is unaware of.

Rather than his speculating about the reason,
I think we can have a witness provide that informa-
tion.

MR. MURPHY: I still think I am
entitled to this witness' knowledge and information
on that point, sir.

REAR ADMIRAL BARROW: Go ahead and answer
to the best of your knowledge, recognizing that we
have other witnesses that perhaps may be able to
answer more specifically.

By Mr. Murphy:

Q  Can you answer my question?
A  If you can rephrase it.
Q  I am not sure I can.

REAR ADMIRAL BARROW: Perhaps we can have
the reporter read it back.

THE REPORTER (Reading): "Question: What I am
really trying to learn, sir, is: Based upon your
experience with these automatic recording stations,
I am assuming in my question that the equipment is
designed to withstand the normal storms that it would
be expected to record; otherwise, it couldn't record
these very high and severe winds and so forth.
"I would like to know if, in your experience, it doesn't take an exceptionally severe and intense storm for the storm to put one of these stations out of commission if, in fact, that's what put it out of commission?"

A. I would say that any kind of equipment of that type that depends on such things as telephone lines or electric lines, I have known in my experience — I have encountered cases where such instruments have malfunctioned for those kinds of reasons when no storm existed at all; so I would say that this could have happened if there was a malfunction, and due to any of those causes, including weather.

Q. In your experience, are you aware of any instance prior to this storm, and I don't mean to suggest that this storm is involved, but are you aware of any instance prior to this storm, where, in fact, the automatic recording system was put out of commission because of the intensity of the storm?

A. Are you talking about the automatic weather equipment on Lake Superior or any automatic weather equipment that I know of?

Q. Well, let's limit it to Lake Superior because that is where we are involved here.

A. Since I do not have the complete record of the performance of those particular automatic stations, I don't believe
that I can answer that question.

Q. All right, sir. You don't have any present recollection of any such situation, though?
A. No, I don't.

Q. You had indicated that there were procedures followed for your Weather Service in anticipating approximate height of waves, and would you explain to us how that is determined?

In other words, how do you determine that in advance?
A. We use a procedure of determining wave heights, which is based on the longest period of time that the wind blows from a given direction at a certain speed.

Q. Now, I believe you said that the recordings received on this occasion from the station at Stannard Rock were 56 knots with gusts up to 66, is that correct?
A. I would like to check back and make sure.

Q. Please do, because that is what I have in my notes.
A. What I gave was the average wind direction and wind speed for the period 3:00 p. m. to 7:00 p. m. Eastern Standard Time, Monday, November the 10th, and I said that the winds were from the west-northwest and averaged — and the range was 40 to 56 knots with gusts as high as 66 knots at times.

Q. All right, sir.
A. And I can read you each observation each hour, if you
would like me to.

A That's fine, sir. I just wanted to confirm that my notes were correct on that.

Now, am I correct that the fetch of that wind across open water has a bearing on the height of the waves that you can expect?

A Yes, it certainly does.

Q And that the wind speed in knots has a bearing on that.

A Right.

Q As well as the sustained period that the wind is known to have existed at that velocity?

A A sustained period is the most important factor.

Q How can you determine from the information that you have given us as to what sustaining periods were involved from that 40 to 56 knots? How do you determine that or can you determine that?

A We can approximately determine that, yes. While I can give an estimate right now, I would have to thoroughly study all of the weather maps in order to come up with something that is more exact, but I certainly can estimate it.

I think for the last seven hours before the sinking of the Fitzgerald, a good estimate of the average wind speed
now, not the gusts but the average wind speed, would be
about 45 knots for about a six to seven hour period of time
from a west-northwesterly direction.

Q. And that, based upon your calculations --
A. Would give us waves of about 15 feet.
Q. Do you think that those waves could go as high as 24
feet based upon that information?
A. I would like to --
Q. Sir, based on that information, do you believe that
they could go 24 feet?
A. Based on that information, they could not.
Q. They could not?
A. No. We would have to have a higher average wind
speed for a longer period of time.
Q. Was this storm plotted by anyone from the Weather
Service, who reported it to you, the plotting of the storm,
from where it was first picked up and its movement
within the few days prior?
A. Yes.
Q. Do you have any information with respect to that?
A. Yes, I do.
Q. Would you just tell us generally what your information
in that regard is?
A. Yes. This storm that affected Lake Superior on November
9th and 10th first became evident at 7:00 a.m. Eastern
Standard Time on Saturday, November the 8th. From that
time, 24 hours later, the center of that storm, and it was
at that time not a very intense one, was located in
southcentral Kansas and that would be as of 7:00 a. m.
Eastern Standard Time, Sunday, November the 9th.

By 7:00 p. m. Monday, November the 10th, the storm
had intensified and had moved to central Wisconsin.

I would like to correct that. It had moved to north-
eastern Iowa by 7:00 p. m. Eastern Standard Time. I would
like to go back over that again because I believe I read
one of the dates incorrectly on the map here.

Q. All right.

A. By 7:00 p. m. on Sunday, November the 9th, the storm
had moved to northeastern Iowa and was more intense from
the time that it started its movement from the Texas
panhandle, and by 7:00 a. m. Eastern Standard Time,
Monday, November the 10th, the storm had moved to near
Marquette, Michigan, and had intensified further and
then by 1:00 p. m., 1:00 p. m. Eastern Standard Time,
November the 10th, the actual low center had crossed Lake
Superior and was located about 40 miles south-southwest
of White River, Ontario.

Now, the movement of the low center, of course, did
not determine in itself the strength of the winds, and
I earlier brought out that as far as the strength of the
winds on Lake Superior were concerned, the winds became stronger as of 1:00 p.m. Eastern Standard Time, Sunday, November the 9th, and except for a brief period Monday, November the 10th, continued very strong through Monday evening, November the 10th, 1975.

Q. Has it been reported to you either officially or unofficially that there were sustained winds recorded as high as 58 knots with gusts of 70 and above?

Has that been reported to you by anyone?

A. I would like to check the chart just to make sure about what I do have.

You said sustained winds of 56 knots?

Q. 58 knots.

A. 58 knots?

CAPT. ZABINSKI: What day are we talking about?

MR. MURPHY: I am referring again through this same period of this storm on the afternoon of the 10th. As far as I am concerned, all my questions are directed to that particular area.

THE WITNESS: We did have a vessel observation with gusts to 65 knots at 7:00 p.m. Eastern Standard Time. No, I'm sorry, that was the Stannard Rock report at 7:00 p.m. Eastern Standard Time, November 10, 1975.
We did have gusts to 65 and the highest gusts reported at Stannard Rock, the evening of Monday, November 10th, was 67 knots.

Q. Didn't you mention 66 knots earlier on that, sir?
A. Well, I was taking the average of a three hour wind speed and direction.

Q. All right, sir. Well, then, I thought I had asked that question. I'm sorry if I didn't.

What was the highest gust reported to have been recorded at Stannard Rock?

A. The highest was 67 knots and the highest sustained wind speed was 56 knots, gusts to 66 knots, from Stannard Rock at 5:00 p.m. Eastern Standard Time, Monday, November the 10th.

Q. And what was the highest gust reported from Whitefish Point Station?

A. I do not have a written record of that observation and I would like to point out that the gentleman, the port meteorological officer, Mr. Kennedy, whose expertise lies in this area, could certainly answer that question; but since my responsibility is administrative, as chief of a forecasting program, I don't necessarily keep an hour-by-hour report of weather observations all over the Great Lakes.

Q. I understand, sir.
Q. Fine. Just one more question along that line.

You responded to my question on the highest gusts with respect to both of those stations. Was there a higher gust reported by any reporting vessel to your knowledge?

A. I would like to look at the maps that we have plotted to be certain and I can give you the best information on that question.

On these maps, which were prepared by the port meteorological officer, I do not find any higher wind speed than that.

Q. Fine. Thank you.

MR. MURPHY: Mr. Chairman, as you know, we haven't had an opportunity to examine Exhibit 20. May we have a short recess to examine Exhibit 20 before questioning the witness on that?

REAR ADMIRAL BARROW: I think that will be fine.

We will take a 10-minute recess. (3:40 p.m.)

(Recess had.)
REAR ADMIRAL BARROW: Thank you very much. Let the record show we reconvened at 3:55 p. m.

Counsel for the Operators are present. Counsel for Capt. McSorley is not present.

I think before we get started, a point was raised during the recess as to what is meant by wave height, and I think, Mr. Murphy, going back with your line of questioning, we might ask Mr. Waldman in the context of the weather reports or forecasts that he puts out, what does he mean by wave height, and I think we will progress from that.

THE WITNESS: By the wave height, we are trying to forecast the mean wave height over a period of time, and we certainly recognize that there could be waves that are higher.

We are not trying to forecast the highest wave conditions. We are trying to achieve a mean over a period of time, a range of the wave heights over a period of time.

By Mr. Murphy:

Q In responding to that then, sir, would you be good enough to indicate what would be the high and the low points used to reach that, or did you mean a mean of the longer period this lasted? I am not sure I understand that.

A Well, one of the things that we would strongly depend on
would be the fetch, the length of the fetch, and the
average wind speed.

That would be one guide. In addition, we would use
actual observations that would be available.

Q. Could you give me, based on your experience, just
following that one step further, when you mentioned the
height of, I believe, 16 feet; is that right?

A. Yes.

Q. That was a mean height in mean of what maximums
and minimums there are?

A. Yes. This was based on expected wind direction from
the northwest at a given speed for a certain length of
time.

Q. And that given length of speed was what?

A. I would have to go back to the time the original fore-
cast was made, but as I look at the conditions that the
vessel has reported, it appears to be about 45 knots
for that seven-hour period that I am talking about that
preceded the time of the Fitzgerald's sinking.

Q. Referring to the points that we designated earlier
on the chart, No. 9, Stannard Rock and Coppermine Point
and so forth, would you consider that to be a long fetch
across that area coming from the northwest, or the north-
west by west, as you have described it?

A. That would be one of the fetches that we usually use,
yes.

Q. In terms of short and long fetches, would that not be considered to be a long fetch?
A. Yes.

Q. In other words, it would be almost the whole sweep from Keweenaw Point over?
A. Yes. We had various fetch schemes that we use, and that is one of them.

Q. In your fetch schemes, in your ratings, what is the longest fetch that you do use in terms of your scales?
A. If you allow me to look through my notes, I will get that information for you.

The longest fetch we use is 140 nautical miles.

We have Lake Superior divided up into various fetch schemes.

Q. And you are looking at a diagram and chart from which you are reading to obtain those figures?
A. Yes.

MR. MURPHY: Mr. Chairman, may I ask that that document be introduced into evidence, please?

REAR ADMIRAL BARROW: We'll mark it for identification.

MR. MURPHY: As long as we are on the subject, the witness did testify from a number of
other documents earlier, and may I identify those
and ask that they be introduced also?

This would seem to be an appropriate time
to do that as long as we have --

REAR ADMIRAL BARROW: Which specific ones
were you talking about, the one from which they used --
take them one at a time if we can identify them.

MR. MURPHY: Let's take this one
right now.

CDR. LOOSMORE: I have in my hand a
copy of a chart marked in typewriting "Wave Height,"
and then it is obliterated. There are then capital
letters "ET)Major Winds," and in front of that written
by hand is the word "significant."

By Mr. Murphy:

Q. Mr. Waldman, could you identify for the record just
exactly what that record is called?

A. All right. That is entitled "Significant Wave Height
and Fetch vs. Major Winds," which means that the fetch
based on the winds that we are forecasting in the coded
Major forecast is for the Great Lakes.

CDR. LOOSMORE: Sir, I believe that
entering that in evidence in the record in these
proceedings is certainly possible, but it would tend
to merely overlook the fact that it would take an
awful lot of experience and education in order to operate this, and I wonder what it could add.

REAR ADMIRAL BARR OW: Well, let's mark it for identification, and then let's find out if it does not seem useful.

I think we can talk about this.

CDR. LOOMSORE: That would be Exhibit 21.

REAR ADMIRAL BARR OW: All right. This will be marked as Exhibit 21 for identification and made part of the record.

THE WITNESS: May I ask the Board if I can add something to a question previously asked, which was brought up by Capt. Zabin ski?

CDR. LOOMSORE: Does it pertain to this?

THE WITNESS: No.

CDR. LOOMSORE: Just a second.

REAR ADMIRAL BARR OW: Do you have any objection to the introduction of this? I am assuming that you intend to ask some questions about its use so that we can relate testimony to the specific document?

MR. MURPHY: Well, sir, there have been questions already asked about its use, and I think it is pertinent in view of the answers that the witness has given to those questions.

That was my reason for introducing it, and
I would like to introduce it at this time on that basis.

REAR ADMIRAL BARROW: We will admit it as Exhibit 21.

(Exhibit 21 was marked for identification and made part of the record.)

REAR ADMIRAL BARROW: I might ask one question: This, of course, is a copied piece, and it has some blank spots and some dark spots. Is there a better copy that we might have produced for the record?

THE WITNESS: It comes out of the guide book that my forecasters use to make wave forecasts, and we have a rather poor copying machine.

I think we can certainly try to get a better copy for you. It is possible that within our service we can provide you with a better copy.

REAR ADMIRAL BARROW: There are some pieces you couldn't read the items under the columns, and that is why we need to get a little better copy.

MR. MURPHY: Also, Mr. Chairman, there has been a reference made to the Mafor code, the schedule which is developed to enable a layman to read that code.

Do you have a copy of that with you, sir?
THE WITNESS: Yes, I do.

MR. MURPHY: And I would also ask the Chairman to introduce into evidence the document which the witness has described as the descriptive matter for interpreting the Major code. I don't know how you refer to it.

How do you refer to that, Mr. Waldman?

THE WITNESS: We refer to that as the Decode for Lake and Seaway Marine Forecasts.

MR. MURPHY: We would like to introduce that into evidence, please.

CDR. LOOSMORE: That has been marked 22 for identification.

REAR ADmiral BARROW: I have no questions on it.

We will introduce this exhibit as Exhibit 22.

(Exhibit 22 was marked for identification and made part of the record.)

MR. MURPHY: The witness also referred more than twice to the charts that he and his office used for preparing the forecasts, and I think those charts certainly should be a part of the evidence in this proceedings because he referred to them for the conclusions that he reached.
I would like to ask that they be introduced into evidence.

REAR ADMIRAL BARROW: How many sheets do we have?

THE WITNESS: I would like to point out that this is a very small part of everything that is used to prepare a marine forecast. There are a multitude of computer products that we use in preparing forecasts, which I did not bring along, and which would be made available somewhere in the system, but this is merely a very small part of the number and represents a very small part of the forecast tools that are used in preparation of such a forecast.

These are what we call our work maps. This is the kind of map that the individual meteorologist prepares and he makes a note of and puts into this map the things that he, as an individual, requires to make a forecast; but it is a small part only of the total number of things that he uses.

MR. MURPHY: Mr. Chairman, we recognize that there may be some documents and other information used to make up this document, but the witness used it and testified from it, and I think it is very important in determining the development
of this storm and how it proceeded as he has described and testified from it, and I would ask the Court to receive it in evidence.

REAR ADMIRAL BARROW: I think what we will do is mark the individual items for identification and then we can talk about them.

MR. MURPHY: Thank you.

I would also, then, make the same reference --

REAR ADMIRAL BARROW: I think we need to dispose of this specific item here and determine whether or not what is needed before we go forward with something else.

MR. HOCHMAN: My name is Martin Hochman, attorney with the National Oceanographic and Atmospheric Association.

I just want to say that those charts are the originals and there are no copies in the possession of the Weather Service, so if the determination is made to place those in the record, we would like to provide copies, if possible, and not the originals.

MR. MURPHY: Perfectly agreeable.

REAR ADMIRAL BARROW: What are the specific pages and how many of them are there?

CDR. LOOMIS: There are seven pages, the cover of which, the first of which, is entitled,
"Synoptic History of the Intense Great Lakes Storm of November 9th-10th, 1975."

The remainder of the sheets bear various information in the titled blocks.

I request to mark these 23-A through whatever letters, and mark them consecutively for identification.

These sheets are marked 23-A through 23-G for identification, sir.

(Exhibits 23-A through 23-G were marked for identification and made part of the record.)

REAR ADMIRAL BARROW: I think I would ask for a 10-minute recess and ask counselor, Mr. Murphy, if he would talk with us about these, in addition to the witness and the attorney for the Weather Service.

CDR. LOOMIS: Excuse me, sir. I think there are some other charts which could be dealt with in the same way.

Do you have other charts?

REAR ADMIRAL BARROW: Let's take one at a time. Let's have a 10-minute recess.

CDR. LOOMIS: Certainly.
(Recess had.)

REAR ADMIRAL BARROW: Let the record show we reconvened -- gentlemen, let the record show we reconvened at 4:26 p. m.

We have a series of documents which have been marked for identification as 23-A through 23-G, and I believe we are going to have to have some further identification by the witness on these specific items at this time.

CDR. LOOSMORE: Would you go through them one at a time?

THE WITNESS: The first map, No. 23-A, indicates the track taken by the Great Lakes storm of November 9-November 10, 1975.

The second exhibit is 23-B, and it depicts the surface weather features only as of 6:00 p. m. Central Standard Time, 7:00 p. m. -- I'm sorry -- 1:00 p. m., Eastern Standard Time, November 9, 1975.

23-C is a map of the surface weather features only for 7:00 p. m. -- excuse me -- 1:00 a. m. Eastern Standard Time, November 10, 1975.

The next exhibit is 23-D, and it depicts the surface weather features for 7:00 a. m. Eastern Standard Time, November 10, 1975.

The next is 23-E. It depicts the surface
weather features for 1:00 p.m. Eastern Standard Time, November 10, 1975.

The next exhibit is 23-F, which gives the surface weather features for 7:00 p.m. Eastern Standard Time, November 10, 1975.

23-G shows some of the surface weather features for 1:00 a.m. Eastern Standard Time, Tuesday, November 11.

All of these maps are considered merely as work sheets for the forecasters at the National Weather Service Forecast Office in Chicago, and there are many other additional maps of the upper air and such things as radar maps and satellite maps that are also used.

By Mr. Murphy:
Q. Mr. Waldman, in response to that statement, have you retained or do you have access to the others of those documents that you said were used and the other information that was used?
A. We have retained some of the significant maps of the upper air and some of the computer guidance, but they are other maps which we have not retained, but which would be available from other sources within the National Weather Service.

MR. MURPHY: Mr. Chairman, I would
like to request --

REAR ADMIRAL BARROW: I think we should dispose of these specific items here.

CAPT. ZABINSKI: I notice you were talking about the eastern -- or my notes indicate that you were talking about Eastern Standard Time.

THE WITNESS: Yes.

CAPT. ZABINSKI: I notice these are marked Central Standard Time. You converted all these?

THE WITNESS: Yes, I converted all these.

CAPT. ZABINSKI: Fine.

THE WITNESS: I converted all those because in all of the lake forecasts, Eastern Standard Time is used and that is the reason I did it.

CAPT. ZABINSKI: But when you said 1:00 p.m. Eastern Standard Time, that was the same chart here as exhibited by 12:00 Central Standard Time?

THE WITNESS: Yes, that is correct.

REAR ADMIRAL BARROW: Let the record show that these exhibits, 23-A through G, are introduced into evidence.

MR. MURPHY: Mr. Chairman, the
witness also testified, and I am afraid I asked him the question while you were still looking at those charts, and I don't want to paraphrase his answer, but Mr. Waldman, would you restate your answer, please, as to the availability of the additional information that was used by you in reaching your computations and diagnosis?

Would you restate that, please?

THE WITNESS: Yes. I stated that the work maps which were submitted here are only a small part of the total map material which includes such things as maps of the upper air, computer guidance, satellite charts, and so on, and that these other maps that I do not have with me at this time would be available somewhere within the National Weather Service, if there is a need for them.

MR. MURPHY: Your Honor, I would like to make a request for the maps to the Chairman.

REAR ADMIRAL BARROW: I think probably what we are going to have to find out is what is available. You say "somewhere," and there is a limitation as to how much. I think probably what we would ask is that we get a summarization of what is available and then deal with the subject at that
time.

Would you furnish such a list?

THE WITNESS: Yes.

MR. MURPHY: Very good. Thank you, sir.

By Mr. Murphy:

Q. Mr. Waldman, you also referred to maps of vessel and station reports that you have in your possession, is that correct?

A. Yes.

Q. Would you be good enough to produce those?

/Documents handed to counsel./

These are the reports and documents, and would you just briefly explain the manner in which you referred to those in your testimony and the manner in which they were useful to you or significant to you?

REAR ADMIRAL BARROW: Would you identify them, please?

CDR. LOOMIS: Can we mark those 24-A through whatever for identification?

CAPT. ZABINSKI: 24-A through what?

CDR. LOOMIS: I am not sure yet.

By Mr. Murphy:

Q. Mr. Waldman, you also referred to maps of vessel and station reports that you have in your possession; is that
correct?

A. Yes.

Q. These are records, documents?

A. Yes.

CDR. LOOSMORE: These will be marked

as Exhibits 24-A through 24-F, sir.

REAR ADMIRAL BARROW: We'll mark them 24-A

through 24-F.

THE WITNESS: Do you want me to go

over each and every one of them individually?

By Mr. Murphy:

Q. Just make a short statement as to what they are for the

Board.

A. 24-A is a Great Lakes Ship's Weather Observation Log

from the Arthur M. Anderson and for part of the month of

November, 1975. I quoted the observation, "Submitted by

the Arthur Anderson at 7:00 p.m. Eastern Standard Time

on Monday evening, November 10, 1975," in which I said

the winds were from the west-northwest at 50 knots.

Item 24-B is an analysis of the track of the storm

as it approached and crossed Lake Superior.

Item 24-C is a map of the weather observations plotted

as taken by the Coast Guard, the automatic weather stations

and the weather equipped vessels on Lake Superior as of

1:00 a.m. Eastern Standard Time, November 10, 1975.
Item 24-D is a similar map as of 7:00 a.m. Eastern Standard Time, November 10th.

Item 24-E is a similar map as of 1:00 p.m. Eastern Standard Time, Monday, November 10, 1975.

Item 24-F is a similar map as of -- it indicates observations as of 7:00 p.m. Eastern Standard Time, Monday, November 10, 1975.

May I add that these maps were made available to me by Mr. William E. Kennedy, Great Lakes Port Meteorological Officer.

MR. MURPHY: I would like to request that these be introduced into evidence.

REAR ADMIRAL BARROW: Are those copies that may be left with the Board, or do you have to make duplicates of those?

THE WITNESS: Those are copies of originals.

By Mr. Murphy:

Q Mr. Waldman, before you sit down, referring to --

REAR ADMIRAL BARROW: Can we look at them?

MR. MURPHY: Excuse me.

(Pause.)

REAR ADMIRAL BARROW: Exhibits 24-A through 24-F are marked and admitted into evidence.

(Exhibits 24-A through 24-F
were marked for identification and made part of the record.)

By Mr. Murphy:

Q Mr. Waldman, I just have one question with respect to 24-A, which you said were the reports from the Arthur M. Anderson, and I didn't quite see as you were pointing it out where this exhibit shows that on the 10th he received a report from the Anderson as you had described?

A Right. This is Greenwich time, and I was converting that to Eastern Standard Time, which would be 7:00 p.m. Eastern Standard Time, November 10.

Q So the day of month, GMT on the left-hand column, even though it says the 11th, it does not refer to the date and time referred to in this casualty; is that correct?

A That's correct. In other words, the 11th at 00 Greenwich is converted to 7:00 p.m. Eastern Standard Time on the 10th.

Q How are these reports received? Perhaps that is something I should ask Mr. Kennedy about?

A I believe you should ask Mr. Kennedy about that.

Q Referring to Exhibit 20 and just simply because I am not familiar with the Major system, would you be good enough to tell me what the Major reading was for 4:39 p.m. on the 9th, Sunday, the 9th?

You described that earlier, and would you tell us
what that reading was and interpolate it, according to
the description that you have previously filed?
A. Okay. The Mafor issued -- based on the 4:30 p.m.
forecast for the Eastern Standard Time, forecast for
Sunday, November 9, for the east half of Lake Superior,
reads as follows:

"Gale warnings up - Eastern Standard Time, Sunday."
Do you want me to decode all of this for you?
Q. You had described earlier that the weather at 4:39
p.m. was to such extent that you were going to place gale
warnings at 7:00 p.m. if I understood your testimony?
A. That's correct.
Q. What was the actual Mafor broadcast at that time at
4:39 p.m.?
A. The Mafor is broadcast at midnight, noon, 6:00 p.m. --
it is broadcast four times a day.
So this would have been broadcast at 6:00 p.m.
This Mafor would have been part of the regular 6:00 p.m.
broadcast.
Q. Then I am confused. What was the broadcast at 4:39 p.m.?
Not Mafor. That was the other one.
A. The 4:39 p.m. is the time that it opens on one of our
teletype circuits and appears -- it could appear at that
time or sooner on the marine weather circuit, and also it
could be broadcast at this time or close to this time
by our Noah Weather Review System.

Q. But when you say "could be," is there any way of knowing whether it was?

   It seems to me that the Admiral's questions refer to what was put out over the area, or at least that is what I understood it to be.

A. Right.

Q. What was put out over the air with respect to that 4:39 broadcast? Was it put out at that time or at some later time either by Mafor or by NOAA?

A. What I can say is that the forecasters in my office put it on and gave it the routine dissemination and the proper dissemination that they always give this kind of forecast information; but to actually testify as to how it was broadcast, I think that I do have a colleague here who knows those procedures and who deals in those procedures, who could answer those questions.

Q. All right, sir.

A. We have fulfilled our complete responsibility in Chicago by making this available at the proper time.

Q. Making it available to those who had the opportunity to so inform vessels, is that correct?

A. Yes, sir; that is correct.

Q. So we don't know from that when the vessels were informed?
A  No.
B  But there is somebody who can tell us?
A  Yes.
B  Thank you, sir. And who is that person?
A  That would be Mr. Daren Boyce, who is in the audience
     at the present time.
B  Thank you, sir. Now, is that also true, then, as to
     the broadcast or the information that was available at
     2:00 a. m. on November 10?
A  Yes, it is.
B  That you referred to?
A  Yes.
B  That is the same thing?
A  Right.
B  Now, just so I understand it, describe the difference
     between the NOAA broadcasts and the Mafors? I think I
     understand the Mafors, but I don't understand the NOAA's.
A  The NOAA's Weather Radio Stations, most of which are
     24-hour-a-day, seven-day-a-week operations, broadcast the
     Lake Superior forecasts and other lake forecasts every
     five minutes, 24 hours a day, and I say every five minutes
     because one complete cycle of a broadcast on NOAA weather
     radio takes about five minutes, sometimes less, sometimes
     a little more.
B  And you had earlier referred to that as Lake Michigan,
I think, but you are saying that it is also Lake Superior?

A. Yes.

Q. Thank you. Now, then, the Mafor, then, is every six hours?

A. Yes, the Mafor is not broadcast by NOAA Weather Radio because it is broadcast by the radio telephone stations, the marine weather radio stations on the Great Lakes.

Q. You mentioned earlier also, sir, that there were some water temperature readings obtained or recorded.

Would you tell me what those records are and where they might be obtained? Do you have any such reading records with you?

A. No, I do not and these readings are usually obtained by the local city water authority, and temperatures obtained at the site that they usually refer to as the crib, for instance the Cleveland crib in this city; and they record the observations and they at times make them available to the nearest weather office, and that weather office records them and the weather records eventually end up at the National Climatic Center in Asheville, North Carolina.

Q. Would that also be true of the water temperature readings at Whitefish Bay or the Eastern Bay of Lake Superior, if you know?

A. I am not sure about that.

Q. All right, sir. Thank you.
You had referred several times to your broadcast being divided between -- dividing Lake Superior between eastern and western parts.

A. You mean the forecasts?

Q. The forecasts.

Roughly, what do you consider to be the dividing line in the forecasts?

A. The Keweenaw Peninsula would roughly be a good dividing line.

Q. That would be a line north and south from the Keweenaw Peninsula?

A. Yes.

Q. Just one more question, if I may, sir. What do the satellite maps show with respect to marine weather broadcasts?

A. Well, you mean marine weather forecasts?

Q. The forecasts, yes, sir, excuse me.

A. Well, the satellite pictures tell us what the density of the cloud coverage is and we delineate that or we try to identify the storm centers and the positions or locations of cold fronts and warm fronts and other weather features, but it is used for all forecasts including marine forecasts.

Q. I understand, but with what frequency are those obtained for your purposes?
One every half hour.

Q I see.

MR. MURPHY: I want to thank you for your patience, sir. I hadn't meant to keep this going to long, but there was a lot that I didn't understand. Thank you very much.

Mr. Chairman, I have one more request in this regard. I would like to make a formal request for the production of the weather records at the Sault Ste. Marie Radio Station. This witness testified that they were very significant with respect to matters in the original recordings of the two most significant stations, Stannard Rock and Whitefish Point, and would have been received at the Soo, and he also indicated that, to the best of his knowledge, and in following usual procedures, they should be still available at that station, and I request that they become part of this record and part of this hearing, in whatever manner they may be obtained.

THE WITNESS: May I add that I added at that time that this was not within my expertise, and that I thought that some of my colleagues here could tell you more accurately just what record-keeping there is and what disposal there is made of
the records.

MR. MURPHY: Thank you.

REAR ADMIRAL BARROW: Perhaps we can wait until this witness testifies and then we will deal with this subject.

MR. MURPHY: Fine.

One more question. Excuse me, Mr. Chairman.

(Pause.)

MR. MURPHY: Your Honor, may I ask the Court if Mr. Boyce and Mr. Kennedy will be available to testify?

REAR ADMIRAL BARROW: Are they in the room?

THE WITNESS: Yes, sir, they are here now.

MR. MURPHY: My request was in the event that we don't reach them today, will they be here?

REAR ADMIRAL BARROW: I would anticipate we would go right into the other two witnesses at this time.

MR. MURPHY: Thank you. Thank you, Mr. Chairman.

CAPT. ZABINSKI: Mr. Waldman, we have been talking about wave heights. Just to set the record straight, when you are talking about 15 --
let's say 20-foot wave heights, what are we talking about? Are we talking about from trough to crest?

THE WITNESS: We are talking about trough to crest.

CAPT. ZABINSKI: Thank you.

REAR ADMIRAL BARROW: When you talk about mean wave heights, can you relate that to maximum wave height?

THE WITNESS: No, it is not meant to define maximum wave height.

By Rear Admiral Barrow:

Q. You cannot relate that in any way?

A. Yes. With regard to what I said, we did not mean to indicate that there were not other waves that were higher, nor does our forecast ever mean to imply that.

Q. But there is no way you can relate your mean height to what the maximum height of a specific wave might be in that area?

A. I think that you can relate it, but not in such a manner that you can say that a wave height in the forecast of, let's say hypothetically now 16 feet, would automatically indicate that the maximum wave height will be so many feet higher than that, because I believe that maximum wave height depends on local effects and may be a locally strong wind or something like that.
MR. HOCHMAN: My name is Hochman, Staff Attorney with the National Oceanographic and Atmospheric Administration.

The Weather Service does have someone present who could perhaps answer that question in somewhat more detail later.

REAR ADMIRAL BARROW: Who is that?

MR. HOCHMAN: It would be Dr. Lee Baer.

REAR ADMIRAL BARROW: Fine, thank you.

I might ask one other question.

Would you say that a mean wave height, 15 or so feet, would be a fairly frequent or not so frequent occurrence during November, at this time of the year?

THE WITNESS: I think it would be during any one given November. I think it would be something that might happen twice in a month.

REAR ADMIRAL BARROW: Thank you very much. You are excused at this time.

Please do not discuss your testimony with any others outside of this investigative process here.

Thank you very much for your testimony.

(Witness excused.)
REAR ADAMIRAL BARROW: Call your next witness.

CDR. LOOSMORE: The Board calls William E. Kennedy.

WILLIAM E. KENNEDY

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

EXAMINATION

By Cdr. Loosmore:

Q  State your name, address and occupation.

A  Yes, sir. William E. Kennedy. I am the Port Meteorological Officer for the Great Lakes.

I am stationed at the National Weather Service Forecast Office at Cleveland, Ohio.

My home address is 725 Hollywood in Sheffield Lake, Ohio.

Q  Mr. Kennedy, the record indicates you are not a party in interest in this proceeding.

Are you a holder of a Coast Guard license or document?

A  No, sir.

Q  How long have you been involved with your present duties?

How long have you been assigned to your present duties?

A  23 years.

Q  Is that 23 years as the port meteorological officer?
A. The job just started out as visiting the ships. I was a meteorologist at the Cleveland office, a forecaster.

I then became the marine assistant to the meteorologist in charge, and then the port meteorological officer, which is the same position but the titles have changed.

Q. Could you describe what the duties as port meteorological officer involve?

A. Yes, sir.

I am responsible mostly for data acquisition. We have 40 Great Lakes freighters. They are completely equipped with National Weather Service anemometers, barometers and thermometers.

We take observations every six hours and there are special observations when the winds exceed the forecasted winds.

In other words, if there are no warnings out and a vessel gets into a storm, which is up into the storm or gale warning, they take a special weather observation and let us know if the winds are higher than the forecast.

Also in my job is collecting the Coast Guard observations for Lake Erie for quality control; also, all the ship observations come into my office.

They are checked for quality control and mailed to the National Climatic Center at Asheville, North Carolina.

Q. Do your duties involve the collecting of observation
data from shore site stations around the Great Lakes?
A. We have 40 Coast Guard stations surrounding the
Great Lakes, but on Lake Superior we have 10 Coast Guard
stations, two Canadian stations and two automatic stations.
The local weather office is responsible for the Coast
Guard station in their area.

The Coast Guard takes the observations every two
hours. They are put on a form.

At the end of the month, these forms are sent to the
Weather Forecast Service and checked for quality control.

Then these forms are mailed down to the National
Climatic Center in Asheville, North Carolina for filing.
Q. What would be the local weather forecast station on
the eastern end of Lake Superior?
A. We have a Coast Guard station at the Soo. Then we
have the automatic weather station at Whitefish Point.

Then the next station over is Grand Marais Coast Guard,
and then it runs over to Marquette Coast Guard Station.

Actually, the Grand Marais would be the closest station,
Whitefish being automated.

Q. And you said that these data were collected at the --
A. At the Weather Service Office which is at Sault Ste.

Marie. The forms would be sent in there.

Q. And how long are they retained there?
A. It is up to the workload of the office.
The Coast Guard sends them in at the end of the month into the supervising station and then they are checked for quality control. Then they are mailed on to Asheville, North Carolina.

Q. If there were some difficulty at one or more of those reporting stations, would you be advised?
A. Not necessarily. I am advised at Whitefish Point. We make up what we call the lake weather bulletins, which are measures comprised of the 40 Coast Guard Stations and the ship reports, and the barometric pressure readings from stations around the Great Lakes.

This is made up every six hours at the Cleveland office and broadcast to the ships every six hours at 2:30 a.m. and p.m. and at 8:30 a.m. and p.m., so if some of these stations at Whitefish, if it is inoperative, the meteorologist at Sault Ste. Marie informs me. That is so I know those reports are not available for the LAWEB forecast.

Q. So we are talking the same language, LAWEB, is that a broadcast form of the Lake Weather Bulletin?
A. It used to be called Lake Weather Bulletin. A bulletin -- a bulletin is an updating on a particular storm, so we changed it so it now reads Lake Weather Broadcast.

Q. And you previously used the terms Lake Weather Bulletin?
A. Yes.

Q. So what your office prepares is based upon whatever
ship observations you have plus the shore site observations, and that is called what?

A. Lake Weather Broadcast. Also, I might add, that the Canadian ships, Canada has a port meteorological officer who does the same work I do in Canada, and we get the Canadian ship reports and reports such as from Caribou Island on Lake Superior.

They come into our office, and it is incorporated in this Lake Weather Broadcast.

Q. Do you have information on what the Lake Weather Broadcast for the 9th, 10th and 11th contained?

A. No, sir.

Q. Do you have it with you?

A. No, sir. I can get copies for you. We have them on file in our office.

Q. Would you please prepare copies of all the bulletins of all the broadcasts, the Lake Weather Broadcasts for the 9th, 10th and 11th of November, which would pertain to Lake Superior?

A. Yes.

Q. Are there different Lake Weather Broadcasts for the different locations?

A. Yes, sir. We start out with each lake. We give the land stations around each lake, and then it is followed by the ship reports on that lake.
Like we give Lake Superior, and then we give Lake Michigan, Lake Huron and Lake Erie and Lake Ontario.

Q. Was the Fitzgerald one of these reporting ships plying the Great Lakes?
A. Yes, one of the better.
Q. Did you receive reports from the Fitzgerald on the 9th and 10th?
A. Two reports on the 10th.
Q. Do you have records of those?
A. Yes. You have this map that was made up. It has both of the reports for the Fitzgerald.

He made his first report at 1:00 o'clock in the morning. Would you like to have me read the report?
Q. Yes.
A. The Edmund Fitzgerald at 0100 Eastern Standard Time on November 10, 1975, his position was 47.6 north -- wait a minute -- 47.5 north, 89 degrees west.

His winds were north-northeast, but I do have the actual ship reports, which I could make available, the teletype copies, which gives it in degrees.

We have those on file.
Q. Would you do that for me, prepare those for me and make those available for November 9 and 10, please?
A. Yes, sir.

The Fitzgerald was reporting at 0100 on November 10.
I gave you the position.

His winds were north-northeast at 52 knots.

He was reporting heavy rain. His visibility was two to four miles, and his waves were 10 feet.

His next report came in at 0700 in the morning. He was now located up at 48 degrees north, 87.8 degrees west.

His winds were northeast at 35 knots.

He was reporting moderate rain, visibility two to four miles, and he had 10 foot waves.

There were no further reports that day from the Fitzgerald, no further weather reports.

Q. That report was at --
A. 0700 on November 10th.

Q. How frequently do vessels give reports?
A. Every six hours on the lake.

They do not report in the rivers unless the mate or someone has the time available to make a report in the river, but they only report on the open waters.

Q. Wouldn't there normally have been a report at 1300?
A. This I don't know. I might add, like the Anderson, took the weather reports that day.

When I received the report from the Anderson, which you have a copy there for the 10th, I discovered that he took two weather reports that day and gave them to the Coast Guard stations, but those reports were not received in
our office.

So the Fitzgerald, he may have taken a weather report and maybe in our communication it had got tied up some place, but we have no record in the Cleveland office of receiving a report from the Fitzgerald at 1300.

Q. Does the Lake Weather Broadcast include wave height information?

A. Yes, sir.

Q. Where is that obtained?

A. The wave height information is obtained off the vessel ship report.

I might add, when a ship makes an observation, and I will give you the information he reports -- he reports the day of the month, the latitude and the longitude, the time, the total cloud amount, his true wind and degrees and knots, his visibility, his present weather, his past weather, his air temperature, and his Celsius, his water temperature in Celsius, ice secretion, which is information given when the temperature is below freezing, his wave, the average period of the wave in seconds and the average height of the wave in half-meters on his observation, and also any other information if he has time to put in remarks.

He has this little block called "Remarks" where he can put in things such as "Heavy snow, visibility half mile,"
or maybe "Peak gusts," if he can observe a peak gust.

That is put in the Remarks of the observations he takes.

Q  How is the wave height data obtained?

A  It is difficult for a mate, because of his responsibilities in the pilothouse, but he normally looks out and takes several waves, because one wave right after the other could be different; so he looks out and takes the average.

Q  Does he have any instruments to measure that?

A  No. It is one of the most difficult observations to make on the Great Lakes.

Q  The mate does this?

A  Yes.

Q  Are these people trained for this observation?

A  Yes, sir, they are trained by me with what resources we have available.

I have manuals that I supply the mate with.

They have a card here which gives them instructions for observing the weather, and we have another -- we have handbook No. 1, which is also presented to the mate for observing.

Q  Do either of these things contain information on wave height?

A  Yes, sir.
Q. Apparently those are the sorts of things that are handed out?

A. Yes, sir.

Q. Could you provide copies of those to the Board, please?

A. Yes, sir.

Q. There has been some question about the weather reporting from the station at Whitefish Point during the period of 24 to 48 hours preceding the loss of the Fitzgerald. Can you shed any light on that question at all?

A. Yes, sir. The station at Whitefish Point is an automated weather station at the Coast Guard station at Whitefish Point.

The readings are transmitted from Whitefish Point into the Soo Coast Guard Station, using telephone lines.

On the day of the 10th at 1600 the station went out of commission, and I understand when I called up the Sault Ste. Marie weather station that the wires went down at 1600; so the reports after that -- the 1500 report was the last report from the Whitefish Station.

Q. And when did it come back on in service?

A. I have no record of it having come back in.

They will usually send something when they are back in, but as of midnight that night the report was still missing.
Q. I may be getting a little bit out of your area of knowledge, but you said that the information from Whitefish was transmitted to the Coast Guard station?

A. Yes, sir.

Q. Do you know what happens to it then?

A. The Coast Guard station puts it on. These are original records here.

The Coast Guard station -- I might add at this point that the Coast Guard has their own teletype system around the Great Lakes. The Coast Guard is broken up into group offices, which I believe one of them is a Soo office, and then they have local loop teletype service, so that the Soo Coast Guard would collect all of these observations from their stations, which includes Stannard Rock station and the Whitefish Point into a collection every two hours.

They put that on their Coast Guard teletype system. Here at the Ninth Coast Guard District, those reports are transferred to our own marine teletype system. They are transmitted every two hours onto our National Weather Service teletype system, and these reports are then available at all of our forecast offices.

Q. I am not sure whether you mentioned this or not, but once this Lake Weather Broadcast is prepared, how is it disseminated?
Who broadcasts that and from where?

A. They are prepared at the Cleveland Forecast Center, and they are put on the marine teletype previous to the 2:30 a.m. and p.m. or the 8:30 a.m. or p.m. broadcast onto the marine teletype.

In turn, the marine teletype circuit is over at WMI Lorain, and they broadcast it at 2:30 a.m. and p.m. and 8:30 a.m. and p.m.

Q. Is this in addition to the two other broadcasts that Mr. Waldman spoke of?

A. I think what he spoke of was the Mafor, which is broadcast at 6:00 o'clock, 6:00 p.m., and yes, that is in addition.

Q. Mafor is Marine Forecast?

A. Yes, sir, and LAWEB is the actual observations at that time. Those are the actual observations at the Coast Guard stations and the ships that come in just previous to the making of the LAWEB.

Q. So I have it straight, LAWEB is L-A-W-E-B?

A. Yes, sir.

CDR. LOOSMORE: I have no further questions.

EXAMINATION

By Capt. Wilson:

Q. You mentioned there is room in the report for remarks
such as "Peak Gusts."

You also discussed the wind velocity as sent in.

Did either the Fitzgerald or the Anderson in their
reports that day include any comments including peak gusts?

A. No, sir. Peak gusts, I might add, on the vessels,
they have a special anemometer, which is adapted for
marine uses.

It has a little bit of a movable ring on the direction.
When the mate takes his wind, he has a little plotting
board, a plastic wind board, and he takes the ship's
direction and the ship's speed on this board, and it makes
a dot.

Then he takes his movable ring on the anemometer and
moves it around so the ship's direction is to the bow of
the vessel on this instrument.

Then he looks at the wind direction meter and whatever
the needle points to, that is the apparent wind direction
and the ship's speed will be apparently indicated.

For computation, it is entered on this form, his
apparent wind speed and direction, and the ship's speed
and the ship's direction.

Then by using this little board, by lining up the dots,
it gives him the true wind speed and the true direction.

A lot of times with peak gusts, he gets confused,
because sometimes if he records the peak gusts, it is
an apparent peak gust and not a true peak gust, and a lot of times they fail to put that on the form.

Q. You mentioned that the measuring of wave height was one of the more difficult aspects?

A. Yes, sir.

Q. As I understood it, it is purely a visual estimate by the mate on the bridge?

A. Yes, sir.

Q. He uses no stadiometer?

A. No.

Q. He uses no measuring device, just his estimate?

A. Just his estimate. He will look out at the waves and watch the waves, and he will give his best estimate and report on the wave.

Q. And this is not based on anything such as the angle of the wave to estimate the height? There are no instructions? It is purely his estimate?

A. Yes, sir, his best estimate.

I tell them this is how you measure it, and they say, "How can I measure it?" and I say, "Just do the best you can. Take several waves and come up with your best estimate and put it on your weather form."

Q. Do you know if anyone has ever made a comparison of the actual wave heights with the estimated wave heights?

Have there been any efforts or studies?
A. Well, I am a member of the wave group of the Naval Architects and Marine Engineers, and they do have wave measuring devices that they have on some of the ships, and you would have to contact them.

Q. Then you believe that these have been used to compare a mate's estimate?

A. Yes, because they are on some of the weather ships, but this is their project and not ours. We have to go with ours, with the available wave observation.

Q. The anemometers, the measuring instruments on the ships, as I understand, those are furnished to the ship?

A. Yes, sir.

Q. Or is that ship's equipment?

A. National Weather Service owned equipment.

Q. And that is furnished and maintained and everything by them?

A. That equipment, the wind equipment is installed by me, serviced by me, repaired by me and calibrated and checked every so often.

By Capt. Wilson:

Q. About how often is it checked? Is it a scheduled check?

A. No, sir. Right now it is a check usually when the marine superintendents or the ships will call me, either at the office or at home and say their anemometer needs
service and then I will, with the resources available to me, I will go to the port and, as I said, I cover all the Great Lakes, and I will go to the port and visit that ship and service the anemometer.

Q. Do you know offhand if you had recently visited either the Anderson or the Fitzgerald?

A. The last inspection report I have from the Edmund Fitzgerald was on August 14, 1974, and as far as I know, they have been taking observations all this season and as far as I know, they had no complaints of their anemometer being defective.

Q. And that was your last visit to which vessel?

A. To the Edmund Fitzgerald.

Q. To the Fitzgerald?

A. Yes, and I would have a report of the Anderson, but I did not bring it with me.

Q. Do you know offhand, has it been recent or would it have been similar to this last one?

A. Yes, similar to this one.

Q. I realize that you didn't mention this, but as it was used, what is an intense storm, since you said you were a forecaster? Is there a simple definition or something?

A. I don't know. You will have to ask the forecasters on that because back when I was a forecaster, I came from a station in Bear Mountain, New York, and I came to
Cleveland.

CAPT. WILSON: That's all the questions I have.

EXAMINATION

By Capt. Zabinski:

Q These people on the ships that take these weather forecasts or these weather observations for you, what do they get in return, Mr. Kennedy?

A The weather observations, I might go back with a little history, back to the November 11th storm in 1940 when several ships and many lives were lost.

The ship masters asked for more weather information for the Great Lakes and we had a meeting over at Milwaukee at the Shipmasters' Convention with Mr. Andrus, who used to be in charge of the Cleveland Forecast Office.

It is very hard sometimes to make a forecast in an area unless you know what the weather is, and at the time we agreed to furnish 40 ships with anemometers, thermometers and barometers in return if they took the observations for us and we could make a better forecast for them because we would know what was going on out on the Great Lakes.

So through the years, it is their observations on the ships and they put their very best into these observations that they take for us, and of course we give the
forecasts back to them or the warnings, whatever.

Many times this has happened where on the lake in a certain area of the lake, winds may be up in a gale category and we don't have the gale warnings up. We get that report and we immediately put a gale warning up for the other ships and this is the service that they give to us.

They have done it over the years and we furnish the forecasts back to them.

Q. This has been going on since the 1940's, is that right?

A. Yes, sir.

Q. In some areas they have Telefax machines that ships are able to get pictures of the weather map, the general weather map.

Is that common here in the Great Lakes?

A. Well, the Weatherfax machine, Mr. Daren Boyce who is the ice forecaster in the ice demonstration, the Weatherfax is only used in their ice program for their vessels, sailing late in the season or through the winter season.

They have a Fax, which Mr. Boyce, I am sure, will explain the facts there, but as far as our fleet of weather ships, as far as I know, there are no Faxes on the vessels.

Q. You indicated quality control, that you checked
quality control. You have used that expression two or three times.

What is it or how do you do it?

A. For instance, a ship will take weather observations and at the end of the month, all these observations come into my office. Then I go through these observations and check to see if they are plotting the wind right. Sometimes with the wind plotting board, we have a new man or a new mate that has never taken weather before, and I was unable to visit the vessel and maybe he's just got the wind at maybe 180 degrees, I will have to write him a little memo and explain to him that he is writing up the wind wrong and show him how to do it or perhaps some of the other figures on here that he may be writing down in Fahrenheit instead of Celsius on the weather form.

And I will write these notes to him and I will correct them on the sheet before I send them on to our National Climatic Center, and I will send them to him with a note with a correction of the error so he can improve himself.

The same with the Coast Guard stations, we correct those when we send them in.

Q. You indicate that the ships report sea water temperature and water temperature?

A. Yes, sir.
Q. But looking at the previous exhibit, the exhibit down at the table there, can you tell me what the water temperature was as reported by the Anderson on the 10th?

A. At what time, sir?

Q. On the 10th, whatever time it has last. Let's say 1900, does he have one?

A. At 1900 he reported a water temperature at one degree Celsius and an air temperature of six degrees Celsius.

Q. Can you make that quick conversion for me, please, Mr. Kennedy?

A. The one degree is about 33 degrees Fahrenheit, but the six degrees Celsius, can anyone else quickly figure it?

CAPT. ZABINSKI: Professor?

(No response.)

THE WITNESS: We use tables today, so that's why I referred to it.

CAPT. ZABINSKI: Okay. We can look it up.

THE WITNESS: It's 42 degrees Fahrenheit for six degrees Celsius and 33 degrees for one degree water temperature.

CAPT. ZABINSKI: That's all I have for the moment.

EXAMINATION

By Rear Admiral Barrow:

Q. You talked a little bit about calibration of these
anemometers. Is this done on any kind of a routine basis or just when complaints are received as to the anemometer itself?

A  We try to visit the vessel at least once a year.
Q  I am talking specifically about calibration of them.
A  The calibration, I try to get to the vessel at least once a year, and of course if the anemometer, if it reads his wind speed low, then, I will change the sensors with reconditioned units, which have been calibrated.
Q  I see. Is this calibration process something that you can carry on right on board the vessel itself?
A  Yes, sir, I have calibration equipment.
Q  And you attempt to do this, you say, once a year?
A  Yes.

REAR ADMIRAL BARROW: Mr. Murphy, do you have any questions?

MR. MURPHY: Yes. Thank you, Mr. Chairman.

EXAMINATION

By Mr. Murphy:

Q  On that score, Mr. Kennedy, I think you indicated the last time you recall having been to the Fitzgerald in that regard was August of 1974.

Apparently you hadn't had an opportunity to get there in 1975, is that correct?
A. That is right.

Q. Do you find it is necessary to check these calibrations on a regular basis or do you feel that it is not necessary?

A. I feel it is not necessary because the captains and mates usually can tell pretty much when their anemometers aren't working. They check it with other ships in the area and let me know when it is reading low and request service.

Q. Having received no request for service from the Fitzgerald, would that be an indication to you that their anemometer was working properly to the best of your knowledge?

A. Yes.

Q. Or they would have reported that, is that correct? You would have expected that to have been reported?

A. Yes.

Q. What about the Anderson, do you recall the last time you were there?

A. No, I don't. I just pulled the Fitzgerald's out, but the Anderson has company owned wind equipment.

   We have five ships and we have one from each fleet that the captains have asked for more ship reports and we have one from each fleet, but I do calibrate the equipment on the Anderson.

Q. Although it is company owned?
A. Yes, sir.

Q. Those that are not company owned are Government owned, then?

A. The 40 ships are Government owned, yes.

Q. And that would include the Fitzgerald?

A. Yes, sir.

Q. So you have no reason to believe that her anemometer was not properly calibrated at this time?

A. If the captain or I have no record of them calling asking for service and from his weather observation that he has taken, it appears that his anemometer was working.

Q. Would that be consistent also with the Anderson, as far as you know, even though it is company owned?

A. Yes.

Q. You mentioned that you received the readings from the mate, am I correct?

A. Yes.

Q. Is there any particular mate from whom you receive those readings or is there any one mate assigned to that task or is there any mate on watch to do that?

A. The mates on the vessels work, I believe, a regular shift from between hours -- whether it is midnight to 4:00 or four on and eight off, or something like that, and it is that particular mate that is on during that time.

For instance, the mate that is on from 4:00 to 8:00 in
the morning would take the 7:00 o'clock in the morning observation and usually there are two mates. The one mate that works a shift is not at our weather time, so it is usually two mates that take observations.

Q. When is the other observation? One is 24 and eight and the other one is when?

A. Well, I don't know on the Fitzgerald what watches they were standing, but the mate on duty at 1:00 and 7:00 a.m. and p. m., that would be the mate that would take the observation.

Q. Did you find those mates to be reliable in the information that they had given to you?

A. Yes.

Q. Did you know either one of them personally?

A. Yes, I knew all of them personally.

Q. Did you know Mr. McCarthy, the first mate?

A. Yes, I did.

Q. Did you find Mr. McCarthy's reports to be reliable?

A. Yes, sir.

Q. Did you find him to be reliable in any contacts which you have had with him?

A. Yes, sir.

Q. You mentioned also that it may have been that the one o'clock report from the Fitzgerald was typed up somewhere, just by paraphrasing your language.
Would you describe to us how that may have occurred and in what respect that might have occurred? Would it been route or what would be the route?

A. It would be hard to say because the vessels, when they take their weather observations, there are several sources that they can call their reports into.

Now, one of the things that I insist on board a ship, the first thing that comes on a ship is the safety of the vessel. So if a mate is tied up in severe weather or is tied up, perhaps, and there is another boat and he is watching it on radar, he is not to take the time to take the weather observation. Only if he has time to take that weather observation on there, he will.

There could be many elements at that time that was involved where he may not have taken an observation. This happens a lot of times.

The observation, it could have, maybe, tried to have been called in to WMI Lorain with his weather report and perhaps he couldn't get through. Maybe he tried to call at one of the Coast Guard stations and they may have been on a rescue mission or the man tied up and he was unable to get his report.

He may have tried the Canadian station or maybe called a Coast Guard station and maybe the report laid on his desk and maybe the report could have been laid aside.
with some other papers or mislaid or something, and never
gotten into our office.

This happens occasionally.

Q  So it is possible if you were to trace back through
the route that there could have been a report received at,
say, the Grand Mara station? Would that be a reasonable
station to have received it in this instance at 1:00 p. m.?

A  It would be hard to say because on the form over in
Column 26, they indicate -- like the Anderson indicated
the radio station he gave is, "Message to -- end of time."

Q  What station was that?

A  Well, the one he had marked here at 1900 was Duluth
Coast Guard Station.

Q  And now referring -- you don't have the Fitzgerald
records so you can't tell us what station.

A  Because he would have it in there because, as I
said --

Q  You will produce that for us. Can you produce that
for us?

A  I will try to check if the report was issued.

Q  What I was thinking was, your records should show
the stations which the Fitzgerald reported at 0700,
should it not?

A  Yes.

Q  The station from which you received the information?
A. Yes, I have those records.
Q. There would be a record of that?
A. Yes, sir.
Q. Now, is there any way that you could trace back through the possible stations to find out whether or not they did, in fact, receive a report, but for one reason or another did not transmit it to you? Could that be done?
A. We could ask the Coast Guard to check their stations and request WMI Lorain to see if they have gotten the report, and we could go through our records in the office.

We have them on file and we can double-check our records to see, perhaps, if the report was in.
Q. Could you do that for us, please?
A. Yes, sir.
Q. Now, perhaps you have answered the Admiral's question in this regard, but I am not sure I understood it.

I think you said if the ships make special observations when the wind -- or that the ships did make special observations when the winds exceeded the forecast winds, was that the same discussion that you referred to as peak winds earlier, or let me put my question this way:

Do you know whether there were any special observations received from either the Anderson or the Fitzgerald that the winds did, in fact, exceed the forecasts?
A. As far as I know, there was no specials received from
either of those vessels.

Q And the Anderson record is here and you can tell from that?

A Yes, I have a copy here and there is a copy in the files and there is no indication of a special record.

Q And the similar record, similar entry, would appear in the Fitzgerald record?

A From reports in our office, because that same day we got a special weather report on Lake Erie from one of the ships.

Q In talking about wave heights, I recognize that you described how the mates tried to determine those.

Based upon your knowledge, does the depth of the water that a vessel is operating in have anything to do with the height of the waves?

Do you have that knowledge? Do you know whether it does or does not?

A No, I don't know anything about that.

Q You just ask the men to try to visually determine how high the waves are?

A Yes.

Q I see. Now, you mentioned that there was an explanation for the failure to receive winds and velocity and weather records from the Whitefish Weather Station.

Do you have any knowledge as to whether there was any
interruption in the receipt of information from the automatic station at Stannard Rock?

A No, there was no interruption.

Now, Stannard Rock station is a little bit — the Stannard Rock station is controlled by radio at the Marquette Coast Guard Station every two hours.

The man on duty at the Coast Guard Station at Marquette presses a red button. It sends an FM signal out to Stannard Rock and it takes a weather report, and the peak gust is the highest gust since the last time the station was activated.

So these gusts were the highest. We are not missing anything between observations, and then the report comes back in to the Marquette Coast Guard Station on a tape and then the man has to take the information off of that tape and then put it in on a log, which is a regular log for recording observations and then he sends out that report every two hours into the Soo group office with his own Marquette Coast Guard report.

I have the observations from November 9th to 2300 on November 10th from the Stannard Rock station and I believe you have a copy in your records of an observation taken every two hours.

Q In other words, do I understand that you are saying that a duplicate of what you are now pointing out is
already in the files?

A. I believe it is with the maps that Mr. Waldman testified to.

MR. MURPHY: May I see the records?

THE WITNESS: If not, this is Stannard Rock here (pointing). This is the direction in velocity and the gusts, and this is Whitefish.

MR. MURPHY: I would think that that would be a pertinent record to your testimony, sir, and if you have no objections, I would like a copy of it.

THE WITNESS: Could I make a copy of this and bring it in with the others?

REAR ADMIRAL BARROW: Is the information contained on any of these enclosures here?

THE WITNESS: No, they are not. I thought it was attached with the Anderson ship report, but I will make a copy of this.

By Mr. Murphy:

Q Would you see that we receive a copy, sir?

A Yes, sir.

Q Thank you.

Is there an actual recording station at Sault Ste. Marie?

A For weather?

Q Yes.
A. No.

Q. At the weather station at the Soo Airport, where do they get their readings?

A. I believe their station is at the airport in the service office.

Q. At the airport at the Soo, they have their own recording equipment to record weather?

A. They have their own anemometers and they take observations every hour.

Q. Do they report to you or do you receive the reports through any general reporting service?

A. Yes. We receive them through, I believe, the aviation reports that come in. These are like Cleveland Hopkins and Toledo, and we take them as an aviation report, not as a marine report.

Q. I see. Have you ever heard the term power bump in any of these recording devices that record wind velocities?

A. No.

Q. You never heard that? It doesn't mean anything to you?

A. No.

Q. Was there any information that you received which would give you the ability to estimate the distances between peaks in the waves that occurred on Lake Superior during the hours of 3:00 and 7:00 p.m. or in that vicinity with which we are concerned here?
A. The only thing that I have available on the waves is what was reported by the ships and the Coast Guard stations, the actual observations.

Q. Then is your answer in the negative, that there is nothing there that would enable you by interpretation or otherwise to indicate approximately what the distances were between the peaks of these waves?

A. No, I couldn't do that.

Q. And there is no way that it could be determined?

A. As far as I know, I could not do it from this.

Q. Now, again, I want to be careful not to ask you to produce duplicate information into the record, but can you tell us, sir, in reference to weather maps and the various maps from which you have testified here, whether they contain information different than the information which has been previously testified to by Mr. Waldman?

A. No, these charts are the same. What charts Mr. Waldman has introduced are copies of these charts.

Q. They are copies of these charts?

A. Yes, sir.

Q. And do you have with you any other documentary information which you think could be of assistance or helpful to this investigation in determining the questions under investigation?

A. Well, the only other thing would be copies of the
Coast Guard operations, the teletype copies that we have received in Cleveland, which we can make copies of along with the LAWEB and the ship reports and the Stannard Rock reports.

We can make copies of the Coast Guard reports.

Q Would you do that, please?

A Yes, sir.

Q Thank you.

MR. MURPHY: Excuse me, please, for a moment, Mr. Chairman.

(Pause.)

By Mr. Murphy:

Q Again, back to this matter of the waves and the peaks, did I understand you to testify that there was some measurement of the time interval between the peaks? Do you have some way to determine the time interval between the peaks based upon their size?

A You mean in measuring the waves?

Q Yes. Well, you have measured the waves.

A From crest to crest for the size of the waves?

Q Yes.

A In other words, it could be, for instance, on the Anderson -- I will have to go back to my code tables to tell.

The Anderson at 1900 reported a code figure of 10,
which is a 16 foot wave and he reported 15 seconds,
which is the average wave period in seconds from one crest
to another crest.

In other words, it took 15 seconds for the wave to go
up, to go back down and come back up again.
Q. That was at 1700?
A. 1900.
Q. 1900?

Had you received any report from them prior to that
time or what was the next previous report that you received
from the Anderson?
A. Our report previous to that was taken at 1300 and
he reported a code figure for height of 06, which is 10
feet and an average period of eight seconds between crests.
Q. Did he report the wind velocity and direction at
that time?
A. Yes, sir, he did. The wind velocity was 150 degrees
at 20 knots.
Q. So you have no report from the Anderson between those
two time periods as to weather conditions which she was
encountering?
A. That is true. There are no reports, sir.
Q. All right. Now, did you receive any reports or do
you have any access to reports from these Canadian reporting
stations that you mentioned?
A. The reports that we have, receive at synoptic times. At six hourly times we receive reports from Canadian stations, which are Caribou Island and Slate Island, from Canada and these are only teletype copies.

For original records, you will have to obtain them from Canada.

Q. Do you have teletypes of those reports for the period with which we are involved here?

A. Yes, for the times, if they had reported it, we would have a copy of it.

Q. You don't have that with you now?

A. No, I don't have copies with me.

Q. It would be in your office if it was reported?

A. Yes, they are on these charts. If they had reported it, they would be on these charts.

Q. Do the charts show whether or not they were reported?

A. In 1900, Caribou Island was missing and Slate Island, which is up in the extreme north, that island in the extreme north part was reporting northwest 25 knots and five foot waves.

Q. You say Caribou was missing at 1900?

A. Yes.

Q. Do you have any way of determining what the next previous report from Caribou was?

A. At 1300?
Q. Whatever it was, whatever was next.
A. At 1300, Caribou was reporting west at 40 knots with six foot waves, and Slate Island was reporting northwest 25 knots and seven foot waves.
Q. Is Caribou an automatic station or a manned station?
A. I don't know because they are changing also over there to automated stations, and many times we are not informed at the time what they are.
Q. From what point do you receive the Caribou information? Does it come directly from that station to what point in the United States?
A. It goes into the Toronto Forecast Center and then the Toronto Forecast Center puts it on the marine teletype. They are on the drop sail, as it were. They put it on the marine teletype service and that report goes to all of our forecast offices.
Q. I see. Thank you.
A. Are both the LAWEB and the Mafor reports broadcast from WMI in Lorain?
A. Yes, sir.
Q. They both are?
A. Yes, sir.
Q. You mentioned that the telephone line transmitting the information from the Whitefish Point Station was out, but would the information received at Whitefish still be
there, but not having been transmitted because of the telephone lines being down?
A. I don't know.

We do have stations, and this particular installation, which was one of the first on the Great Lakes, has to be activated either by a telephone call, which for instance here in Ashtabula we dial a telephone number and then put the telephone in a coupler and we receive the report on a teletype.

That particular installation, I am not acquainted with. We may have somebody here that may be able to answer it.

No, they say no. That would be something we would have to find out from up there.
Q. It is possible that the instrumentation could have been recording but not transmitting it? Is that possible or don't you think so?
A. At this time, I don't know. I would have to find out from our electronic people up there.

MR. MURPHY: Thank you, sir.

Thank you very much, Mr. Kennedy.

THE WITNESS: You are very welcome.

By Capt. Zabinski:

Q. Mr. Kennedy, I wonder if you could help me with timing of getting the broadcasts on the air of the marine forecasts.
They are prepared at the Weather Center in Chicago?

A. The Mayor?

Q. Yes.

A. Yes, sir.

Q. And then it goes on a teletype?

A. Yes, sir.

Q. And then where does it go from there; how does it get out to the ship?

A. The Mayor, one is prepared -- now for instance, Chicago prepares the Mayor for Michigan and Superior; Detroit prepares it for Lake Huron; Cleveland for Lake Erie; and Buffalo for Lake Ontario and the St. Lawrence Seaway.

It goes onto the marine teletype and it is received at the radio station at Roger City, a commercial radio station, WMI in Lorain and WBL in Buffalo which also has a drop, and, of course, it goes into the Coast Guard system. It goes to the Coast Guard stations, so when it comes into Lorain, they have a regular scheduled time to broadcast it, which you have a schedule card there.

Then Lorain broadcasts it at that scheduled time.

Q. Do we know how much of a time delay there is between when the weather forecast is prepared in Chicago and what time it is given on the air?

A. You would have to get that from Mr. Waldman or WMI, Lorain.
Q. The only ones especially broadcast would be the ones that had some special significance?
A. Yes.
Q. And they would be broadcast as soon as received?
A. And there is a schedule on the Major cards, so many minutes past an odd hour or even hour, and that's a regularly scheduled broadcast for those.

CAPT. ZABINSKI: That's all I have.
REAR ADMIRAL BARROW: Anything further?
CAPT. WILSON: I have some questions.

EXAMINATION

By Capt. Wilson:

Q. Sir, you said that the winds at Stannard Rock are maximum gusts?
A. Peak gusts; yes, sir.
Q. Peaks?
A. Yes.
Q. And what you get from the ships are the average?
A. A one minute average.
Q. A one minute average?
A. Yes.
Q. And from Stannard Rock you get true wind and --
A. And the peak gusts.
Q. And the wind direction and the velocity?
A. That's also an average wind, one minute wind, and then
the peak gusts, which occurs between the last time the
station was activated. At Stannard Rock, we could get
an observation every 15 minutes, but the peak gust would be
from the last time it was activated, so you would always
have the peak gust.

REAR ADMIRAL BARROW: Is that stored in some
sort of memory bank of some kind?

THE WITNESS: Yes.

By Capt. Wilson:

Q And I understand that is with the exhibits?

A No. I am going to Xerox a copy of that.

Q It will be with the exhibits?

A Yes, sir.

Q The other question I had is that you mentioned that
the Anderson reported at 1900 a 16 foot wave with a 15
second interval?

A Yes, sir.

Q Before you mentioned that the wave height was one
of the most difficult of the readings that the mate is
required to take, but the accuracy on the period is pretty
good?

A No, I meant the whole wave observation, not only the
height. The whole wave observation is what I meant.

Q That is usually one of the more inaccurate things
you get?
A. Yes. They have to look at it and estimate to their
best ability what it is.
Q. Including time?
A. Yes.

CAPT. WILSON: Thank you. That's all
I have.

REAR ADMIRAL BARROW: Commander Loosmore?

CDR. LOOSMORE: I have nothing further.

REAR ADMIRAL BARROW: Before we finalize on
this particular witness, can you summarize the
information, the additional information which this
witness is to furnish to the Board, and I would say
that should be directed to the Chairman of the
Marine Board of Investigation.

Can you summarize that, Commander?

CDR. LOOSMORE: Yes, sir. Mr. Kennedy
said that he would furnish a weather operations log
similar to the one already in evidence for the
Fitzgerald.

THE WITNESS: That would be the ship's
observation logs.

CDR. LOOSMORE: Yes.

THE WITNESS: 

CDR. LOOSMORE: I'm sorry. Is there
some problem with that?
THE WITNESS: No. You said operations manual. I was questioning you on what operations manual you wanted:

CDR. LOOSMORE: No. I meant observation rather than operations. I intended to say observation.

THE WITNESS: Okay.

CAPT. ZABINSKI: Is a standard publication put out --

THE WITNESS: These are the instructions for the mates when they take the observations. I can supply a copy of that.

CDR. LOOSMORE: That's another thing on my list.

MR. HOCKMAN: I am not sure anyone is clear yet on exactly what we are agreeing to provide.

CDR. LOOSMORE: Let me start out again back at square one.

REAR ADMIRAL BARROW: Let's go off the record for just a few minutes until we can get the recapitulation of what specific items are needed.

(Discussion off the record.)

REAR ADMIRAL BARROW: Let's go back on the record.

Mr. Kennedy, since I think you have the list there, would you repeat for the record the items
which you will furnish to the Chairman of the Board following this session?

THE WITNESS: Yes, sir. The LAWEG's, which is the Lake Weather Broadcasts, which will be for November 9, 10 and 11; the Coast Guard reports for Lake Superior for only November 10; the ship reports for the Fitzgerald for November 9 and 10; the American Ship reports for the 10th, the weather reports for Stannard Rock and Whitefish Point for November 10; the Caribou Island and Slate Island report for November 9 and 10; the Canadian ship reports for November 10 and a copy of the Weather Bureau Observing Handbook and also the Weather Bureau Form B-21A.

REAR ADMIRAL BARROW: Thank you very much, Mr. Kennedy.

You are advised not to discuss your testimony in this case.

I think we had one additional witness that hopefully would be a very brief witness.

Right now we'll take a small recess, and we will subsequently call Dr. Baer.

(Recess had.)

REAR ADMIRAL BARROW: Let the record show we are back in session at 6:10 p.m.
Commander, will you proceed?

CDR. LOOSMORE: The Board calls

Dr. Lee Baer.

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LEDOLF BAER

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 occupa-

tion?

A  My name is Ledolf Baer and I am Director of the

Oceanographic Services Office of NOAA.

I work at Headquarters at 6010 Executive Building,

Rockville, Maryland.

My home address is 9920 Bedfordshire Court, Potomac,

Maryland.

What else did you ask for?

Q  Your occupation?

A  I am Director of the Oceanographic Services Office.

Q  The records do not indicate that you are a party

in interest in this hearing:

A  Good.

Q  Are you a holder of a Coast Guard license or document?

A  No, sir.
Dr. Baer, you are represented to this Board as having some knowledge and expertise in waves at sea and the ocean. Could you explain, one, the source of that expertise; two, whether that is applicable to the Great Lakes wave system?

I have something on the order of 20 years' experience in wave forecasting, wave behind forecasting and wave observations and other research in that area. I got my Ph.D. degree with a dissertation in wave forecasting in 1962 and have worked in the field mostly doing research for this entire time, until about a year ago when I took my present job, which is administrative in the marine area.

I might also say I have published quite a number of papers in the scientific literature field in the area of waves.

Yes, sir; I know you have been listening to some of the testimony, and there has been quite a bit of discussion about wave height.

Several questions have come up. One of them involves -- I guess all of them involve really the measurement versus observation of wave height, and the testimony pretty generally -- the testimony has indicated that there is some question as to the reliability of that.

Could you comment on that as an expert in this field?
A. There have been a number of studies in this area making such comparisons and I don't think you could say they are conclusive in any case.

What the studies show is if you are on a small boat you tend to overestimate the waves.

If you are on a big boat, you tend to underestimate the waves.

Waves themselves are fairly complicated, and in the last years we almost always speak about a wave spectrum in the scientific discussion of waves, because this allows us to recognize that the waves vary from one wave to the next.

Now, when I say spectrum, I am really saying a superimposition of a lot of different wave lengths, and when those are superimposed, you get a complex sea, much as what you actually observe, with one exception; that has to do with the non-linear properties of the wave, which makes the crests steeper and the troughs flatter.

Now, that's general, and I think that applies, whether we are talking about the lakes or the open ocean.

I know of no reason that the research that has been carried out on the open ocean is significantly different than what you would expect over the lakes, as far as wave generation.

Does that answer the question?
Q. Yes, sir. In the studies which are compared to
observe waves, what has been the conclusion as -- toward
the part of the question of spectral distribution of wave
height being observed by the observer?

Can you simplify that?

A. If I could simplify the question and just talk about
the general subject, we normally speak of a significant
wave height, and that term has been used once in these
proceedings. That was in talking about a forecast sheet.

Actually, that is the height that all of the National
Weather Service people have been talking about. That is
the height that we think is being observed by the ships,
the Coast Guard people and other people along the shore.

Now, there are several formal definitions of
shifting wave height.

One of them is that it is the average of the highest
one-third of the waves. That's a difficult definition to
apply, because you don't know what is a wave.

If you have something one millimeter high, is that a
wave or not?

A most modern definition of that is that it is four
times the square root of the variance of the record.

Now, that's a statistical definition. The square root of
the variance is essentially the RMS.

We are also talking about the same as the area under
the spectrum.

Now, how does that tie in with what we are talking about here? Well, there were a bunch of studies, and I can't remember the exact dates, but they were in the era of the late '40s.

It showed that what people think they see from a ship, what they talk about wave height, is the significant height. That's when these basic comparisons were made.

There is a great deal of variance between eyeball estimates, but the average of the upper one-third has been found to be a reasonable estimate of what people do see when they look out over the waves.

In other words, you don't see the little ones. You just see the large ones.

Is that an adequate answer?

Q Yes, sir. Pursuing this just a little bit further, is there some way that you could estimate what the biggest wave is?

A Yes, sir. It is reasonably well accepted that the individual wave heights are almost Raleigh distributed.

With that statistical distribution, you can give a probability estimate of any condition.

I am sorry, but I didn't come prepared to testify, so I didn't bring any such tables or graphs with me.

In general, you can say that the highest individual
wave is often about twice the significant height.

So if we had a significant height of 16 feet, you
would get close to the 32 feet, just perhaps a little bit
under, if this 16 foot significant height persisted for
a fairly long time.

You have to consider the number of waves passing in
order to do that. I am sorry, I just don’t have the
statistical function, but it would be of that order.

Q Dr. Baer, what is the significance of a period of
a wave that is recorded and measured in these observations?
Can you relate period to height or period to length?

A There are some relationships, but these relationships
aren’t always that good.

In the first place, there is a minimum period that you
can have. According to theory, the ratio of height to
length cannot cause a steeper wave than one to seven.
In other words, I cannot have -- if I have a one foot wave,
the wave length must be at least seven feet long.

Other than that, there is no absolute relationship.

Now, that’s as far as waves.

As far as forecasting waves, there is a relationship
that ties it down. The methods of forecasting do allow you
to give a complete spectral distribution of the waves.

I mentioned spectral earlier, and I think I better define
what I am talking about a little bit here. It is a fairly
technical term.

If you allow me, I would like to give you a simple definition rather than a precise one. We are really talking about either the frequency, the period or the wave length, and those three are all interchangeable mathematically.

We say that we have a superimposition of waves of a large number of different wave lengths, let's say, and each one of these wave lengths has a different height.

These add up and give us a total height, and we have a range of periods that are also added.

We can give, from that, the maximum -- let's say the period with the maximum energy. I use the term "energy" relative to the height of an individual component.

I forgot where I was. I can, however, forecast both, and when I make a forecast, I have both available.

Now, there is a problem in that very few people can use spectral information.

When I try to break this down to a single height in a single period for operational purposes, it is impossible.

It is impossible to describe so simply, but the important thing I think for this kind of a condition is to realize what kind of ranges you actually could have in real life; that there is a range.

Q. What do you do with the period of information that is reported?
A. What does NOAA do with it?
Q. Does it go back into the forecasting, or is there quite a bit of processing? Do you do anything at all with it?
A. Because wave observations are as important as they are, in general, let me say that the wave forecasting methods that are used by NOAA, by the Navy and by various other organizations, depends almost completely on the wind, sea, and essentially ignoring initial wave observations.
Q. Does that speak to the reliability of the wave observation?
A. Yes, sir. The reliability is not very good. I don't have a firm number, but if you could guess within 50 per cent, I think you would be doing pretty good.
Q. Would that apply to the observations which have been discussed earlier of a 16 foot wave with a 15 second period?
A. I was flabbergasted to hear that. A 15 second wave period is a very long period of time. It is about what we see with long swells crossing the Pacific.
I think 16 seconds is pretty normal. Hurricanes in the Gulf of Mexico which cover larger regions than this covers occur for 12 seconds for the primary period.
Q. Are you talking about a period moving past a fixed object, or as observed from a moving ship?
A. I am talking about the true wave in true space, not relative to the ship but relative to the earth.

Q. And what are these which are reported?

A. The ship should try to estimate relative to the earth rather than relative to himself, but it gets to be a problem. It is very difficult.

The ship encounters waves, and he might be measuring the encounter frequency or the encounter period, rather than the true period.

I can't say what he actually does. I can only say it is very difficult to do a good job by eyeball. We have been eyeballing waves for years.

It is the best we have available at the present time, except for research purposes and a few other cases.

Q. Mr. Kennedy previously testified that the way the period was measured was to time it as it went by the ship?

A. I guess I wasn't listening carefully.

Q. Do you know whether there are any instructions which would be contrary to that?

A. I think it would depend on what direction the ship was going as to what that would do.

Q. That wasn't the question: Do you know whether there are any instructions?

A. I would have to say in the Great Lakes there are a series of special instructions worked up for the Great Lakes
that are different from the rest of the world as far as
what the ships do, and I am not familiar with them.

There were one or two other questions that came up
which I might be able to clarify. Would this be an
appropriate time to do it?

CAPT. ZABINSKI: It depends on what
the subject was.

THE WITNESS: There was a question
of the water depth on waves. The previous witnesses
said they didn’t know or something to that effect.

I would like to say certainly there is an effect
of depth on waves. As the bottom gets shallower,
we get a shoaling effect, and the steeper they get,
the higher they get.

If this gets all the way to the beach, they
will break before they get there, and we have all
observed this.

Now, the question is how much steepening is a
function of what the wave spectrum or what the
wave of range period is, and the longer the wave
period or the wave length, the deeper the water.

Now, a 15 second period wave would be very,
very long and would certainly be felt in the shallow
places if you had something as long as 15 seconds.
We are talking about effects -- I better not say that. I was trying to remember some numbers about depth, and I don't remember them good enough. I better not introduce it.

I thought perhaps that would clarify it a little bit.

CAPT. ZABINSKI: What was the other thing? You said you had two things.

THE WITNESS: I think the other little notes that I had taken here were -- I guess we answered that.

I had a note about the wave length methods of getting wave lengths, and we explored that one well enough.

REAR ADMIRAL BARROW: Capt. Wilson?

CAPT. WILSON: I have a few questions.

EXAMINATION

By Capt. Wilson:

Q You may have covered these, but you said that in a large ship you tend to underestimate or understate the wave height?

A That has been experienced.

Q That has been experienced. Is there some kind of a direct relationship to the height of the observer to the sea?
A. I am not sure what the relationship is. There are several things we could thing about. One is the height of the observer above. Another is how steady she rides.

Q. Then the larger the ship, the more likely you are to understate?

A. I think that's generally true.

Q. And the less steady the platform, the more likely a person is to -- would you say over or underestimate?

A. I think when the ship is small and you are bobbing quite a lot, it makes it seem like those waves are awfully big when you look up at them.

Q. You also mentioned the relationship of the moving platform to the waves or the sea.

Is there a tendency to underestimate if you have, say, a following sea and overestimate when you are headed into the sea, or is there any relationship?

A. I could only guess.

Q. Well, your guess is better than mine.

A. My guess would be that the problem is if you don't correct for it, if you know what you are doing, you make a correction for it and there shouldn't be a bias, but if you don't correct or if the observer makes no corrections, then -- we are talking about waves that are moving on the order of 10 or 20 knots, which is not that
different from the speed of ships.  
So if I have got a following sea, I might think  
that the wave length is quite long. If I am heading into  
it, I would tend to think that they are quite short if  
I made no corrections.

CAPT. WILSON: I have nothing  
further.

REAR ADMIRAL BARROW: Anything further,
Capt. Zabinski?

CAPT. ZABINSKI: Nothing.

REAR ADMIRAL BARROW: Mr. Murphy?

EXAMINATION

By Mr. Murphy:

Q. Thank you. I am curious, Doctor, when you are referring  
to relatively large and small ships.  
What was your interpretation as to what you considered  
to be, lengthwise, a small or large ship?
A. I think the Fitzgerald would be classed as being  
large.

Q. And what would be small?
A. Small, I am talking about 50 or 100 feet.

Q. In other words, you are including most commercial  
vessels as a large ship? Would that be fair to say?
In other words, not fishing type vessels?
A. That's true. That is the kind of distinction.
There are small commercial coastal cargo ships that may not fit in that category either.

Q. Could we put it in the category of any seagoing or --
A. I would think so. That has been my experience on open ocean. I know nothing about ore carriers.

Q. Were you here when Capt. Pulcer testified this morning about undertow? Were you here at that time?
A. Yes.
Q. Did you understand what he was saying?
A. No, sir. I must say that he had a very soft voice, and I was sitting relatively far back. I couldn't hear very much of what he said.

Q. As I understand, what he said is that when the shoal areas were pointed out to him, he expressed these as being areas which created an unusual backlash or undercurrent of the waves that not necessarily would be present in the deeper waters.

Do you have any familiarity, or do you have any comment on that, if I understood his testimony?
A. There are a number of places around the world that are famous, and captains know they are rougher there. I presume that's the same kind of a thing we are talking about here.

It is local area effects. They are pretty well, usually, known by the skippers.
Q. Would that condition be similar to or commensurate or connected with your comment that waves will steepen as the water becomes shallower? Would they be co-acting?
A. That's the kind of thing we're talking about, but exactly what happens, gee, that's getting pretty complicated.
Q. We have found here on the lakes, or at least generally lakes, that people believe that Lake Erie is shallow and will build up faster, whereas the deep lake, the waves will build up slower but perhaps have a longer lasting effect.
Is that a fair statement?
A. I have no firm scientific evidence to support that, but my intuition would go along with that.
MR. MURPHY: Thank you, Doctor.
I have no further questions.
REAR ADMIRAL BARROW: Are there any further questions? Are there any further questions to be submitted by the parties in interest?
(No response.)
REAR ADMIRAL BARROW: Thank you very much. I appreciate your testimony.
I caution you not to discuss it with anyone, other than counsel, until the investigation is completed.
We will adjourn at this time and reconvene in the room adjacent to this hearing room tomorrow morning at 9:30.

We will have to get out of this room.

(Whereupon, at 6:40 p.m., the hearing was adjourned to reconvene on Thursday, November 20, 1975, at 9:30 a.m.)
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TRANSCRIPT OF MARINE BOARD OF INVESTIGATION

Volume 2
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

Thursday, November 20, 1975

The above-entitled matter came on for further hearing, pursuant to adjournment, at 9:30 a.m.

BEFORE:

Marine Board of Investigation:

Roar Admiral Winford W. Barrow, Chairman
Capt. Adam S. Zabinski, Member
Capt. James A. Wilcox, Member
Cdr. C. S. Loosmore, Recorder

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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

9:40 a.m.

REAR ADMIRAL BARROW: Good morning, ladies and gentlemen. Let the record show we reconvened at 0940.

I would like to note that counsel for the Operator is present. I don't believe that counsel for Capt. McSorley is present in the room at this time.

I would like to note also for the record the presence here today of Mr. David S. Whittet who is Regional Manager, Ship Safety, Canadian Coast Guard, Central Region. I would like to note that he has been with us previously and has offered to assist in any way he can in the proceedings before the Board.

I have one other announcement for the record. There have been some questions raised, and I believe that earlier I had announced that we intend to hold hearings on the proceedings on Saturday.

It is still our intention to hold proceedings on Saturday. We have scheduled witnesses for the morning and the afternoon of Saturday, and we intend to hold hearings on those dates, on those times and dates.

Call your first witness.

CDR. LOOSMORE: The Board calls Mr. Charles H. Studstill.
CHARLES H. STUDSTILL

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

EXAMINATION

By Cdr. Loosmore:

Q. Mr. Studstill, would you please state your name,
address and occupation?

A. Charles H. Studstill, 800 Irving Park, Sheffield Lake,
Ohio.

I am retired from the Coast Guard, a Lt. Commander,
and presently I am pastoring a Baptist church in Avon Lake,
Ohio.

Q. Mr. Studstill, the record indicates that you are not
a party in interest in this proceeding.

Are you a holder of a Coast Guard license or document?

A. No, sir, I am not.

Q. When did you retire from the Coast Guard?


Q. What were your duties in the Coast Guard immediately
preceding your retirement?

A. I was assigned to the Marine Inspection Office in
Cleveland as a hull inspector.

Q. Did your assignment as a hull inspector include any
inspections on the Fitzgerald, the ship involved in this
hearing?
A. Yes, sir. I had the drydock inspection or examination
of the Fitzgerald, which was completed on 4-20-74.

It was drydocked at the American Ship yard in Lorain,
American Ship Building.

Q. You call this the drydock examination. Is this a
required examination?

A. Yes, sir.

Q. How frequently?

A. Every five years.

Q. What does the examination involve?

A. In this particular examination, the vessel is placed
in the drydock and is examined throughout extensively,
every department, internally and externally, and all the
equipment and gear and so forth relative to the safe opera-
tion of the vessel.

Q. What is the conclusion; what end results are reached
by one of these examinations?

A. After the examination is completed, the vessel is certi-
fied to be, in the opinion of the inspector, as the statement
at the last page in the book indicates, "In my opinion,
the vessel is fit for service and route specified in the
certificate."

Q. Now, you are holding a book there. Could you explain
what that book is?

A. This is a document that the inspectors use as a
checkoff list as well as a report to certify that the
vessel was examined and what was done during the examination.

Q. So with the aid of that book, then, could you tell us
what was done during that examination?
A. Yes, sir, I sure could.

Would you like me to enumerate each item or -- well,
for instance, under the first page, the condition the
vessel is examined, the hull, the structure externally,
all external members and all internal members, bulkhead
decks, tank tops, bulkheads, et cetera, throughout the ship.

The vessel is carefully examined for all fractures,
and if any previous fractures or repairs are necessary,
they are accomplished at that time.

The vessel structure is examined to see that it is re-
reinforced in accordance with the applicable instructions
for that particular vessel.

All the fasteners, rivets, welds, whatever it may be,
are examined as thoroughly as possible. The ground tackle
or the anchors are examined.

If necessary, if there are any available or if they
are present, all air ports below the weather deck are
examined, but of course, this was not applicable for the
Fitzgerald.

Q. Why not?
A. There wasn't any air ports below the weather deck, or
at least when I checked on here.

The spar dock, the side ports, all self-bailing and
cockpit-freeing ports, compartments, all interbottoms,
were entered and examined thoroughly and throughout;
scuppers, draft marks, stern frame, the rudder, propeller,
sea chest, and all the sea chests were opened and examined.

The sea valves were looked at by the machinery inspec-
tor and he so indicated here in the book, and he has also
signed the Remarks section.

That is a quick view of what we do.

Q. Thank you. You mentioned fractures; did you find any
fractures?

A. We found some fractures in the connection between the
hull side girder and the hatch in girder or skirt.

There were some fractures in the welds. They were
of the nature that you usually encounter in this type of
inspection.

We found some fractures in the keelson, the connection
of the keelsons and the floors below the tank tops. I
believe we found one fracture -- let me refer to the book
now. That's all we have here.

All these were repaired while part of the vessel was
on drydock.

Q. Mr. Studstill, I have here a drawing which is in
evidence, an Oscillid drawing. It is Exhibit 6-F, and it is
the midship section of the Fitzgerald.

CDR. LOOSMORE: Mr. Murphy, would you assist me in agreeing that this is a copy -- that this is a reproduction of that?

MR. MURPHY: It appears to be. I would rely on the witness' testimony in that regard, if it appears to be a reproduction.

Would you state what it is for the record?

CDR. LOOSMORE: It is a copy of Exhibit 6-F and it is what I propose to have Mr. Studstill talk about with respect to the deficiencies which he found.

MR. MURPHY: May I question the witness on that?

By Mr. Murphy:

Q. Would you be good enough, Mr. Studstill, to examine the document and state for the record whether it is a copy of Exhibit 6-F, please, sir?

A. It appears to be a copy, yes, sir.

MR. MURPHY: We have no objection to the copy being used, rather than the original document.

CDR. LOOSMORE: Mr. Chairman, I would like to mark the copy of the midships drawing Exhibit 25.

MR. MURPHY: Just for the record, sir,
may I know what an Oscillid copy is?

CDR. LOOSMORE: I think it is the process by which blue-lined blueprint drawings are made.

I am not sure this is an Oscillid process. I think that is a patented name.

REAR ADMIRAL BARROW: Cdr. Loosmore, are you marking this for identification?

CDR. LOOSMORE: Yes, sir.

REAR ADMIRAL BARROW: All right. That will be Exhibit 25 for identification.

(Exhibit 25 was marked for identification and made part of the record.)

By Cdr. Loosmore:

Q. I believe you referred to three or four locations. Could you point out on there where they are?

A. The fractures we found were in this connection of the outboard stringer plate to -- well, it is in the connection with this hatch side girder.

I don't see it portrayed photographically here, but it is this area right here, where the skirts -- maybe I can sketch it up here.

This would be the spar deck or the main deck running here (indicating).
This would be the hatch looking down in the corner.
This skirt or hatch end girdle comes across and in a T
connection --

REAR ADMIRAL BARROW: Excuse me. Cdr. Loosmore,
if we are not going to use this specific Exhibit 25
for identification, if indeed we are going to actually
carry out a sketch, then I suggest that a sketch
probably would be the best thing to produce what
the deficiencies were.

I am sure that in this, the witness can look
at the midship section to do this, but I think prob-
ably we should have a sketch in lieu of a document
which we aren't going to use.

MR. MURPHY: In view of the fact
the witness was unable to locate the particular area
on the substituted proposed exhibit, may we determine
whether or not the area is, in fact, shown on the
original of Exhibit 6-F?

THE WITNESS: The section of the mid
stiffener under the spar deck and where your arch
comes over right in here, this area right in here
is in question and this particular profile, it is
kind of hard to make out and I don't see a detail
which exhibits it. It does not exhibit it suffi-
ciently enough for me to indicate where the fractures
were.

The profile we need is standing on the spar deck looking down into the hatch and at the corner junctions of the hatch end girder and hatch side girder, the T connection, the connection of these two.

MR. MURPHY: May I request, then, that we examine these other plans to determine whether or not that is shown on any of the other plans?

REAR ADMIRAL BARROW: Let's go off the record while we carry out this search here.

(Recess had.) 10:08 a.m.

REAR ADMIRAL BARROW: Gentlemen, may we be seated?

CAPT. ZABINSKI: Gentlemen, please.

REAR ADMIRAL BARROW: Let the record show that we reconvened at 10:08.

Cdr. Loosmore, continue.

MR. MURPHY: Mr. Chairman, please, in discussing this matter with Cdr. Loosmore during the recess, we did find that we do have a photograph which the witness has indicated would illustrate the area to which he refers, so we would offer this into evidence.

I would like to have it marked, please, and it probably might ease the description that the
witness would like to show.

CDR. LOOSMORE: This is 26. I request
this exhibit be marked 26 for identification.

REAR ADMIRAL BARROW: This exhibit, which
has been introduced for identification 26, on the
back of the photograph indicates under date of April
9, 1966, "SS Fitzgerald loading, Eveleth Taconite
Company's First Pellets, Mesabi Railroad, Ore Docks,
Duluth, Minnesota."

Do we have any idea which specific hatches are
portrayed here?

MR. MURPHY: Are there any numbers
appearing on them?

REAR ADMIRAL BARROW: The photograph shows on
the hatch covers, which are displaced here, 3, 4 and 5.
We will admit the photograph in evidence as
Exhibit 26.

(Exhibit 26 was marked for
identification and made
part of the record.)

By Cdr. Loosmore:

Q. Mr. Studstill, would this illustrate the area in
which you are talking about?

A. Yes.

Q. Would you hold it up for the Board?
A. (indicating) We have found here, located in this area here, where the skirt or hatch end girder comes across and connects to the hatch side girder, this is a T connection welded usually on both sides, to the best of my recollection at this time; and on almost every, I would say, a large majority of the drydock inspections as well as other topside inspections, you find small hair-line fractures in the weld of this connection, and this is an area that we look for it.

There are two alternatives, two remedies: We can just vee them out and weld them back up and then sometimes with the discretion or with the indication, the direction of the particular weld.

Sometimes they have been altered and this area is relieved so that the stress does not collect there, but to my recollection in the Fitzgerald we simply — well, I want to see what the book says here.

In the Remarks section of the drydock examination book on March 16, 1974, the Remarks indicated that I was on board that day to conduct a spar deck examination and of all cargo holds. This is in conjunction with the drydock examination.

I found fractures in the weld connection of the side — of the hatch side girder and hatch combing skirt at the following locations:
Port side, hatch 14 aft, 16 aft. These are hatch numbers, and 19 forward and aft. That would be the forward end and aft end of the hatch.

Also, 20 aft, 21 aft, on the starboard side at hatch No. 4, the crack located at the aft end of the hatch, Hatch 5 forward, No. 6 forward, 8 aft, 9 forward, 10 aft and forward, 12 forward, 13 -- excuse me, 15 aft, 16 forward and aft, 17 aft, 19 forward, 20 forward and aft.

These are welding connections that we have found hairline fractures in the welds.

Fractures are in the welded connections only and are to be removed by enlarging the weld at the hatch combing.

Q And the records indicate that that was done?
A Yes, that was accomplished and inspected.

As a matter of fact, all the deficiencies we found, which includes this, as well as one fracture in the skirt, were completed and inspected and so indicated on 4-20-74.

Q All right. Now, these fractures in the connection between the skirt and the hatch side girder, how long is that connection vertically?
A Roughly 18 to 20 inches.

Q And how long were the fractures?
A They wouldn't run the entire length of the weld. They might be just an inch or inch and a half. You would have to look real close in most cases to locate them.
Very seldom did they run -- I don't remember one running the full length of the weld itself.

Q. What other discrepancies did you find during that drydock inspection?

A. In the double bottom section of the vessel, and we can use this profile for the midship section for that, we found some cracks or fractures at the connection of the tank top and the transverse floors and the forward and aft keelsons.

This area sets up an L shape or T shape area.

On occasion we find fractures in this area. Some of them were found on the Fitzgerald. I might state that when we make this examination, we take with us a representative from the company as well as a representative from the shipyard.

They go down, and we mark those areas and make a sketch of them. The shipyard man usually makes a sketch to locate them.

Then he comes later on, the yard does, and repairs them. Then we go and take a look to see that they are repaired.

This was done on the Fitzgerald.

I will look and see if we made any notations on that.

(Pause.)

Yes, the record indicates -- my record indicates I
was on board March 14, 1974, on board and conducted an internal examination of all side tanks and voids. Necessary repairs are listed on the attached yard sheet dated 3-18-74.

This is the yard stringer here, detailing what we found and what was done (indicating).

Q. Would you point out on the drawing precisely where the area that you are describing is?

A. This would be a typical one of it. We are talking about this area here, where the tank top, the transverse of the forward and aft floor, and the transverse keelsons meet here (indicating).

The damage usually occurs, if there is any, from unloading equipment or something of that nature, disturbing the tank top.

Q. Would you take this marker and indicate where the fractures occur, please?

A. All right. It would be in this area right here (indicating). I don't know what caused it, whether it was damaged from physical damage or what, but we didn't indicate that.

Again, this is something that is expected on this type of examination.

MR. WAESCHE: Mr. Chairman, the record will not indicate what the witness is referring to unless he marks it.
CDR. LOOMIS: All in due time, sir.

REAR ADmiral BArrow: Yes, go ahead.

By Cdr. Loosmore:

Q Mr. Studstill, again, to the best of your memory, can you recall what the extent of the fracture was? Did it extend from the full width along the floor, or between stiffener and stiffener?

A To the best of my knowledge, and I have looked at quite a few, but what the stringer or writeup indicates is that there were just superficial cracks in the connection of the tank top and keelsons to the extent that if there is any damage found of any magnitude, the repair would have been to crop out the affected floor or keelson and insert it, or -- yes, insert it.

So based on what the stringer calls for in the book, the writeup, I would assume at this point that there were fractures of six-eight inches in the welds only.

Q Were there any other damages -- first, would you draw a circle around that area with respect to that, please?

A Yes.

Q And would you put a letter "A" there?

A All right.

REAR ADmiral BArrow: Well, let the record show that in the discussion here we were -- the witness was referring to Exhibit 25, and I don't
think we have admitted that, have we?

CDR. LOOSMORE: Not yet.

By Cdr. Loosmore:

Q. Were there any other damages which your records indicate. any other fractures?

A. Let me refer to them just a minute.

(Pause.)

There were no more fractures, but there were some more repairs that were carried out at that time.

Q. Could you describe those for us, please?

A. This was a replacing of side shells, operating at loca-
tions L strake on the port side, which would be the --
this is an L strake here (indicating).

REAR ADMIRAL BARROW: I think you are going
to have to describe it in words, because you are referring to an exhibit here.

Q. Would you circle the L?

A. The L indicates the side shell plating, beginning with the keel as A and lettering A, B, C, D, E, F, G, H, J and L. I is not in here, and L in this case is first below the shear strake.

Also, at that time the K strake, which is immediately below the L strake, was cropped and renewed. All internals were renewed.

This repair was tested and it was examined and tested on
4-20-74.
I might add it was found to be in good condition.

Q. Mr. Studstill, would you date and sign that?
A. Today's date?
Q. Yes, sir.
A. That being what?
Q. The 20th of November.

CDR. LOOSMORE: Mr. Chairman, I
would like to request that the Drydock Examination
Book which Mr. Studstill has been referring to be
marked as Exhibit 27.

REAR ADMIRAL BARROW: For identification?

CDR. LOOSMORE: Yes, sir.

REAR ADMIRAL BARROW: I would like to note
on this exhibit, which is the Drydock Examination
Book, that there is an attachment to it and I believe
the witness has been referring to these two pages
as a stringer.

THE WITNESS: Yes, sir. That is
the term, a shipyard work list or stringer.

REAR ADMIRAL BARROW: They are two pages,
which constitute the shipyard work list and attach-
ment to this, which form part of the exhibit,
which is the drydock examination of the Edmund Fitz-
gerald.
This was completed in Cleveland, Ohio on
4-20-74.

CDR. LOOSMORE: Perhaps I could mark
the book A and the attachments B and C.

REAR ADMIRAL BARROW: All right. Exhibit 27-A
B and C will be marked for identification.

(Exhibit 27-A, B and C was
marked for identification
and made part of the record.

MR. MURPHY: Mr. Chairman, just so we
won't unnecessarily delay the proceedings, if we may
examine the document for a few more moments while
the questioning goes on, or would you prefer that
we complete the examination now.

REAR ADMIRAL BARROW: I think we would prefer
completing this on the drydock book itself at this
time. We have other witnesses who just arrived and
I want to get a feel for how much further questioning
we have of this witness.

We may want to terminate very shortly here and
get on with another witness and come back to this one.

MR. MURPHY: May we just reserve
our comment then on this?

REAR ADMIRAL BARROW: Yes.

MR. MURPHY: Thank you.
CAPT. ZABINSKI: The Chairman will rule on that, if he wants you to reserve comment on the expression of the drydock.

REAR ADMIRAL BARRON: Yes.

CDR. LOOSMORE: I would like to offer Exhibit No. 25 which has been previously marked for identification as part of the evidence in this hearing.

REAR ADMIRAL BARRON: I think we should rule on the admission of this particular drydock book right now, and I think my ruling on that would be that we would admit the drydock book in evidence.

MR. MURPHY: We have no objections.

REAR ADMIRAL BARRON: As far as the duplicate of the midship section with the notation on that, I believe I would prefer to reserve ruling on that until after we have had some questioning on this particular piece of paper.

CDR. LOOSMORE: I have no further questions.

REAR ADMIRAL BARRON: Capt. Wilson?

EXAMINATION

By Capt. Wilson:

Q Mr. Studstill, the areas that you have marked, are they generally considered to be critical areas of the ship for stress concentration?
A. Yes, sir.

Q. Now, in the case of the L strake below the shear strake, to the best of your recollection, was that replacement due to an external physical damage or was the plate removed in the internals due to working the vessel itself?

A. To the best of my knowledge, this was in compliance with a requirement issued by another Coast Guard office. I don't remember which it was now. It wasn't anything that we called out because of any difficulty. It was something that had been on the record and to be dealt with at that time.

Q. Yes, sir. Well, do you recall whether it was done or appeared to be done because of something damaged, the plate, or the plate being worked?

A. No, it had been as a result of coming in contact with a pier or a dock.

Q. I see. In the case of the welds that were redone, you said those type of weld fractures were fairly common. Are they generally considered to be a very serious type of fracture?

A. No, in my opinion, they would not be; no, sir.

Q. So if the complete weld in that area had been fractured, it would not constitute a serious condition?

A. No, not in the area that we discussed because that
is a connection of the lower skirt to the side girder
and it would not be, in my opinion, it would not constitute
a very important area at that point.

Q. Yes, sir; and one other thing.

You said "we found." Were you using the "we" to
indicate there were more people there than just you?

A. Yes, sir; when these inspections are made, usually
there is a representative of the Classic, the company
that has the vessel in class, or the American Bureau of
Shipping, and Lloyds of London, also a representative of
the company. And in most cases a yardman from the craft
that would be doing the repairs; there is sort of a team
that goes through this.

Q. Yes, sir.

CAPT. WILSON: That's all I have,
Admiral.

REAR ADMIRAL BARROW: Capt. Zabinski?

EXAMINATION

By Capt. Zabinski:

Q. Mr. Studstill, who assisted you; do you have a listing
or names of persons from the American Bureau of Shipping
who assisted you in this examination or who accompanied
you on this examination?

A. No, sir. I don't remember the American Bureau man
at this time. We did not indicate that in the book. We
simply indicate the company representative.

Q. Who was the company representative?
A. Dick Phelps is indicated in the book.

Q. Could you refresh your memory by looking in the book, please?
A. It indicates Dick Phelps, owner's representative.

Q. Do you remember what shipyard representative was there, if any?
A. No, Captain, I don't know at this time.

Q. When you started your testimony about the description of this drydock record book, which you produced, you indicated that it served both as a field record and as a record for recording the findings of the inspection.

To your knowledge, are there any other records kept of this drydocking examination which occurred, as far as the Coast Guard is concerned?

A. Of the drydock itself, Captain?

Q. Of the drydock examination itself, yes.

A. This would be primarily the drydock inspection, yes, sir.

Q. Now, you indicated there may have been a boiler inspector. Who would that have been?

A. Lt. Cdr. Edward Standicar, S-t-a-n-d-i-c-a-r, I believe.

Q. Now, there are several, you indicated several entries
in the book, some pertaining to inspections that you did
and other areas which Mr. Standicar may have done.

How would we, by examining this exhibit, know who
did what?

A. Each inspector checks off the item that he looks at,
initials that item, and signs the Remarks section in the
back after placing in a resume of what he did on that
inspection, and this is so indicated in this document.

Q. By looking then at the initials, we know whether
you or Mr. Standicar covered that particular item?

A. Yes, sir.

Q. On these fractures between the side girder and skirt,
you enumerated several areas in which you found this type
of fracture.

Now, did you examine all the girder skirt connections
or did you only examine a portion of them?

A. No, sir, we examined every one of them.

Q. Forward and aft?

A. Yes.

Q. Port and starboard?

A. Yes, sir.

Q. And this was the total amount of fractures that were
noted by your inspection?

A. Right; yes, sir.

Q. Do you have any opinion as to what causes these
fractures to occur in the skirt? Would it be from, let's say, unloading or loading operations or could it have been from that cause?

A. In my opinion, it could be. I would say that this is a highly stressed area due to the normal working of a ship in the seaway, insomuch as it is a T connection, and in my opinion could be primarily, I would say, from the working of the ship in a seaway.

When you locate such a fracture that occurs at the loading dock, which you do have at times, this one did not have any, to my knowledge. This is very -- you can tell it because of the physical damage that has occurred.

Q. Did you notice any physical distortion of either the side girder or the skirt in connection with any of these fractures, if you can recall?

A. No, sir.

Q. On the exhibit here, which you indicated the fractures on the keelson through the connection, is that underneath? What is that? Is that a boundary between the side tanks and the cargo holds?

A. Yes, sir. The tank top in that diagram is actually the bottom of a cargo hold.

To make this examination, you go down inside the wing tanks and make an internal inspection of all the interior inside, and this connection, then, would be looking up at
the bottom of the tank top, and where the floors and
keelsons cross.

Q. Is it your testimony, Mr. Studstill, that you had
gone through all of the deep tanks on the vessel?
A. Yes, sir.

Q. And you were looking for fractures in all of the
deep tanks, is that correct?
A. Yes, sir.

Q. And the fractures that you note in your inspection
reports are the only ones that you had noted?
A. Yes, sir.

Q. And you marked those for corrections?
A. Yes, sir.

Q. Could these fractures in any way be caused by
damage in unloading or are they caused by something else?
A. These particular fractures, I can't recall what caused
them because it has just been too long, but it has been in
my experience that most of these type of fractures are
caused from unloading equipment, buckets, Howletts, or
something of this nature, and inasmuch as the Fitzgerald
was a straight-decker as opposed to a self-unloader, I
would assume that this would be highly probable that
these cracks were formed the same way.

Q. Now, these cracks or fractures, would you describe
them for us? Were they in the weld? Were they in the
web of a particular --

A. No, sir; they were in the weld, and again to the 
best of my knowledge, the welds were fractured. If we 
find any extensive fractures or damages to the web and 
web connections, these are just primarily cropped out, 
inserted, or they are lap welded.

Q. You indicated some repairs to the K strake and the L 
strake. You have identified the strakes. Could you 
identify the location on the vessel where the repairs 
for the K strake and the L strake were done?

A. Yes, sir. I believe it was indicated by L-8, L as 
I indicated would be the L strake.

The number of the strake goes from the keel and 8 
being the eighth plate back from the bow.

We had L-8 and K-10, so we were right in the same 
area.

Q. Quarter starboard side?

A. Port side.

Q. And could you give us any idea what hatch or what 
section of the vessel L-8 plate would be?

A. It would be relatively close to the bow. I mean, 
it would be in the forward part of the ship.

I would assume it would be in the first No. 1 hatch.

Q. And how about Plate 10?

A. That would be in the same area. 9 and 10 would be --
9 would be here, and, of course, 10 would be the one
below this in that it was L-8 and K-8; then it would be
in the same area, in the same hatch.

Q. Did you examine this damage that you recall?
A. Yes, sir, on drydock.

Q. What kind of damage was it?
A. It was set in physically from outboard to inboard.
I don't remember the extent of it now, but it was set in,
and that is to the best of my knowledge what it entailed
at that time.

Q. And you say you tested the side shell repair; how
do you test the side shell repair after it is completed?
A. Underwater hose pressure. We put a water test on it
using water pressure.

We apply the pressure from one side, and the inspectors
are on the other side. The water is applied to all the
connections of the repaired plates.

Q. How thick is this plate, if you recall?
A. I don't recall.

Q. Would it list on the repair?
A. Yes, it might. It is a 45.9 pound plate. That's
on L-8; it is 45 pounds.

CAPT. ZABINSKI:        That's all I have.

EXAMINATION

By Rear Admiral Barrow:
Q. Could you tell me on the side girder at the hatch, are those continuous along the spar deck underside?
A. Some ships are and some aren't. I don't recall.
I would imagine that the Fitzgerald was a continuous-girder. I think the intercostal construction came quite earlier, the ship construction.
Q. There were no fractures in this particular girder, nor in the skirt itself?
A. No, sir. There was no indication here.
Q. On one of the exhibits, I believe it was Exhibit 25, which was the photograph, or 26, I believe, I don't believe you have indicated on that, and I believe I would like for the exhibit to show, using a marker or pen, the area of the fracture right on the photograph.
Has that been done?
A. No, sir.

CDR. LOOSMORE: No, sir; it has not.

THE WITNESS: It doesn't show up too well.

CDR. LOOSMORE: The witness has marked a vertical line and then circled it at two locations on the photograph.

REAR ADMIRAL BARROW: I would like to indicate for the record at this time that what the witness has done here is to mark where the location
of the specific -- an example of a fracture he
has seen, and we should not relate specifically
to Hatch 3 or 4 or 5, nor, indeed, to the extent
of the crack itself, because he has testified that
in some of those cases the crack was on the order
of an inch or so in some cases and longer in others.

I think our purpose in marking this up is
simply to give the indication of the fracture itself,
the location of it.

Counsel, do you have any questions?

MR. MURPHY: Yes, I have a question

or two, please, Mr. Chairman.

By Mr. Murphy:

Q. Mr. Studstill, you were responsible for ascertaining
that these repairs were carried out satisfactorily?

A. Yes, sir.

Q. And were they, in fact, carried out to your satisfaction?

A. Yes, sir.

Q. Does the Coast Guard issue a certificate of inspection
to indicate whether or not that was the fact?

A. Yes, sir, but not in particular with what we find,
but an overall condition of the vessel.

Q. And that would include the damage?

A. Yes.

Q. And was there, indeed, such a certificate issued
under your authority or by you or someone acting on your behalf?

A. If I might, there was a certificate issued under the authority of the Commanding Officer of the Marine Inspection, and he issued the certificate after I completed the vessel. It was under his authority.

Q. Is that done on an annual basis, sir, or is that done periodically?

A. A certificate is issued customarily on an annual basis, but a drydock is made every five years.

Q. And in addition to the drydock every five years there is an annual inspection?

A. Yes.

Q. And the certificate is issued that the vessel is a seaworthy vessel in all respects?

A. Yes, sir.

Q. And while you were not still active in service in 1975, do you have any knowledge as to whether or not a certificate of inspection was issued by the United States Coast Guard at the commencement of the 1975 season?

CAPT. ZABINSKI: If you know.

A. I don't have any knowledge of that.

Q. That would be standard practice?

A. That would be standard practice, but I don't have any knowledge of that.
Q. I understand that. You mentioned also Lloyds, American Bureau, the Coast Guard and the shipyard.

Is it also in your experience with respect to the repairs which you have described here, also necessary for those parties to approve the repairs that were made?

A. Yes, sir. The survey, whether it be by American Bureau or Lloyd's, also would have to satisfy themselves that the repairs were made properly.

Q. What does the term "maintain a vessel in class" mean?

A. Well, that's a term used by the Classification Society. I would imagine it would be comparable to a certificate issued by the Coast Guard to attest that the rules and regulations under which the Classification Society operates have been fulfilled in connection with that vessel.

Q. To the best of your knowledge with respect to those repairs and with respect to the condition of the vessel at the commencement of the 1974 navigation season, was the vessel seaworthy in all respects?

A. Yes, sir.

MR. MURPHY: I have no further questions.

REAR ADMIRAL BARROW: Are there any further questions by the Board?

CDR. LOOSMORE: No, sir.

CAPT. ZABINSKI: Nothing.
CAPT. WILSON:    No.

REAR ADMIRAL BARROW: Have we entered this
(indicating)?

CDR. LOOSMORE:    No, sir; we have not
got that in evidence.

REAR ADMIRAL BARROW: We have Exhibit 25 for
identification.

MR. MURPHY:    May we, if you please,
and I don't want to delay the proceedings, but may I
ask just for a few more moments?

REAR ADMIRAL BARROW:    All right. Off the
record.

(Pause.)

MR. MURPHY:    We have nothing further,
Mr. Chairman.

REAR ADMIRAL BARROW:    Exhibit 26 for iden-
tification will be entered into evidence.

Are there any interested parties that have ques-
tions?

(No response.)

REAR ADMIRAL BARROW:    Thank you very much,
Mr. Studstill.

The drydock book, which is Exhibit 27-A, B and C,
is introduced in evidence. Thank you very much.

You are cautioned, Mr. Studstill, not to discuss
your testimony with anyone other than counsel, until the conclusion of the investigation.

CDR. LOOSMORE: This is not in evidence yet, Admiral.

REAR ADMIRAL BARROW: That's 25 for identification and entered into evidence?

CDR. LOOSMORE: Yes, sir.

REAR ADMIRAL BARROW: We'll take a five-minute recess.

(Recess had.)

REAR ADMIRAL BARROW: Let the record show we reconvened at 11:30 a.m.

Cdr. Loosmore?

CDR. LOOSMORE: The Board calls Capt. Jesse B. Cooper.

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JESSE D. COOPER

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 occupa-
tion?

A. My name is Jesse B. Cooper. I reside at 160 Gulfstream
Drive, Tequesta, Florida, and my occupation is Master of
the Arthur M. Anderson.

CDR. LOOSMORE: Would you identify
yourself, sir?

MR. KEENEN: Roman T. Keenen of
the law firm of Ray, Robinson, Keenen & Hanninen,
1550 Union Commerce Building, and I am appearing
here on behalf of Capt. Cooper.

By Cdr. Loosmore:

Q. Capt. Cooper, do you hold a Coast Guard license
or document?

A. Yes, I do.

Q. Would you describe it, please?

A. First-Class Pilot and Master of all tons, between
Duluth, Gary, Buffalo and Montreal.

Q. Do you have that license with you?

A. No, sir; it is on the ship.
Q. Where was it issued, Captain?
A. In Milwaukee, April of this year.
Q. Do you know what issue number it is?
A. I can't remember.
Q. How long have you been Master of the Anderson?
A. This is my third full year. It will be my third full year.
Q. And could you summarize your experience on the Lakes prior to that?
A. I started in 1937 as a deckhand, and I worked my way up to a third mate. I took time out for the Navy during the Second World War, and I came back from the Navy.

Actually I have been on the Anderson as first, second, and third mate and captain all the way through.

I have been sailing a boat for nine years as master of a ship.
Q. Now, as I am sure you realize, this board of investi-gation is concerned with the loss of the Fitzgerald.

You are here because it was reported that your vessel was in the area of the Fitzgerald.

Could you describe or tell us of your voyage in Lake Superior on the 10th and 11th of November; just briefly give us a summary of what happened?

A. Where do you want it from? Two Harbors?
Q. Where did you start?
Well, we left Two Harbors. On November 9th at 1630 we made a departure of Two Harbors.

Shortly after we left Two Harbors, I received notice that we were having -- they put up a northeast gale warning. At that time the gale warnings were fringe. When I say fringe gale, I mean 34-38 knots, which is not unusual at this time of the year.

We proceeded on a course of 77 degrees to Devil's Island. From Devil's Island we proceeded down toward the middle of Lake Superior.

On my other chart, it would show it better.

Q. All right, sir. Let us describe what you are referring to on there. What is this right here?

A. This is the official log of the Arthur Anderson.

With the wind at this time, which was at Devil's Island, was east by north 31 knots, cloudy weather, and it was practically right on our stem, a fresh breeze.

At various times I was going up and down from the wheel room and I was checking the weather. The wind started to work around more toward the northeast. By midnight and after getting the Mafor and looking over the situation, I changed course, 0200, on the 10th. The wind at that time was northeast by north 42 knots.

I proceeded on the course that I was heading. That was a course change of 30 degrees, which from down in
here headed me up in a more northerly direction because
in this particular area, whenever you get northeast
gales, 90 per cent of the time the wind will go north;
so if I was up here, by steering 30 degrees, if I went
north, I would be able to get to the north shore for
shelter if it really started to blow.

CAPT. ZABINSKI: Captain, you are
indicating an area. Where is that?

THE WITNESS: South of Isle Royale.

I ran that 30 degrees for one hour and at 0300
I changed 055 degrees true. My barometer at this
time started to fall.

The barometer reading was 29.30 at this time.
The wind at that time was northeast by north 40
with rain.

I continued on this 055 degree course past
Passage Island and at Passage Island, we didn't have
a bearing off of it for distance, but at Passage
Island, the wind started to abate a little bit
with showers.

The barometer at this time was 29.13.

By Cdr. Loosmore:

Q. Captain, were these one of the charts that you were
using at this time?

A. This is one, yes, that I was using.
Q. Perhaps we could put that up.
A. Yes, if you would, I think it would help.

At this time, we were steering a 55 degree course, which is this line right here with the wind at that time, which was northeast 32. The gale warnings still were all up, but at 0100 in the morning when I was in the wheelhouse, I got a report from Duluth Coast Guard at 0100. They put up storm warnings.

At that time I notified the Fitzgerald that I had heard this and called them, initiated a call, and asked him if he had received this notice. So at this time he was alerted like I was and we talked over what we were going to do as far as going up on this course.

Now, the Fitzgerald had been right close by us all this time, pulling ahead of us a little bit. She was a little bit faster a ship than we were.

I went down at 0330 in the morning, after I got my notes and plotted the weather maps and all, and I went down and went to bed. That was about 3:30 that I left the wheelhouse.

Everything was normal. The wind was northeast at that time, 31 with rain.

At 0730, the first mate came down and told me that the wind worked around a little bit more to the northeast, and came down and suggested that perhaps we can drop
the ship off a little bit to head a little farther south of the straits. This would be this course here. So as long as we were making good weather, we would have the nose just off of our port bow into the wind, northeast. We would be steering 65, which is a point and a half.

Then the mate called me at 7:30 on this. At 0750 the mate signed over and the barometer reading at that time was still dropping. It was 29.02. The wind was northeast 31-34 with rain.

At 0953 in the morning, I changed course to 90 degrees at a due east toward the lee shore. The wind was still northeast. At that time, the wind was north-northeast 26. We were getting over the weather. Actually, the sea was moderating considerably than what we did have. We were never taking any green water per se, but we were taking on a lot of spray, but never any green water. The ship was never laboring, no problems at all.

I was under full speed the entire time from Two Harbors to Whitefish.

At 10:30, I changed course to 125. That is this heading here down toward Otter Head, which is on the Canadian shore on the western edge of the Canadian shore.

Now, when I changed course to 125, the wind was north-northeast 26 and the barometer reading was 28.94. At 1030 the first mate signed off. At 11:50 the wind,
the barometer was 28.85 and the wind had switched around
to south-southeast 30 with cloudy, so we were approaching
what my weather map showed, the eye of the storm.

At 11:52 I changed course to 149 degrees. That is
this course here (indicating) for Michipicoten's west end.

Now, at this time, the Fitzgerald had went in farther.
He was in closer to the Canadian shore, more into the lee
than I was, and I was experiencing no difficulty here.
The ship was under full speed at that time. I brought
the engineer's log which will show you that we averaged
102 rpm's all the way down the lake, which is almost normal
for rpm's per mile.

At Otter Head, at 12:52, I changed course to 154
degrees to clear the West End Light at Michipicoten Island.

At that time, I was figuring on being about two miles,
two and a half miles, off of the West End Light of Michi-
picoten.

At Otter Head, the barometer reading was 28.82 and
the wind was southwest at 11, overcast. So evidently we
were right dead center in the eye at that particular time
of this particular storm.

At 13:50 I changed course at 230 degrees. The wind at
that time was northwest by west 5, and overcast, but
I was down here with my weather plots. I figured the
wind was going to go around northwest and which is what all
the storm warnings and everything else were indicating.

I changed that because the wind changed. I started to pick up and by the time from here, I started a 230 course to make some leeway off of the end of Michipicoten Island. This was so that if I could get far enough off Michipicoten Island so that if at any time the sea began building up enough to where we would start to roll, I could haul the ship down on one, practically on one course, to Whitefish.

It didn't quite do that, but that was my general idea. I ran that course from 1350 to 1445.

Now, at 1445, the barometer had started up. It was 29.05 and at that time the wind was northwest at 43 knots, snow.

At 1520 I changed course at 1445 to 130 degrees and that put me west, heading for a point where we were 7.7 miles west of Michipicoten West End Light.

At that time, the wind was northwest 43 knots, snow.

At 1520 I was at the beam of Michipicoten West End Light on a 130 degree course. This was a distance of 7.7 miles off. The barometer had risen to 29.10 and the wind was still holding at northwest 43 knots with snow.

At Michipicoten, I changed my course to 125 degrees from here to steer out more toward the north, to stay as high up here as I can with the sea and the sea was building
at this time and building very rapidly.

In fact, normally you figure on Lake Superior in weather, you can figure two hours before you are in deep water, before you get a sea that is going to start to bother you, but from the time that I hauled her, from the time I was to Michipicoten West End, the sea had built up to probably 10 to 12 feet.

By the time I was down in here, the seas were running on, say, 12 to 16 feet.

CAPT. ZABINSKI: Indicating south of Michipicoten Island?

THE WITNESS: Yes, indicating south of Michipicoten Island, that is right.

In the meantime, when I hauled -- when I was at this point, and I can't remember exactly, but he was about eight to 10 miles ahead of me.

He was here about two and a half miles off of the West End Light, which was where I was going to head (indicating).

He must have got the wind shift just about the same time that I did. He would have been all set as far as the wind of the sea.

It would have hit over his stern, where I made a westerly direction, so in case something did happen, if I lost steam or the engine or whatever,
I would have a little room to play with.

So anyhow, from here, I steered 125, which took me pretty well -- it took me to the Chummy Bank. The seas were building in here (indicating). They were not anything tremendous at this time.

Here again, when I had plotted this storm, which will show on my plots, I knew -- the indication was that I didn't believe my plot completely. It showed me 80 knot winds, and I thought that we had never had 80 knot winds up here. But I knew it was going to be something nasty.

I figured that I had two hours to go. I figured I would be down at Whitefish in an hour and a half, and I figured I had this one licked. It was a very small, confined storm.

At 1530 I was just by the West End Light, and I saw him. It was the captain of the Fitzgerald who called me.

I understood him to say that his fence rail was laid down, and I'm probably wrong on this, but the mate and the wheelsman said the fence wire was gone. This was probably correct.

He also told me that he had lost two vents, and he said that he had had a list and asked me if I would stay with him, which I concurred that I would
stay with him.

He said he was taking a list. I asked him if he had his pumps on and he said, "Yes, I have them both on."

He said, "I will check down so that you can close the distance between us," so we could get up closer to him.

Of course, I never saw the Fitzgerald visibly from the time it started or a little before it started to snow, but there must have been snow where he was at before we ran into it.

I never saw him again visibly, but I saw him on radar; I had him on radar all the time.

At this time, after steering west, he extended his distance out to 17 miles, which I think was about maximum, which he was ahead of us.

He gave no indication that he was worried or that he had a problem or there was something that he couldn't cope with.

There was no excitement or whatever. It was almost -- well, this was a problem but it was under control. This is what you would assume from the way he talked, that there was no problem.

When we got down here at Caribou about eight miles -- when we were about seven and a half miles
from the northeast tip of Caribou, I figured I was clear of all the banks. I hauled down on a course, what I was figuring to be a course of 141 degrees true.

At that time the wind was northwest by west, 58, light snow.

Q What was that?
A Northwest by west. The wind held there about 300 degrees. At that time the barometer was 29.25, so it was coming up quite rapidly against the wind.

At that time I held up one degrees, steering 142, figuring the see was over a little bit. I didn't want to move to the east, so if I had to come down, I could put more on my stern than on my quarter.

At some time after we hauled down here, after the 8:00 o'clock weather, I stayed up until -- I think it was 1810 that I stayed in the wheelhouse. The mate was on watch, and I went down and lay down for an hour. I was up and down all night.

You will hear the mate's testimony as to the calls and so forth. You will get that from him. I wasn't there. I know what he has told me, but I believe you would probably rather hear it from him.

Is that all right, or -- I can repeat what he told me. He can repeat it when he tells you. I just know what he said.
About 1910 the mate had talked to the Fitzgerald.

When I came in the wheelhouse, Morgan said that I had come in practically just as he hung up and just got done talking to him.

He said it was just about two or three minutes before that. After he talked to the Fitzgerald at 1910, he was down here on the scope about nine miles away and barely discernible.

The radar -- the sea return, the center of the scope was just a white blob, and the Fitzgerald was disappearing into the sea return at 10 miles.

When I walked into the wheelhouse, I think we picked him up, and he was about nine miles away.

I asked Morgan where the Fitzgerald was, and he showed me. He said, "He is here." We had had him on the radar all this time.

We were closing on him at this time, too.

That was up to 10 miles, so we picked up seven miles or eight miles, you might say, down to the nine miles when he disappeared into the clutter.

At 1910 Morgan talked to him and he asked him, I guess -- Morgan was giving him positions, because his radars, one was out and the other was ineffective.

After I walked in the wheelhouse, I was there about five minutes and we were looking at the radar. We got
another target coming up around Whitefish Point. It was still snowing when I walked in the wheelhouse, but after 10 or 15 minutes, it cleared up. You could see for miles.

We had also two other targets on radar. I can't remember if the two salties were visible or what.

We picked up two saltwater vessels about 17 or 18 miles away, and then I started looking for the Fitzgerald, and there were no lights around. I couldn't find him.

I thought maybe he has a blackout, which happens once in a great while. You lose your steam or if your engine goes down, your generators don't work.

We were looking for him, everybody in the wheelhouse was looking for him. It was a change of watch, too.

I called the Fitzgerald on the FM and I got no response. The mate tried to call him several times. Then I was wondering whether my phone was putting out.

I called the William Clay Ford, which was by Whitefish Point, and he told me that my signal was excellent. He said that I was coming out loud and clear.

I also asked him by any chance could the Fitzgerald come under the point. He told me what ships were there. There was a Hilda Marge Ann, and I can't remember the others. There were four at the time under the point.

About this time I tried to call the Coast Guard.
They were having trouble at the Soo. I think their big antenna was down, and I found out a little later that their high antenna was down.

At that time I was trying to call the saltwater vessels. I can't say which was which or where, because I was calling like on a constant basis trying to get an answer from somebody somewhere.

But I do know that I didn't get ahold of the Coast Guard the first time. I think I got them and tried to go to Channel 12, and nothing came through.

Then I called the saltwater vessels and asked them if on their radar they could see the Fitzgerald, because at that range they would have been outside of that big sea return.

I was talking to the Nan Free, and that was Capt. Jacovetti. He told me that he was only making one or two miles an hour and the sea was big. He could see the lights of one vessel, and there was nothing on his radar, which pretty near convinced me at the time that there was something that happened.

I tried to call the Soo again and I finally got them, I think it was around 1950.

I informed them of my concern over the Fitzgerald; that I thought she had floundered, and they reported to me to be on the lookout for a 16 foot boat that was lost in
Whitefish Bay, and there was another 10 or 12 minute lapse. I called them again. I think they were like I was. I don't think they could believe a ship could go down that fast.

When I called the second time, I said, "I know she is gone."

At that time the Coast Guard started to put out calls trying to get an answer, and they also started their alert.

I was at Whitefish Point, and I proceeded right on my course down there.

At this time, if the Fitzgerald was gone, I would have been by his position, and there was no way that I could have turned my vessel right there at that particular time with the seas the way they were, because I conceivably could have lost mine. At least I would have done some damage, and I did do damage.

I lost one lifeboat, because the sea came over and dropped on top of it and pushed the lifeboats into the saddle, pushing it in on the port sea -- not the sea side, but on the inboard side and sea saddle.

The barometer was 29.62. So the barometer was really jumping up. The wind was northwest by west at 48 knots, cloudy but clear.

I proceeded down in the Bay of Parisienne. In the meantime, the Coast Guard at the Soo had called me back
and asked if I would go back and take a look for the
Fitzgerald. It was in the process -- no. He called me
first, I guess.

I told him that I would go back and give it a try.
So at that time, at 2155, we were at the Bay of Parisienne,
and I hauled the ship around on a reciprocal course and
headed back out toward the area where we last saw the
Fitzgerald.

After that, the William Clay Ford did come out there
behind Whitefish Point, and he was afraid to turn around.
So he kept right on going.

There were two saltwater vessels, the Nan Free and the
Ben Free, I think, and they almost drifted backwards.
They tried to stay but they were also afraid to turn.

They didn't think they could make them. One was a
711 foot ship, which is a well built saltwater ship,
and we went out there.

The rest is history. And then some of the other
vessels came on later. But the seas did start to moderate
after daylight that morning.

Q. Captain, is that the chart you were using to navigate
the vessel?
A. Yes, sir.

Q. Rather than putting any further marks on that chart,
I would like to produce another copy of that chart and ask
you to plot, as well as you can, based on that chart and
your log, from somewhere in the vicinity of the Isle of
Royale. In fact, we have another chart we can use.

CAPT. ZABINSKI: What number is that?


CAPT. ZABINSKI: Lake Survey No. 9.

Is there a date on that chart, as far as the last
correction and so forth?


CAPT. ZABINSKI: Are they identical?

THE WITNESS: Yes, they are identical.

CAPT. ZABINSKI: Is the date of correction
the same?

THE WITNESS: Yes, they are dated
September of 1973. They are both September 14th of

This is the latest chart issued.

Where do you want me to start? Actually, as far
as weather or anything else that was concerned, either
the Fitzgerald or myself had no problems whatsoever.

It is a normal winter storm, as far as we were
concerned. It was nothing unusual. We have this
type of a storm in November quite often.

It is nothing that is excessive.
Do you have triangles? I work better with triangles.

CAPT. ZABINSKI: Can we get triangles?

THE WITNESS: As far as this goes, the log will show you there was no weather to speak of. There was weather, but it was nothing that was drastic.

There was nothing really that took place as far as the Fitzgerald were concerned, until after he was below Michipicoten or until we were below Michipicoten.

Actually, coming out here and laying these courses out really doesn't mean anything.

CAPT. ZABINSKI: Do you mean up until the time you reached Michipicoten?

THE WITNESS: Right.

REAR ADMIRAL BARROW: Maybe we can start somewhere around Otter Head.

THE WITNESS: All right.

CDR. LOOSMORE: I have asked him to reconstruct his position and his course.

THE WITNESS: From Otter Head.

REAR ADMIRAL BARROW: Down to Whitefish Bay. I have also asked him to indicate as he goes along the relative position of the Fitzgerald at the times.
I think while he is doing that, we might
go off the record for a few minutes.

You have given him instructions.

(Recess had.)

REAR ADMIRAL BARROW: Back on the record at
11:45.

THE WITNESS: I did bring my --

MR. KEENEN: Wait until he asks you

a question, Captain.

By Cdr. Loosmore:

Q Captain, would you describe what this chart is and
what you are doing here?

A Essentially this is the course that I steered on the
day of November -- from Otterhead to Whitefish Point.

Q What time were you at Otterhead?

A 12:52, 10.8 miles out.

Q Would you indicate the time and the location on the
chart, please?

MR. MURPHY: Mr. Chairman, if the
Court please, may we have this marked as an exhibit
so that the record will indicate which chart is
being referred to when the questions and answers
are being given?

CDR. LOOSMORE: This will be marked 28.

REAR ADMIRAL BARROW: This will be 28 for
identification.

(Exhibit 28 was marked for identification and made part of the record.)

REAR ADMIRAL BARROW: This is the Lake Survey Chart No. 9.

CDR. LOOMMORE: It has been marked No. 28 for identification, sir.

By Cdr. Loosmore:

Q. Captain, you indicated that you were heading at 12:52. What time zone is that?

A. Eastern -- the ship, our ship, is constantly on Eastern Standard Time, and that is Eastern Standard Time, I think, at the Soo at that time in that area.

Q. And are all the times that you have indicated Eastern Standard Time?

A. All of the times on our ship are Eastern Standard Time.

Q. At 12:52, sir, where was the Fitzgerald, as best you know?

A. The Fitzgerald at this time was around seven or eight miles ahead of us and to the east of our course line.

Q. Would you write down a number 1 and circle that in there? (Witness drawing.)

Does that indicate the 12:52 position of the Fitzgerald?
A. That is approximate, yes. This is all guess because we did not plot them. We watched them all the time, but as far as plotting them exactly, except when the mate gave us some positions down here, we didn't truly plot them.

Q. All right, sir. At 12:52 you proceeded in what direction?

A. In the course of 154 degrees true.

Q. Is that indicated on this chart?

A. Yes, it is. That is this line right here (indicating).

Q. Until when?

A. 1350. At 1350, the wind had started to swing around to the west-northwest, or to the northwest, and I hauled down from 1350 to a 230 degree heading to go in a little westerly direction so that I could, consequently, when I did haul down for clearing of Caribou Island, I could have the sea pretty much over my stern.

Q. You have marked the chart 1350. Does that indicate the point where you changed course?

A. Yes, it does.

Q. Where was the Fitzgerald at that time?

A. As near as I can remember, he was down in this particular area (pointing).

Q. Would you mark that with a circle and a number 2, please, and that indicates the position of the Fitzgerald?

A. Yes, at that time.
(Witness drawing.)

Q At 1350?

A Right.

Q Proceed, please.

A At 1445, the wind was northwest 42 and snowing.

I hauled down on a course of 130 degrees.

Q Where, at 1445, would you estimate the Fitzgerald?

A This is his maximum distance, as near as I can figure, if I can remember; and he was about 17 -- no, wait.

I take that back.

I am not sure on just exactly how much he was ahead of me at that time. It was probably about 16 miles, but that would be strictly a guess because I know his maximum distance was 17 when I was abreast of Michipicoten.

So he could have probably been 16 miles, but I lost seven miles onto him, I mean, to his time, because I ran out this distance while he was making his course at right angles, meaning to run away from me.

Q Are you saying that the Fitzgerald did not make that little jog to the southwest?

A No, he was down past Michipicoten, evidently, before he got to the wind shift because I got it here, and he was eight or 10 miles ahead of me. So he was clear as far as the wind shift is concerned.

He was below Michipicoten. He came down there just
about the distance that I had anticipated coming over.

Q. Which was about how far?

A. Two and a half to three miles.

Q. Two and a half to three miles from where?

A. From the beam of the West End Light of Michipicoten and he was right in this particular area (indicating).

In other words, we were heading on a converging course.

He was a little bit on this side of me, but we were heading on a converging course for the same distance off of Michipicoten West End.

But when he was here, the wind went around northwest for me here, so I would have to assume that the wind went about northwest about the same time for him, so he had no problem.

He is below the island with northwest winds. He's got it over his stern because, in further testimony, he said he was steering 141, so we wouldn't believe anything other than that.

We don't know for sure what his courses were down here because we were on a different heading and he would be to the right of our heading flasher and he could have been steering 141, too, because again, as I say, we didn't plot him.

In other words, if we were heading down here at 125 and he is steering 141, he would cross our bow eventually.
Q. All right, but at the time in which he would appear as you have just testified to the right of your heading flasher, that is after a course change which we haven't gotten to yet.

A. Yes, I said 1445. You were asking me how far down there he was at this time.

This is strictly a guess. He was around in this area there, I would say (indicating). I don't know; that is strictly a guess on that part there because I wasn't concerned about watching him. I knew he was on the radar.

I watched him, but I wasn't concerned about him. I was more concerned about my ship getting down there and getting that thing over my stern. He's in the radar and he realizes that, but there was no problem. He was ahead of us, but the actual distance that I can actually give you on this Fitz, when I was 10 minutes past abeam bearing on the West End Light, I think I can give you one on that.

Q. I think you just make a mark on the chart and erased that. Don't erase that mark.

What was that mark to indicate?

A. That would have been strictly a guess as far as where it is, and it's even a bad guess.

Q. Is that your best guess as to where the Fitz was when you turned?
A. Not really because I am still more interested in my particular problem right here.

The wind is abeam. I have to put it abeam. I have to put my ship into the trough to make some westerly direction. He is coming down here and you are watching him on the radar and he's almost 90 degrees to us, and we went by the West End Light.

I assumed he was steering 141 and I assumed, again, that he was steering 141. This area down here, we don't know; I don't. I have no idea. He has to steer a 141 course or something to clear Caribou Island. That is obvious, but the next time that I can give you any kind of a clear point is when he called me, and when he called me I noted that he was 17 miles ahead of me.

Q. When did he call you?

A. At 1530, I believe. I believe that was the time. I have to check my records, but I believe it was 1530.

Q. Would that kind of a call be in the radio log?

A. I don't know whether it is in the radio log or not. It possibly could have been. We don't log all our calls.

(Witness refers to document.)

This was a call. It was at 1540, logged: Navigation business with Steamer Fitzgerald.

REAR ADMIRAL BARROW: What are you referring to, Captain?
THE WITNESS: The time that he called me. I wasn't sure of the time when he wrote that. It was off the top of my head.

REAR ADMIRAL BARROW: You are taking this from where?

THE WITNESS: This is from the ship's radio log. The mate's log indicates that there was navigation business.

At that time when he called me, he was 17 miles ahead of me.

CDR. LOOSMORE: Where were you at that time; where was your vessel then?

THE WITNESS: Approximately right here (pointing).

REAR ADMIRAL BARROW: I think you are going to have to indicate that for the record.

CDR. LOOSMORE: Yes, sir; I will have him mark it.

By Cdr. Loosmore:

Q Would you mark that 1540?

A Yes.

(Witness drawing.)

Q All of the positions on this schedule are Anderson unless you indicated otherwise, are they not?

A I have some down here that will be otherwise.
Q. Fine.

A. The mate has those. This would be No. 3, then.

Q. What does No. 3 indicate?

A. That indicates the approximate position of the Fitzgerald. He was to the right at 1540. He was to the right of my heading flasher a point or a point and a half, I can't remember exactly, on the 125 course.

Q. What is the next course change you made?

A. 141 from seven and a half miles, just about to the position of the Fitz.

Q. What time did that happen?

A. I changed course at 1652.

Q. Would you indicate the time position there, please? Would you draw an arrow to that particular point, 1652, to that particular point?

A. (Witness drawing.)

Q. And you changed course onto what course?

A. To 141 degrees true, and at that time when we hauled down in our course at 141, the Fitzgerald was just off of the starboard side of our heading flasher, not 17 miles away, but he was about 14 or 15, if I recollect right, at that time.

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

A. When we steadied on the course of 141, I also held her up one degree into the wind to steer a course of 142.
My gyro was a half a degree low, so essentially I was making 142 1/2 as a steering course, figuring I was going to make 141 degrees true.

After 1652, I was up here all this time. I was up here until after -- I was up there until after the Major, that six o'clock weather came on. I should say 1800 weather. That's when I went down to lay down for an hour.

Q Then you returned to the wheelhouse at what particular time?

A Just about an hour later, approximately 1915.

Q Did you fix your position at any time between these times?

A We were checking it; yes, sir. We checked it. We ran all the automatic checks. The mate had a bearing with the radio direction finder at Caribou.

He tried the radio direction finder at Whitefish and tried to take bearings at Whitefish Point radio beacon, which was malfunctioning, which we found out later when they came out with a weather report from Soo Control that it was malfunctioning.

Q Where was the Anderson when you got the call from the Fitzgerald indicating that there was some problem?

A That was at this point here at 1540, a couple of miles below the beam bearing at Michipicoten.

Q At that time, where was the Fitzgerald?
A. Approximately, let's see -- where is 1540?

Approximately in this area (pointing).

Q. That position, indicating in the third circle?

A. Right.

Q. Where was the Anderson when you returned to the wheelhouse?

REAR ADMIRAL BARROW: Off the record.

(Discussion off the record.)

REAR ADMIRAL BARROW: Back on the record.

CDR. LOOSMORE: Let the record show that the Captain has referred to what has been described as the Anderson Copy of Lake Survey Chart No. 9 and has now returned to what has been marked as Exhibit 28 for identification.

THE WITNESS: Approximately 1915, I returned to the wheelhouse, which we were about 25 miles north-northwest of Whitefish Point.

By Cdr. Loosmore:

Q. You have indicated that on Exhibit 28 with a mark. You have marked that 1915, and with a circle, and you have done that.

A. Right.

Q. And the word "Andy."

Where was the Fitzgerald at that time?

A. I took the check on him. He was nine miles ahead of us.
That was the last that we saw of him. That would be No. 5 for the Fitz there.

Q. Yes, No. 5.

A. That was at 1915, which is still -- that is approximately -- at 1915 he was about nine miles, a mile and a half to the east of our heading flasher.

In other words, he was toward the Canadian shore and approximately, this is approximately, about 14 miles, 13 miles due west of Copper Mine Point.

Q. In any of your conversations that you had, not what was told to you but that you personally had with the Fitzgerald, was there any indication that he was changing course other than coming straight down between Michipicoten and Caribou?

A. Evidently the mate told me that he was steering 141 degrees, when I talked to him, below Caribou. This is the mate's testimony on that, but he was a little bit to the east or to the left side of our heading flasher down there, and I assumed, if he is steering 141 and we are steering 142 1/2, a degree and a half and 30 miles equals one mile, so he would naturally work to the east on a heading like that.

REAR ADMIRAL BARROW: It may be useful to shift charts here for clarity.

CAPT. ZABINSKI: I would ask the witness
if he could now shift from his position 1915, to
this Lake Superior Chart, 92. Can we get on with 92
now?

CDR. LOOMSORE: Do you want to plot
the position on that?

Do you want to take a five-minute recess to do
that?

CAPT. ZABINSKI: Yes.

REAR ADMIRAL BARROW: Off the record for a
few minutes while we transfer to the Lake Chart.

CDR. LOOMSORE: This is the Lake Survey
92, July 5, 1974.

REAR ADMIRAL BARROW: Off the record.

(Recess had.)

REAR ADMIRAL BARROW: Let's go back on the

By Cdr. Loosmore:

Q I have a copy of a chart, Lake Survey 92, dated July 5,
1974.

Would you indicate what you have done with respect to
the marks on this chart?

REAR ADMIRAL BARROW: Are we going to mark
this?

CDR. LOOMSORE: Yes. I have marked this
No. 29 for identification.
A. I was asked to approximately put down my position in relation to the position of the Fitzgerald, the last time I saw her, in our sea return.

I so indicated on the chart that I was about nine miles from him and he was approximately 14 miles due west of Copper Mine Point, about a mile and a half to the east or to the left of my heading flasher, my course.

Q. Would you indicate what that is (indicating)?

A. 141 degrees true, Andy's course and time at 1915.

Q. And that's a circle?

A. A circle with a dot in it.

This is an approximate position of the Fitzgerald at 1915. That is the last that we saw of her; that we absolutely were sure we saw of her.

Q. Would you mark that "6" and put a circle around it, please?

A. Yes.

Q. Where is the position; is it at the 6?

A. No, sir. The position is at the X.

Q. What does it say here?

A. The approximately position of 1915 of the Fitzgerald.

Q. And what did the Anderson continue to do on down into
Whitefish Bay?

A. We proceeded on down to Whitefish Point, 2.2 miles off Whitefish Point, 148 degrees true from Whitefish Point to Parisienne Island.

Q. All right. That's your position of 2.2 miles off of Whitefish Point.

What time were you there, and is that indicated on that point?

A. Yes. We were there at 2059 abeam Whitofish.

Q. And you changed course?

A. 148 degrees true.

Q. Which is indicated on this chart?

A. To two miles plus off Parisienne Island, and we were abeam of Parisienne Island at the 148 course, where I put it hard right and headed back out towards the search area for the Fitzgerald.

So the beam bearing on the Parisienne Island shows me heading on course of 335, which would look kind of wrong. We should have logged it at the same time, I suppose, but actually we were abeam of the light at the same time, and by the time we came back around, it was 335 steering back out toward the open lake.

Q. You said in your earlier description that you talked -- let's move some of these things away and you can sit down, Captain.
You said you talked to the Fitzgerald and you assumed it was the captain of the Fitzgerald that you were talking to?

A. Yes. I would imagine it would be the master that would call the master of another vessel, and he would tell him that he had a problem.

I don't think he would leave it up to a mate. I have never met Capt. McSorley and I don't recognize his voice. If I was in the same position, I would make the call, because I would want to tell the other captain what the problem was, if he would stay with me.

Q. Apparently -- did the person identify himself or not with respect to the call?

A. Negative.

Q. Did he request to speak to the captain of the Fitzgerald?

A. No. I happened to answer the phone, and I always identify myself. "This is Capt. Cooper."

He knew who he was talking to; I had to assume that it was the captain.

Q. Had you ever spoken with Capt. McSorley on the radio telephone?

A. I don't know. I could have. I probably have. I don't recognize his voice, and I never met the man, so I would not be able to say for sure.

REAR ADMIRAL BARROW: I think we have been going here for quite some time with Capt. Cooper.
I believe we'll have a recess at this time and reconvene at 1:30.

MR. MURPHY: Mr. Chairman, just one thing for the record before we leave. There has been one further document that has been referred to a number of times and hasn't been identified. That is the chart that the Captain was using on his ship.

This is the chart from the vessel.

REAR ADMIRAL BARROW: That definitely was referred to.

CDR. LOOSMORE: That will be Exhibit 30.

This is a copy of Lake Survey Chart No. 9, dated September 13, 1973 with sketches of Lake Superior with pencil markings on it on the eastern half of Lake Superior, which the Captain has testified that he was using for navigation purposes in the wheelhouse of the Anderson on the 10th.

This will be Exhibit 30.

REAR ADMIRAL BARROW: We will mark for identification Exhibit 30.

(Exhibit 30 was marked for identification and made part of the record.)

(Thereupon, at 12:25 p.m. the hearing recessed for lunch to reconvene at 1:30 p.m. this date.)
AFTERNOON SESSION

1:43 p.m.

REAR ADMIRAL BARROW: Good afternoon. Let's have the record indicate that we reconvened at 1:43 p.m.

Counsel for the parties in interest present are as indicated in this morning's session.

Cdr. Loosmore, continue.

CDR. LOOSMORE: Yes, sir.

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JESSE B. COOPER

resumed the stand and testified further as follows:

EXAMINATION (CONTINUED)

By Cdr. Loosmore:

Q. Capt. Cooper, I would like to return to the chart which has been marked as Exhibit 28 for identification.

During the recess, you advised me that there was a slight mistake in your plotting and made a minor change in that.

Would you explain what that was?

A. The line drawn, the 154 degree true course, was about approximately 12 miles from Otter Head, where it should be 10.8.

Q. Have you corrected that now?

A. Yes, I have.
Q. Did that change any of the other positions which were shown on that chart as you developed it?
A. No, it didn't.
Q. Why don't you be seated and we will discuss a few things on that chart?
Capt. Cooper, how did you determine these positions that you've got, the 1540 position and the positions when you were turning and so forth?
What navigational system were you using?
A. Radar.
Q. Were you using anything but radar?
A. No, sir.
Q. What were you doing with the radar; were you taking radar ranges and plotting them or what?
A. No, I never plotted the Fitzgerald.
Q. Did you plot your own position?
A. Yes, we plotted our own position; yes. We always used Michipicoten West End Light, the distance, and I had a beam bearing and ran it back out, and it gives you a good picture, if you've got a good radar system, which we have.
We have watched and plotted our own course down to Caribou to see our distances off of Caribou and then watched our progress when we started to pick up the land north of -- we watched our progress down on our course toward Whitefish when we picked up the high land, not necessarily plotting it,
but how far we still had to run to Whitefish Bay to where
we would get shelter.

Q. You said something about a beam bearing; was that a
visual bearing or radar bearing?

A. I can't remember. To be honest with you, I can't
remember.

Q. Do you visually take visual bearings?

A. Yes. I think it was snowing, and we have snow marked
at 7.7, so it was a radar bearing.

Q. What sort do you have?

A. Calvin Hughes, 3 cm. and Raytheon, 10 cm.

Q. And what kind of a presentation do these give you?

A. What do you mean, by ranges or distances?

Q. Are they A scope?

A. All relatives.

Q. All relatives? There is no true bearing indication
at all?

A. No. I think that's the peculiarity of the Lakes.
We worked with relatives of bearings ever since 1949.

Q. Does the Anderson have a gyro-compass?

A. Yes. There is a steering compass and a compass outside
the front window.

Q. But you don't have a gyro input to either one of the
radars?

A. There is one that is hooked up, but it is not working.
Q. Well, during the whole time of the period which we are discussing and the passage south of Isle of Royale, and as you described north in Lake Superior and swinging around to the north and northeast coast of Lake Superior, you described the weather as relatively high winds or windy and --

A. Fresh breezes. I mean, it is nothing that is drastic at all. The log book will indicate that.

Q. All right. Would you consult the log book and describe what the winds and sea conditions were at approximately 1300?

A. At 1252 after Otterhead, eight miles off, the barometer was 20.82, southwest 11, and overcast.

Q. What was the wind?

A. Southwest 11.

Q. 11 miles an hour?

A. Right.

Q. What kind of seas did you have?

A. There was still a little swell from the north and northeast. If you want me to get my weather maps, they will explain why.

Q. I believe these are what you are referring to as your weather maps.

Will you describe that, as to what you have here?

A. I have a plot here at 0830 in the morning.
MR. MURPHY: May we have these identified?

CDR. LOOSMORE: That is what I am trying to do.

MR. MURPHY: Before he said he plotted, and it would seem the record should show to what he is referring.

REAR ADMIRAL BARROW: If we can let the witness identify them, and then we'll go ahead and assign them a number.

A. These are the weather plotting sheets when we get our 8:30 and 2:30 weather. We get that four times a day.

Any time there are gale warnings or whatever, any time there is an indication that there is a storm that is going to be in the Great Lakes are that will possibly involve us, I always plot my own weather along, and in conjunction with what we get from the Weather Bureau and also what I pick up from TV stations, because there are two or three real good meteorologists along the Lakes, especially when they agree with me.

(Laughter.)

I had some other plots before that, but I erased them. I had one plot for 1430 on the afternoon of the 10th. I have an earlier plot of 0830 on the 10th of November.

Now, up previous to this time the Weather Bureau had
put out a storm warning after they had issued a normal gale warning at 12:00 o'clock. There is a regular weather report that comes out.

CDR. LOOSMORE: Before we go any further, these two plots are grease penciled plots on plastic coated copies of the chart showing the U. S. Department of Commerce, NOAA Weather Service, Chart No. 4W10, Revised February 1973.

One of them is marked "Data 10 0830," with the date blank. There is no date listed. That will be marked Exhibit 31 for identification.

REAR ADMIRAL BARROW: We'll mark that Exhibit 31. (Exhibit 31 was marked for identification and made part of the record.)

CDR. LOOSMORE: The title block indicates "Data" and in grease pencil the time is 0830.

REAR ADMIRAL BARROW: Captain, that would be for 0830 on the 10th?

THE WITNESS: Right.

CDR. LOOSMORE: The other one is on the same chart, the same plastic cover, marked "Data 10th," and it is marked "Time:" and it appears to be a numeral 2 with a numeral 1 on top of 430, and the date is blank again. That would be marked
Exhibit 32 for identification.

THE WITNESS: For your information, that "10th" is what I marked down there, which is just my thing for the 10th. That's for my own reference.

We take and clean them off and reuse them all the time. I had two others that I had plotted before this.

(Exhibit 32 was marked for identification and made part of the record.)

A. (Continuing) To give you an indication on my part, why that storm, why I had plotted the storm and why I figured that the winds -- well, he asked me why south-west II in kind of a puzzled voice, and I have been through three typhoons and I have been through a lot of storms here on the Great Lakes, and every time you pass through the eye of a storm, the wind changes very fast, it's like a direct opposite than what you had been going previously.

If you are on the outer edge of a storm, it's still through, but it is less drastic. The wind does not change around like you're going through an eye.

I was in the eye as I plotted this on this 1430 map.

Q. You are referring to what has been marked as Exhibit
32 for identification?

A. Yes. This here showed the storm exactly how the Weather Bureau predicted it coming, the way my plots laid out, 70 and 80 knot winds.

Q. Where did you get the information for these, Captain Cooper? Was it on the radio?

A. LAWEB.

Q. The question is, where did you get the information from, and without the audience's participation, let me rephrase the question.

Did you get the information to make these -- first, did you make these plots yourself?

A. Yes.

Q. Did you get the information to make these plots from a radio broadcast?

A. Yes.

Q. Or from some other source?

A. From a radio station. Usually it originates from Lorain and it comes on at 8:30, 2:30, 2030, and 0230, every day, every six hours. We get one every day and they give wind velocities of land stations.

It gives you barometer readings for the area that it takes in, three-quarters of the United States.

Primarily barometers are given around the Great Lakes, so that we can draw in our own isobars to plot our own
storm system.

Q. What do those concentric circles on that diagram indicate?

A. Isobars. You count the rings for approximately 300 miles of chart and for every ring that is within that 300 miles, it is approximately 10 knots.

Q. What do these numerals indicate?

A. Those are barometer readings.

Q. Is this a barometer reading; is this a barometer reading of 21? There is a numeral here of 21. What does that indicate?

A. That is a decimal. This is 29, 29.90, 30.06, and the center of the low was 29.02 at that time.

You can't get a barometer reading of 21.

MR. MURPHY: Mr. Chairman, I think it might be helpful for all of us if these charts might be mounted so that we can all see what the Captain is referring to.

THE WITNESS: But this is a pretty crude weather operation as far as my part is concerned, but you can see that I marked the low here. It was up over the lower Peninsula of Michigan at 0830 in the morning and I marked this low again and it covers a little tip of the upper part of Michigan, but it goes into Canada, too. So that shows it in a northerly
direction.

The isobars or the rings around here, the
closer they are together, the more violent your storm
is.

By Cdr. Loosmore:

Q. All right. How we got into this was when I was
asking about the sea condition.

A. Right.

Q. And you said you didn't log a sea condition, but you
did have a wind and you had a wind of 11 and you were
going to explain why.

A. On this chart here --

REAR ADMIRAL BARROW: Which one are you
referring to?

CDR. LOOSMORE: Referring to No. 32.

Q. Would you explain, Capt. Cooper?

A. Now, as that low moves up, usually you get a point or
two points off of your isobars. Your wind comes down
two points farther off of it.

This was taken at 1430 and it coincides very closely
to where I was, off of Michipicoten Island.

As we moved up -- usually your center of your storms
has little weather in it. The winds are light and mild
for a short time, and once that low passes you, like this
one here did, it shows two points off of this isobar,
and there was a northwest wind and damn fresh.

CAPT. ZADINSKI: You are indicating the southwest portion of your low isobars; is that correct, Captain?

THE WITNESS: Correct. So that results in why the weather here in the log was kind of strange for a little bit from north-northeast 26 at 1030 to south-southeast 30 at 1150, to southwest 11 at 1252, to northwest by west 5 at 1350, and then at 1520 she was northwest by west 43 and gusty.

Later on at 1653 we had sustained winds, 58 knots west by west, 300 degrees.

By Cdr. Loosmore:

Q. Now, at the time we are discussing, 1300 and 1400 in the afternoon, as the wind, as you testified, started backing and raising in velocity --

A. Right.

Q. -- what was the sea doing in the area that you testified? You testified you were immediately to the west of Michipicoten Island?

A. When I hauled down on the 230 course, actually we had very little sea at the time. We didn't have much sea, although the wind was starting to change and getting heavier, but at the time, at 1445 when I hauled, the wind had increased considerably. That's when it was northwest. It was logged
at northwest at 43.

At that time, northwest 43, by the time I got abeam of Caribou, the seas had built to six to 10 feet, nothing drastic but a normal gradual building in front of a strong breeze, and I am sure that when I hauled off here, I knew the Fitzgerald was down in here (indicating). He was by this point already.

He got the wind -- if he got the wind at the same time I did, I mean he was here when it switched over for me, so he was either eight or 10 miles ahead of me.

CAPT. ZABINSKI: Indicating the west end of Michipicoten Island?

THE WITNESS: That's right. So he evidently hauled down. He was close in here at Michipicoten, two or three miles off of that.

Apparently, by eyeballing it on the radar, we figured two and a half or three miles, which is normal, which I had already figured to come down until this hauling at 230, to come out and get around it.

So by the time we were, oh, 10 or 12 miles north of Caribou, the seas had picked up in that one hour. They were running 12 to 18 feet, and below Caribou they were running 18 to 25.

As I mentioned before, we had a damaged lifeboat. That particular one had to be close to 30 feet to
go in on top of it. We didn't have very, very many 30-footers. That wasn't water coming up on the deck on a constant rate. You had seas that were 10 foot and three or four that would come along that were 18, and a couple of dandies would roll by about 25, and maybe you would go by and none would come.

It was an intermediate type thing, and we got down to here.

REAR ADMIRAL BARROW: Indicating south of Caribou?

THE WITNESS: 30 to 40 miles northwest of Whitefish. The seas were breaking over. We had seas breaking over the deck all the time.

By Cdr. Loosmore:

Q Could we come back to the area after you had your course change to 130, in the area of Michipicoten Island?

At one point in your earlier statement you were indicating, pointing toward an area abeam of Michipicoten, and you said Caribou. I would like to clear that up.

A All right.

Q Where was the area where the sea started to build; was it southwest of Michipicoten or due north of Caribou?

A 1445, when we started to build it from the northwest, that was the start of the build. That was the start of it, and it'd gotten progressively larger farther on down.
We proceeded toward Whitefish until this area where
they probably reached their greatest height.
Q. "This area" indicating a point where?
A. Somewhere along in here (indicating). This is where
I believe we damaged our lifeboat.
Q. Indicating a point between Circle 4 on Exhibit 28
and the mark of 141 degrees on Exhibit 28.
Now, where was the sea during this area from 1440?
A. Approximately 300 degrees true from here to there,
all the way down, approximately. It stayed pretty well
at 300 degrees. It would have -- well, it depends.
It would vary a little bit and it would gust, but it
did hold almost a true 300 all the time, if you are talking
about northwest by west.
Q. And you were basically steering a course such that
that would put the sea where, with respect to the ship?
A. Well, I was steering 141. The opposite of that is
321, so you are talking about 20 points on your port quarter
from dead astern.
Q. 20 points?
A. I mean 20 degrees from dead astern.
Q. How was the vessel riding when this was done? Were
you rolling much?
A. Well, I will quote the cook. He said, "It wouldn't
roll an egg off the table."
Q. Were you pitching much?
A. Very little.
Q. Could you describe that in degrees?
A. I don't know how I would describe it in degrees.
I would say that you would -- looking aft and watching the stack on the horizon, her stern would rise maybe seven or eight degrees up on the horizon before it would come back.

I was watching it, and I estimated the seas at 200 feet apart crest to crest. To me this indicated that I was riding on three waves at all times.

Now, I am not riding on one here and here and nothing on the front end. You look at my average speed, and I never checked, but you will find that I questioned the engineer if the governor took over, because we were throwing our wheel. None of this happened. She rode absolutely beautiful.

We were taking water over our deck, but she was riding absolutely phenomenal. I couldn't believe it myself.
Q. You said a couple times you were taking water over your deck.

Could you describe as well as you can how this would occur? Was it a breaking sea, or what was happening?
A. Well, the seas were coming up from aft, and in effect we would hit a trough between a sea. The deck would be
Like if a 25 foot sea would come over, you have five feet high water that would come over your ship, and it would roll across your deck with a following sea. It would just roll right on across.

It was almost like dropping it on. It was not a breaking sea like if you were running into it head-on. It was like a thumping wake coming down and splashing across, but there was no driving across.

Q Would the vessel shudder?
A No. She didn't even wiggle at all. She had a little bit of movement to her, which is a normal spring. I mean, if they don't bend, you are going to break them.

Q How fast were you going?
A We averaged 14.3 I think from Michipicoten down. Our normal speed was 15.6, so we were getting some air to the prop, because there was a little slip there, and we lost maybe a mile and a quarter.

Q 14.3 knots or --
A Miles per hour. Everything is miles per hour on the lakes. Wind is figured in knots. That is all.

Q How long did you say the Anderson was?
A 767 overall, 70 feet beam and 36 molded depth.

Q When was it built?
A 1952.
Q. And how much power does she have?
A. 7000 horses.
Q. What was your draft on this particular ship, departure
draft on this particular trip?
A. There they are exactly, and this was my draft at the
Soo when I put her in the locks, and before we loaded her
I asked the lockmaster, I asked him to hold us so we could
get an absolute check on our drafts, because I would assume
they would wonder whether we made any water or not.

The draft leaving up above at Two Harbors was 25 foot
six inches forward, 25 foot nine inches in the middle and
26 foot aft.

When we locked through the Soo, our draft was 25 foot
nine forward, 25 foot nine on the starboard, and 25 foot nine
on the port and 25-10 aft, and the change in trim was be-
cause of oil that we consumed coming down the lake.
Q. Is that information in the log, Captain?
A. I believe so, yes. It should be.
Q. You are reading from a piece of scrap paper, and it
is in the log --
A. I believe it is; I believe I marked it in. Here it is,
the same thing.
Q. Could we verify it is the same thing?
A. Here is the draft of departure and the draft of arrival.
Q. The draft at the Soo is 25 foot nine inches, 25 foot
nine and 25 foot 10. The draft at departure is 25 foot six,
25 foot nine and 26 feet.

Yes, sir.

Right.

CDR. LOOSMORE: Sir, what I had in
mind for this log was that we refer to it as necessary,
and once the testimony is completed, we would know
what pages we would need to keep and enter as
evidence.

I will not mark these three pages for identification at this time, but I will identify for the record
that the Captain and I are referring to a document
entitled "1975 Great Lakes Fleet Official Log,
Arthur M. Anderson."

Once it is clear as to which pages we will
need, --

CAPT. ZABINSKI: What dates are you
looking at?

REAR ADMIRAL BARROW: I think as we go along,
if you could indicate the specific dates and we
could assign the next number for identification.

CDR. LOOSMORE: The page I am looking
at right now has a date of November 7, 1975,
Trip No. 29.

This would be No. 33 if we are going to mark it.
REAR ADMIRAL BARROW: If there would be several pages, why don't we mark that 33-A for identification and so on.

CDR. LOOMSMORE: All right. 33-A for identification then.

The reverse of that would be 33-B, and it is a continuation of November 8, November 9 and the next page, which is the other side of the sheet, as the way it is arranged, which would be 33-C.

CAPT. ZABINSKI: Is that also the 8th and 9th?

CDR. LOOMSMORE: Yes, sir. It is a continuation of the 8th and 9th.

The next page would be 33-D -- excuse me -- B and C include one entry for the 10th.

33-D and 33-E are the 10th and until 1950 on the 11th, and include the drafts at the Soo.

REAR ADMIRAL BARROW: These will be marked as 33-A through 33-E for identification, and we would substitute copies of these for the official log.

(Exhibits 33-A through 33-E were marked for identification and made part of the record.)

CDR. LOOMSMORE: I believe that is all I
have at this time, your Honor.

REAR ADmIRAL BARROW: Capt. Wilson?

EXAMINATION

By Capt. Wilson:

Q. Captain, where did you say you were when you first received the gale warnings?

A. It was after we left Two Harbors.

Q. Just shortly after you left?

A. Yes.

Q. You mentioned several times during your testimony the barometer readings on your vessel and also you have barometer readings for the weather that you received.

Are these correct to sea level or not?

A. I believe we were .05 of an inch out for our barometer, but it goes up or down accordingly.

Actually, even though it is .05 of an inch, it doesn't affect us, but the barometers are the shore station, they give us all corrected to sea level, and that's the reason why I can make a halfway decent plot.

Q. At all times up until the time where you referred to barometer readings that you have received on the vessel, those have all been corrected to sea level?

A. From the shore stations, yes.

My barometer is out .05 of an inch, and I don't use my barometer readings to plot.
Q. I just wondered, so we can go back and check the
differences, because there will be some conflicts there.
A. Yes.
Q. You mentioned that when you were between Michipicoten
and Caribou, you did take one large sea?
A. That was below Caribou.
Q. Where you suffered the loss of your lifeboat or some-
thing?
A. Below Caribou.
Q. That was when?
A. The exact time I don't know, but it is generally 15 or 18
miles below Caribou after we got out of what little lee
we had.
Q. First I want to talk about the sea that you took and
then fix where you were and where the Fitzgerald was.
You said that you took the sea, if I understood you
properly, you said that you took water in your boat --
let's see -- you took the water --
A. Starboard quarter.
Q. So it was the seaward boat that was damaged?
A. At the port side. The starboard side was not, because
it was pushed into the saddles.
Q. I misunderstood you for a moment.
A. At that time, did the Anderson make any other response
to the sea, other than the damage it took?
A. I think we lost a wheelbarrow, and we lost one of our trash barrels that was taken off. I don't know what else.

I think we lost one ring buoy, and we had one ring buoy that washed off with all these seas, and it came back and stayed on, and we kept the ring buoy.

Talking about strange things, it was gone and came back. With all the seas, it never pulled loose, but we did lose an oil spill pan that we used when we were fueling. One of those was washed over the side.

Q. Now, that was at some time after the Fitzgerald had indicated that they had a list. She was how far from you at that time? Tell us, approximately.

A. 14 or 15 miles probably. I think it was around -- let me see. That was about suppertime. I believe it was just before -- I can't remember if it was just before the mate went to supper or before, because I know I had my sandwich in the wheelhouse.

We were abeam at the north end of Caribou, so it had to have been after supper.

That is probably 1745 or 5:30. That would put us around this particular area.

CDR. LOOMIS: Indicating just north of Circle 4 on the 141 line.

By Capt. Wilson:
Q. Now, at that point, approximately where was the Fitzgerald?

A. We were closing on him at that time. I really can't say.

I would say 12 to 14 to 15 miles. I am really not sure.

Q. And he was at that time on a downbound course, a southerly course of some sort?

A. The mate informed me that when he talked to me he was steering 141 and we know he was steering that below Caribou, because he did not change radically from our course.

He drifted to the east, because -- maybe he had a wheelsman that didn't steer good, but it was not that much of a drift.

Q. The sea you took was from the northwest?

A. 300 degrees.

Q. And again, it was before or after that time when the Fitzgerald said that she was having problems with her radar?

A. I don't know. Now, I was not in the wheelhouse when the mate had that transmission, so I can't say for sure. I believe it was later on.

I won't say for sure; I am not sure. I just don't know.

Q. Then you were never in the wheelhouse when there was any indication from the Fitzgerald that she was having any problems with her radar?
Q. So it was later? There was no indication?
A. It was either before or after this. I remember the mate mentioning that the Fitzgerald did say that one of his radars was out, and the other one evidently wasn't working very well or not well enough to work for him.

CAPT. WILSON: That's all I have.

REAR ADMIRAL BARROW: Capt. Zabinski?

EXAMINATION

By Capt. Zabinski:
Q. Capt. Cooper, what charts do you normally use in navigating Lake Superior?
A. Generally we use this chart all the time, unless we are going to be operating in Thunder Bay or down toward Ashland or toward the islands; then we would get a much larger scale of the chart.

Q. But ordinarily you use No. 9?
A. Yes. On all the lakes, we use Lake Survey No. 9. In the west end of the lake we have a chart that takes in the Apostle Islands.

Q. There are some Canadian charts of the same area. Do you ever use those, Captain?
A. I have for Isle of Royale and up into Thunder Bay. In fact, I remember we have one of the Slate Islands. I don't feel that we needed them.
Q. There is also a duplicate Canadian chart to our Lake Survey No. 9.

Have you ever used that one?

A. No. In some instances the Canadian charts have a little more detail, but we haven't needed them and never have used them.

Q. You felt that Lake Survey Chart No. 9 was adequate?

A. We have been using them since I started sailing.

Q. I would like to have your comments in that you have been on Lake Superior for many years. We have Chummy Bank.

What can you tell me about Chummy Bank?

A. It is nine to 15 fathoms. I don't know who named it that.

It has been in the charts ever since I can remember.

If you had big seas, usually the seas are a little larger over your shallower waters, which is normal.

Q. Why is that?

A. The bottom drags, and the tops start to break.

Q. Do you recall if you pass close?

A. You probably pass right through the 15 fathom part of it.

Q. Did you notice any change in wave height?

A. No. The sea was building then, as far as I was concerned. The sea was building, and it was not abnormal at this time. It was building.

Q. We also have a couple of shoals south of Caribou
that I would like your comments on, and that's on the southeast and southwest, I guess.

It is a shoal, is that right? Are you aware of those two?

A. The ones south are Caribou, yes.

Q. Do you have any experience with those, Captain?

A. Yes. The same general thing; we have come up the lake in a northwest direction with similar conditions where we have the same conditions in the northeast. You will find that your water is shallower with a more combing sea.

Q. Some of those shoals show six fathoms on the chart; is that true?

A. Yes.

Q. Would this shoal present any problem, I mean, any grounding problem in a rough away, in your estimation, Captain?

A. I would hardly think so. I know on the west end of Lake Erie where the water is like 28 feet deep, and you have a sea building in there, and we are loaded at 25, 26 or 27 feet, depending on the draft, yes; you are concerned there, because it doesn't take that much pitch, but if you are referring to the Fitzgerald, she is over 700 feet long, and she must have had three seas under her all the time at one time.
If it had been a smaller ship, a 450-footer, then
she will bury her nose. If she was loaded deep, yes,
there would be a possibility.

Q. But in six fathoms of water, do you think that would
have posed any kind of problem for a vessel the size of
the Fitzgerald with respect to the sea conditions as they
existed on the night of the 10th?

A. You are asking me for conjecture. I was not there.

Let's say it didn't pose any problem for my ship,
and I was north of there, and I went through the middle
of the Chummy Bank.

Q. I am asking about your experience in the area --

A. Pitching.

Q. We have, let's say, a six-fathom shoal, and you have
to pass close to it in very rough sea conditions.

I know you would normally give it a wide berth, if
you could.

A. True.

Q. If you couldn't give it a wide berth and passed
close to it, would the six fathoms be a serious problem
to take a vessel similar to the Fitzgerald through?

A. All things being equal, I don't think that it should
have. I mean, of course, there are all kinds of variables.

You are asking if the sea came over and raked her
and would it loosen up something? It is a possibility if it
is combing, but I can't believe it, not with the Fitzgerald.
She was not that much different than my ship, and my ship
responded just beautifully.

That was all the way down. When we have no concern
at all from another ship, you have to assume he is doing
the same as we are.

Q. This is not this trip, but just generally, navigating
the Great Lakes --

A. As a general rule, if you can avoid a shoal area
with a big wind and sea, you avoid it.

Q. But if you happen to be over it, do you feel you
could pass over it safely since you have possibly two or
three waves under you?

A. I think so. With three waves, I can't see where
you could do the pitching. You have three under you at
all times.

Q. Captain, could you describe the hatches aboard?

A. Aboard the Anderson?

Q. Yes.

A. Yes. We have about 42 hatch clamps. We have eight
on each end and the rest are on the sides.

They are about a foot and a half apart, and they are
put down with a spring lock and locked in place.

Q. What is your policy about operating summer seas and
winter seas?
A. The company's policy has always been that in the
fall and wintertime everything is tight.
Q. When you say the fall, what period are you talking
about?
A. September on.
Q. The hatch clamps were secured on this voyage?
A. Absolutely. What you do is you tell the crew that we
are going to have her tight, and you go out and lay it in
a trough, and you see if anything falls out and then you
know it is tight.

I went to the precaution with the gale leaving Two
Harbors that we have some extra shutter plates put along
the portholes in the dining room to cover them up, which
is normal procedure.

I can't believe that the other companies don't do the
same thing. It is normal procedure.
Q. Did you put up your shutters on this trip?
A. Yes.
Q. In anticipation of northeast winds?
A. If it got bad, we were prepared.
Q. How about ventilators for ballast tanks? You have
ballast tanks along each side?
A. We have vents on each side.
Q. What kind do you have?
A. We have a mushroom type screw-down vent.
Q. You screw them down by hand?
A. True.
Q. Are they square or round?
A. Round fitted on top of an eight-inch pipe.
Q. What is the policy aboard your vessel in regard to these vents?
A. An hour before we are finished loading, we have one deckhand that is ordered to do this one specific job. He comes aboard and sounds the tanks as the engines are pumping them out to assure the mate who is loading the boat that all tanks are dry. As soon as the engines and the deckhand that is sounding the boat show that the tanks are dry, his job is to automatically screw down those vents, and you can't pump in or out.
Q. Why can't you do that?
A. If you suck on them, you get a vacuum. You try to pump in so you get pressure and it could only go so far.
Q. Is that an undesirable situation to have pressure built up in those tanks?
A. Yes, definitely.
Q. Why is that?
A. You can blow a tank, but you don't do it where you leave them open in a ballasting condition. Often we leave them open because we can't pump in or out.
We are not in a loaded condition. If you happen to hold
yourself, only a certain amount of water would run in
because you would have a pressure that could hold it down.

In fact, we have a hook-up that we hook up air to
our tanks and increase the pressure on the top and the
air would hold that water level down to where the hole is.
This is part of our hook-up, too. We have air vents and
air lines all through the tanks.

Q. Damage control type thing?
A. Damage control, yes.

Q. Are the ships fitted with this?
A. I know ours are.

Q. You say "ours." Are you talking about your company's?
A. Yes, the ones I have been on.

Now, I take that back. This is the newer ships now,
not the older ones. You have the older ones and you have
to put, I think they put a compressor on them or something.

Q. Your testimony is that your policy on board the
Anderson and the company's policy, as I understand it,
is that in a loaded condition those air vents are kept
closed?
A. Absolutely.

Q. In ballasting they are kept open?
A. Yes, sir.

Q. And they were closed on the day of the 10th?
Q. Did you take any water or suffer any damage as a result of this storm?
A. The lifeboat was all. You have my drafts there. You can take a look at them.

She averaged out the same as when we left, so we couldn't have taken any water. We would have been deeper in the marks.

Q. What records do you normally keep? What reports or records do you keep on the bridge, Captain? We've seen the log book, but what else do you keep as routine records?
A. Radio telephone log, a radar type log that any repairs are made or things that the radar technicians will put in and the engineers keep a water ballasting log.

Besides their official log book, they keep a bell book. Let's see, what else do they keep?

And I usually keep a rough log myself, other than the official log for when we put in our position reports to the company and where we are, and our ETA's or if we have ordered some men, then the next man that comes on will look at this and see that it is not a repetition so that he will not order somebody else again.

It is something similar to this, and I did look in my rough log and there was no entry except and ETA, estimated time of arrival.
At the Soo, it is unknown because of weather conditions.

That was the only entry that was in my rough log because I did check that to see if there was anything pertinent to this.

Q I would like to touch on loading procedures for a little bit, Captain, for your company and particularly the Anderson, which you are familiar with.

I want to get into as far as who is responsible for loading the vessel.

A I have had three eligible first mates on my ship and they all load.

Q Is this unusual, Captain?

A It is now because we are bumped back. We train the men. Now, here are our records of our loads and you can see, you can check any one that you want (indicating).

Q Do you have a copy here of your last loading?

A Here's No. 29 right here. Here is the trip in question.

REAR ADMIRAL BARROW: Let's identify what the Captain is referring to.

CAPT. ZABINSKI: The Captain has presented what was originally Great Lakes Fleet Official Log and he is making an entry. It is a page in the log dated -- the number on it is 282930, which are the entries in those documents. The remainder of the columns are blank and this is Two Harbors,
S.-No. 2. What is that?

THE WITNESS: South of No. 2.

CAPT. ZABINSKI: What is OL?

THE WITNESS: Oliver No. 2, which are the pellets.

CAPT. ZABINSKI: Gary No. 38?

THE WITNESS: These designate the trip.

CAPT. ZABINSKI: The trip is No. 2?

THE WITNESS: Right.

By Capt. Zabinski:

Q. These are what (indicating)?

A. These are the number of cars in each hatch, and there are your drafts.

Q. In each hatch?

A. In their hatches. This is our tonnage. Here is our total tonnage.

Here is our load upon leaving the dock.

CAPT. ZABINSKI: I would like to have the Admiral -- I realize this is for the Anderson, but I would like to have this identified as an exhibit.

REAR ADMIRAL BARROW: Which pages are you talking about?

CDR. LOOSMORE: I believe it will be Exhibit 33 something.
REAR ADMIRAL BARROW: Single page, nothing on the back, will be 33-F for identification.

(Exhibit 33-F was marked for identification and made a part of the record.)

By Capt. Zabinski:

Q. This log book stays on the ship, Captain, does it?
A. Yes; but what I wanted to say, one thing more, if you will turn the page, there you will see that the first 17 or 18 trips, we even checked our percentages of our middle, forward and aft, to see how our trim was all the time in here. We haven't been doing it on the last part, but the page back previous to that, the first 18 cargoes or so, we did do it and also you will find in the Notes, the Remark column of the regular log, where it is entered in there that all vent hatches and everything are secured on leaving port, and that is the mate's job, the mate that is on watch, when we leave, to make sure that all of those particular things are done for that particular day.

Q. That is a standard entry that you require?
A. Right.

Q. Not only you, but your company requires that?
A. I guess they do require it; yes.

Q. But you require it, in any event?
A. Right.
Q. I was interested in the records, Captain, that are kept as far as the loading, the particular loading for the Anderson.

I am not familiar with very many procedures here and that is why I wanted to get the benefit of your experience and I am not really concerned about this particular loading. This is just to get an idea of what records you keep and what your procedures are.

These numbers here, then, indicate the number of cars. Is that what you indicated?

A. Those indicate the number of cars, yes.

Q. How much tonnage in a car, Captain?

A. It varies.

Q. How would I know, looking at this log, then?

A. You wouldn't know and we don't know half the time either because they don't give you — I mean, we don't get tonnage by cars.

We can generate and what we have to do is to take the tonnage that we are supposed to carry and the number of cars that are in the load, and we divide it and then we use an average, because if you load pellets that come straight down from the mines, they usually run between 75 and 78 tons per car.

If you go to Duluth and load off of the reclaiming pile, these fellows don't load the cars up to the same amount.
You don't have this type of a weighing, so they can vary as much as eight to 10 tons a car.

So all we go by is the number of cars divided by the tonnage that we are supposed to carry, on top of constantly checking our midship marks to determine whether we have a hog or a sag.

So we keep our ship in trim as we are pumping the water and ballasting the ship.

Q. Does the loading terminal provide you with some kind of a manifest or anything indicating what the weights are, Captain?

A. No, they tell us -- yes, I should take that back.

I will qualify it a little bit.

When you go to an oar dock, they give you what we call a loading slip and that has all of the pockets, and usually there are four cars to a pocket. This is how we normally load, and then all those numbers are designated as pockets, and what is in them, three or four or five car pockets, possibly, and that one section on it, most of the time -- they don't always do it, but they give you, like for the Anderson it's 24,700 and some odd tons for this cargo.

So I mean, you do know, you know generally, and of course the weights do vary somewhat. They vary, I mean, from cargo to cargo, as you can see in there, but I mean,
we know the law of gravity will make it go down so much per ton, no matter what. So whether the weights vary a little bit or not, we do watch our marks as we are loading and taking the water ballasts out and making sure that we do not put a hog in the boat or a big sag where you are going to put a strain on her.

Q. You try to load her on an even keel, do you, Captain?

A. Not necessarily. We try to keep it down by the stern because your bells and your ballast pipes and your tanks are on the after side of your bulkheads, and if you have a little more of an angle, your water will in turn pump out faster because your bell is covered and you are not going to get any air through your suction.

Q. Why don't you tell me, then, Captain, is the mate that is loading one of these things, is it correct that they sort of guess a little bit?

A. I don't know. Until they started going and making all of these tests and unloading and loading plans and ballast manuals and marine consultants, we loaded these ports for many, many years and they came to the conclusion when they came back that we have been doing it right all this time.

So I wouldn't say it is a guess, no. I would say there is a variance of tonnage sometimes, but I can't go along with the guess bit.
Q. I guess I used the wrong word, possibly.

I meant in loading, you wouldn't precisely say what
you were going to put where because of the variances, is
that correct?

A. Well, we know pretty well what we've got because of
our draft and what our normal tonnages are. You can't
refute it. It's there. Your draft is usually the same
all the time, I mean, from one end to the middle to the
back. We must be coming pretty close to it all the time.

Q. I am not talking about the load of the vessel; I
am talking about the load you are going to take aboard,
the load the mate is going to take aboard, if the pockets
can vary by several tons.

This could accumulate to give him a difference in trim
or difference in disposition or spreading of cargo?

A. It wouldn't make a difference in trim, but it could
conceivably make one of our pockets or hatches a little
heavier than the other. But I don't think this poses any
problem here as long as you are watching what I consider
to be the most important part, your midship marks.

I am sure if you are going along, the mate is going
along, and all of a sudden he has a five-inch belly in
the ship, he knows something is wrong.

In other words, he has too much weight in the middle,
even though he knows what the weight of his cargo is.
I am not saying this has happened, but it could happen. Most of the time the ships load out very good. They seem to average out very well, if you know what I mean.

True, you could have 40 tons difference in this hatch and in this hatch you can have 40 tons more or less, but overall, it still seems to average out. We have loaded out what we call the outside docks to the same methods as we do here and it's all essentially the same.

Q. What kind of a cargo is this taconite?

A. Taconite pellets. It is a process iron ore. It is about 25 per cent iron when they take it out of the ground. The iron is extracted and through a process developed by the corporation, it forms a pellet almost like a marble, and it runs about 65 per cent iron.

Q. Do you have any difficulties with shifting of taconite?

A. I have never had a cargo shift. When we were on Lake Michigan this last time after this deal on Lake Superior, I spent 36 hours trying to get in Gary, running up and down the lake in the storms down there, our seas were running 18 feet.

I turned her and she laid in the trough and we rolled 30 degrees and we never shifted a pellet.

Q. Do you as a normal rule, do you spread the taconite pellets after they are loaded, or try to even them out?

A. No, we never touch them, but they are spread by the
loader on top of the dock. He sprays them out and sprays
them back and he waves the spout back and forth, and actually
the angle of repose is very small.

Q. As finally loaded?
A. That is right.

Q. It doesn’t assume a natural angle of repose. It is
a flatter angle of repose?
A. It is even flatter than what the natural angle would be,
very definitely, yes.

Q. And this would keep it from shifting?
A. I have never known it to shift. In fact, I never had
a cargo shift in all the time that I have sailed.

Q. Captain, what information do you have on the Anderson
to tell you the vessel is stressed, or if the vessel is
stressed because of cargo loading?

Do you have any information of that type aboard?
A. Nothing other than we have some formulas that we have
in our log manual and ballast manual that we can go through
in using cubic capacity in volume of cargo.

It is supposed to tell you through your peaks or valleys
whether you are in a dangerous condition, but we go pretty
much by a ballasting manual that is developed by the marine
consultants, and they figure the stress and the whole bit
right down to the degree, even to the extent that we only
have a certain number of ballasting plans that we can put
in there because if you don't want to use one of these, you can put a stress center, and we don't want to put, say, 30 or 40 inches on her like the older vessels that didn't have this stress thing, because we actually put this -- it looks like a silly type of ballasting to put on her, but you are heavier in the middle; but these are the ones that don't have the stress on her, and these are the ones that we go by.

And we put Docking Plan 1 or Ballasting Plan 1, or if it's in good weather, we have about eight of them that we figure, according to the conditions at that time.

Q. You follow the recommendations in the ballast plan?

A. That's true.

Q. How long have you had that ballast plan, do you recall?

A. Every ship that has been lengthened has one of these. All of our ships have gotten these because I have been on the Blough. I have sailed the Blough and she has the same type of ballasting manuals and plans as we do.

This would be the Anderson, the Calloway, the Clark and the Munson will have it.

Q. Mr. Kennedy from NOAA, I guess, said something about weather reports and was very appreciative of weather reports that they received from vessels on the Great Lakes, and mentioned yours specifically.

Do you recall when the last weather report that
was sent out from the Anderson was on the 10th?

A. There was one, two, three, four sent in for the 10th. So we sent in one at 7:00 -- that's 0700, 1300, 1900 and 0100. We've got our weather report for every one of these. In other words, there is a weather observation sent in at 1300, 1900, 0700 and 0100, yes.

Q. Who normally makes these out, Captain?

A. Whoever is available that we can get it to. The Coast Guard -- in fact, a lot of ours have been going to the Coast Guard lately because of the FM service. Sometimes we are limited to a certain area where you can always get ahold of the Coast Guard. It seems like we can always get ahold of the Coast Guard.

MR. MURPHY: May we have for the record an identification of the document that the Captain was referring to when he just testified as to the answers of those questions?

REAR ADMIRAL DARROW: Yes, Capt. Cooper; would you identify the forms from which you were taking those?

THE WITNESS: Yes; they are a sheet that is made up by the weather people for us to log all our observations on a basis of every six hours, so that we can send these in.

We usually send these to them once a month
and they evidently recheck back on their storm checks
and the whole thing and the whole bit.

REAR ADMIRAL BARROW: How many sheets are
there?

CDR. LOOSMORE: Four.

REAR ADMIRAL BARROW: Four front and back
or just front?

CDR. LOOSMORE: Just front.

REAR ADMIRAL BARROW: Mark them for identifica-
tion as 34-A, B, C and D.

THE WITNESS: This is a Xerox copy
of the originals, which I think are probably over at
Cleveland Hopkins Airport.

(Exhibit 34-A, B, C and D
were marked for identifica-
tion and made part of the
record.)

By Capt. Zabinski:

Q. Does that indicate who the preparer was, Captain?

A. The time would designate that. If it is 0700, it is
the first mate. If it is 0700 or 1900, it is the first mate.
If it is 0100 or 1300, it is the second mate.

Q. Do you recall how long the first mate may have been
making these out on the Anderson?

A. I can't recall. We have had weather ships for
I don't know how long. I know I was making them out when I was a third mate during World War II. It's been going on for a long time.

Q. How much experience has the first mate had in making these things out?

A. Well, what are you talking about when you say experience?

Q. How long has he been doing it?

A. I don't know. I think you will have to ask him that, but I would imagine he has been on these ships off and on. He doesn't stay on one ship.

We are changed around and this is only the second time Morgan has been with me, so I can't testify to that.

Q. Would this also be true of the third mate?

A. Yes; I know the third mate had been the first mate, so he has made them out, too.

Q. Captain, I would like to touch on your radars at the present time.

You indicated about the Fitzgerald being lost in the sea returns and so forth.

A. Yes.

Q. And I just wanted to know, is there a suppressor or a sea return suppressor on either or both of these radars?

A. Both of them.

Q. And did you try?

A. I turned the suppressor on completely, and I shut out
everything above 10 miles, but there was still milk in
the scope and it blacked out the shore lines, the whole bit,
by turning the suppressor on up completely.

We worked and manipulated and tried to find the boat.
I was on the 10 centimeter and the mate was on the 3 centi-
meter and we tried everything.

We thought, but we were not sure. I mean, you keep
looking and we thought we saw something at six and a half
or seven miles, and it seemed like there was a blip that
would hit once in a while, and it was somewhere where we
figured.

We were trying to half believe that that was maybe
the Fitzgerald, and I doubt if it was. I don't know
because there was so much sea return.

In fact, it is one of the worst sea returns I have
ever seen on a radarscope.

Q. Why do you think it was more pronounced this time?
A. Because the seas were high and very ragged, and
every sea would give you back a target which will hold
for four or five sweeps, and by the time you've got some-
thing on there, you have a screen that you can't see
anything on.

Q. Is it your experience that possibly the sea return
is worse when the sea is building than when it is stabilized,
Captain?
A. I don't think that should enter into it. It picks up every wave at a certain height, no matter what, I would imagine.

Q. I would like to ask your opinion on the effectiveness of radar to pick up targets or its general usefulness.

If you are rolling very heavily, Captain, what is your experience along this line?

A. It doesn't seem to make any difference. We have been coming down on some nice easy rolls before and it doesn't seem to affect radar at all.

Q. How about a severe list, do you think that would affect it?

A. I don't believe that it would, not to any great extent. It might change the angle of it just a little bit and maybe you wouldn't be able to see that far, because your scanner might be on a little different angle, but essentially it shouldn't change anything that would normally be a normal range for me to use it.

Q. How did you take these beam bearings that you referred to? You referred to beam bearings.

You indicated that you took them on the radar.

A. Our azimuth is rung to zero, so 270 is 90 degrees or 90 degrees would be true 90 one way or the other, and that gave us a beam of the parallel course that you are on.

You also have cables that you can refer to by taking a
bearing of an object and getting a multiplier out of the
table to give you your distance off of an object by a radar
bearing.

Q. Captain, do you feel your lifeboat damage was due to
taking heavy seas?

A. Right.

Q. And other than the oil pan or drip pan that you
indicated and lifeboat, there was no other damage to the
Anderson?

A. No. In fact, the vessel was completely checked over
by two of our people and we anchored below the Soo, and
they went over everything with a fine-tooth comb to see
because they were concerned, too, because that was one
of the first time that a vessel had been out that was
lengthened and had been out in a severe storm like this,
and there was nothing loose, no loose nuts or rivets, or
absolutely nothing.

Q. Which vessel was that?

A. Mine.

Q. You had just been lengthened?

A. Yes, we had just sailed out of Superior June 2nd or 3rd.

Q. And this was your first bad storm, is that correct?

A. Yes, this is actually -- yes, this is the nastiest blow
that we have been in yet.

Q. Captain, this is as an aside, but who is your favorite
weatherman?

A. There is a guy on Channel 3 on -- what's his name, out of Green Bay. I can't remember his name, but he seems to be a pretty good weatherman.

Q. Thank you.

CAPT. ZABINSKI: That's all.

THE WITNESS: There is also one guy in Chicago that does a good job because he lines up the isobars and draws out the storms pretty well.

CAPT. ZABINSKI: Thank you.

REAR ADMIRAL BARROW: I want to ask just a few questions, Captain, before I give you a chance to break here.

EXAMINATION

By Rear Admiral Barrow:

Q. One question on your loading. I have seen the sheets that have been marked for identification here on your loading. Is there a specific sequence of loading in these hatches that you follow?

A. Yes, there is.

Q. And who makes up that sequence?

A. That, well, I don't know who made it up, but it goes by this loading, and a ballasting manual is the way we started up to get the load for these boats, because you have to go from somewhere to start with.
We had the marine consultants, and I can't remember which, that set up this plan, not necessarily the loading plan, but the percentages that should go into it. So when we put cargo in the ship, we take out our water ballast as we are putting in our cargo, and when we are unloading, we put water ballast in as we take the cargo out.

This is what I am talking about all the time: that you check your midship marks so you are not going to put a hog -- if you start to get a hog, you know something is wrong.

If you get a sag, they might be taking it out too fast.

Q But you would follow a specific sequence?

A Yes.

Q And what generally is this sequence?

A When we come into the dock, we take one full run right through here. Before we get tied up even, I call the engineers and have them pump 5, 6, 7, 8 and 9 tanks. 5 and 6 are our big tanks. That's one part that was lengthened, so they are the heaviest.

When you get through with one, the mate is watching, and you set up to pump again, and when you reach No. 12 hatch, then you start pumping the other tanks.

In other words, you are pumping on all the tanks together, but you did get a start on the middle ones. Then you shift back and you take another full run, which I am
talking about is one pocket per 24 hatches, approximately
four cars and sometimes it varies.
Q. All the way through?
A. All the way through the second time. Then on the
third run, you take the last section of the pockets, and
then you skip every other pocket in the middle, which
essentially gives you then your 27 per cent or 28 per cent
that we are putting in the middle of the boat.

In other words, we are trying to maintain this 27
or 28 per cent in the middle hatches of the boat, and
then you have very little to go to trim her, because maybe
-- I think if you will notice in there, there are a couple
in there that are pretty even, except one which has a
No. 29.

You will note that No. 1 and No. 17 or No. 5 or some-
thing -- the aft are pretty well graduated. This is the
whole secret of the way you load the boat. You taper it
from the ends like this (indicating). In other words,
it is a curve. That is, as the cargo goes in.

REAR ADMIRAL BARROW: Let the record show

he is indicating more cargo at the ends than in the
center.

Q. Who is checking the loading?
A. We have a draft indicator forward and a draft indicator
aft on deck, and any time the mate wants to check it, he asks.
Q. Does he have a small radio with which he can check?

A. We are in communication by walkie-talkies. An hour before you are finished loading, the mate on duty or coming on duty, the one who is coming on duty, he comes and reads the marks.

At that time he is also reading the midship marks along this dock side, along with the mate that is reading the boat -- reading the marks from the other side, plus the end.

This is an actual visual observation and our draft gauges are very close. It is almost on the money, and the one aft I think is out about an inch, but in general this is no problem until you get down to the critical end where you have to be careful where you don't put your Plimsoll marks under the water.

Q. You talked with someone on the Fitzgerald a number of times during the period following your departure from your loading point.

What radio were you using?

A. FM.

Q. VHF-FM?

A. Yes.

Q. And at all times when you had communications with the Fitzgerald, were the communications good?

A. Yes. They were all general. It was about the
weather. I was going to steer 55 and him 60. We were
going to go up south of the Slates.
Q. I mean as far as being loud and clear?
A. Very good.
Q. There was no problem with the communications?
A. Right.
Q. But it was all of the VHF-FM?
A. Yes.
Q. You indicated, I believe, that you changed your course
at 1530 to 125 degrees true. At that time the seas were
about four to eight feet?
A. Yes. They were building.
Q. And building at that time?
A. Yes.
Q. But at that time about four to eight feet?
A. Yes.
Q. That coincides just about the same time when the Fitz-
gerald, as I recall, indicated they had had some difficulty?
A. Right.
Q. At this time also, you indicated your winds were north-
west at about 43 knots or thereabouts?
A. Yes. Now, he could have had that wind before I got it.
I was farther up on it.
He was a little closer to the corner of the storm,
so he could have been down there where the sea could have
been larger in his area, because the wind could have
been blowing longer. But I assumed he had to have that
wind down there when I got it. He had to have it before
I got it.

Q. But do you think the seas would have been appreciably
larger than that from your end of where he was located?
A. Probably. I think they might have been, yes. This
is the thing: I can't put any exact time on it, but they
were fast. They had built faster in this particular time
than I can remember them building on Lake Superior. I
don't know if it was because of a higher sustained wind
or what. To me it was like Lake Erie. It is a shallow
lake and it gets treacherous real quick.

That's what I observed out on Lake Superior this time,
because they did build rapidly.

Q. But doesn't it seem to you that if he was following
generally the track that you were where you came along
that the seas could not have been appreciably more than
four to eight feet?
A. Here again, I mean, you are down there within 10 miles.
We are in the eye of the storm. Has the wind been blowing
a half hour longer than it was up where we are? I can't
say really.

I would say they could have been larger; I wouldn't say
they would be as large as what we experienced by far as to
Q. What life-saving equipment do you have on the Anderson?
A. Life jackets, two lifeboats --
Q. The primary type equipment?
A. Two life rafts and two lifeboats.
Q. Two inflatables?
A. And I have three now, since it is wintertime.
Q. You have an additional --
A. An additional life raft for the winter.
Q. Where are they located?
A. One aft on the boat deck, and one forward on the bridge deck. There is one that we have aboard in the wintertime, which is behind my cabin.
Q. Are they all hydrostatically released?
A. Well, it is a brand new one inflated in 30 seconds.
Q. For hydrostatic release?
A. I take that back; two of them are hydrostatic.
The spare behind my cabin, you have to pull that one.
Q. The spare one floats free?
A. Yes.
Q. And the lifeboats, what kind do you have?
A. The screw-out.
Q. You have to lift the boats out of there --
A. It goes up and out.
Q. How often do you hold drills with the lifeboats?
Sometimes twice a year. I think they are useless in a big sea. I have never known them to get one off.

Q. How about emergency instructions?

A. We have a boat and fire drill in front of the merchant marine inspectors every spring.

Q. Just once a year?

A. Occasionally we'll put one down if there is good weather.

Q. Could you give me an idea how long you think it takes to put one of your lifeboats in the water from the time you initiate a drill?

A. You are talking about good weather I assume?

Q. Yes.

A. Well, I have timed it many times, and if you will look through my log book, it is marked in red. Of course, this is cheating a little bit, because we have a fire drill first and then we usually go from a fire drill into a boat drill.

But with the fellows aft there that we have, most of our crew aft, I would think they would have it swung out, not lowered but ready to go down between three and four minutes.

If you ring the alarms, they come out. Believe me, they came out; because I made the mistake one time and set it off by mistake. They all came out. It was after
hours where they weren't expecting it, and I accidentally
leaned on the switch. The fellows popped out real quick
in a hurry. They were undressed, most of them.

Q. Would you make a judgment under rough weather
conditions as far as how long it would take?

A. In rough weather, I don't think I would attempt to
launch one.

Q. Why not?

A. In the first place, the way the lifeboats are set up,
they would be extremely dangerous in any kind of seaway.
You would have to be lucky.

With ours maybe it would be a little quicker and easier,
because we do have the one in the bottom. We can release both
at the same time, but even when it got into the water,
if there was any sea running, I am sure it would be slamming
into the superstructure of your ship.

I don't know. I just somehow or another, I guess
I have lost faith in lifeboats, because of all the times
I can remember and all the casualties I have read about
on the Great Lakes, any time there has been a seaway,
that particular boat in trouble has never been able to get
a boat off.

Q. What would you use in an emergency then?

A. If I was one of the gang and if I heard the lifeboat
drill, I think I would run for the nearest life raft and
inflated it on deck and let it sink under me.

I found a half lifeboat while I was out there, and
I don't know where the other one was -- I believe it was
upside down on the beach. To me they are working in the
right direction with life rafts.

This is the thing of the future. I think this is the
life-saving device of the future, as far as I am concerned.

Q. Just one other item, Captain, that concerns the search
that you carried out once you got around to Parisienne
Point and turned around and headed back out for the search.

Could you describe for us your search effort?

A. Yes. Well, as I mentioned in my log book, I got
Parisienne Island one time at 3:48 and the next time at
3:35.

I made a course for around three miles over Pancake
Point and an east-west line off Copper Mine Point with
the wind northwest and west, and I wanted to be east of the
area where I assumed the Fitzgerald went down because of
all the debris that would have been floating down that way.

I think the best way to explain it -- I mean, I
certainly didn't want to go back because I was afraid we
were going to get beat all to hell, to be honest with you.

I had a decision to make because I had other people involved,
but I figured that I was obligated to try. Maybe I
wouldn't even be able to do anything after I got out there.
The best way I can describe it is that we had a couple of guys on board who were a little bit of braggards. They wanted the rough weather, and when I told them that we were going out, they said they were going to get a tape and put it in bee's wax and throw it overboard so they knew where the Anderson would go down.

We were taking on water harder, because there was more spray. I don't remember the exact time, but around 4:40 in the morning before daylight, we did start to spot some debris, and we were in contact with the 7236 aircraft, I believe, who was ahead of the search in the area.

They were dropping flares when we spotted the debris, but even then the sea was so big, trying to maneuver, that we would drift by and the debris would drift out of our range.

It is difficult to even see during the day.

After we picked up the debris, then they started searching more in an easterly direction, back up into Pancake Bay.

I found a half lifeboat, and I think it was Armco or Reserve that came in there who found all this debris. I can't remember.

Anyway, they were back up in Pancake Bay and Copper Mine Point.

The wind direction, being northwest by west,
had blown it in the area where the Fitzgerald sank back into Pancake Day and off Copper Mine Point.

I was the first vessel released from the search.
I guess they figured I was a little bit beat.

At that time it was obvious that there were no survivors. They were picking up debris and this sort of thing to try and find out exactly where she went down.

The last time that I went up on Lake Superior and ran up there, I found an oil slick.

Q. You sighted half of a lifeboat?
A. Right.

Q. Did you pick up any of this debris?
A. No. The chopper came right over me where I found the lifeboat, and he put a smoke float over it, and I didn't have the equipment to pick it up.

Q. What additional debris did you see?
A. Some life jackets. One other fellow saw a propane cylinder. I believe there was also a floorboard that was sighted from one of the lifeboats. There were no lights. I don't know. That is another thing.

I don't know if they had the old canister or the new canister, but there were no lights on the ring buoys. I don't know whether they were attached when they were picked up or what. I don't know.

Q. There have been several sinkings of boats on the lakes
over the years. In each of the occasions that I can recall, we have at some time or another recovered bodies in life jackets.

In this particular case, as of this time, neither the Coast Guard nor anyone else has located any bodies.

A. I feel that he practically hung up the phone and practically dove under. I don't believe the fellow had a chance to get out of the wheelhouse.

Q. So your judgment is that it was sort of a catastrophic occurrence?

A. This is the only thing I could believe, because she couldn't disappear that suddenly. It cleared up about 10 after when I came back in the wheelhouse -- about 1910 or shortly after, and you don't think that the Fitzgerald could go. We started looking for a blackout.

If she lost her power, she would have blacked out.

I have had that happen to me and it can happen.

I didn't know; that if she was drifting out there, we may even hit her. So we were trying to do everything we could with our radar to bring her back on target.

We could see the other targets of the salties extremely well. Well, she was so very close to the point where we last talked to her where you were finding some of the echoes, the sonar type echoes, we thought she must be in that general area; so she had to go over right then,
but I mean the seas were big at that time.

By Capt. Zabinski:

Q. Captain, from what you describe, even if you did see anything when you went back on the scene to rescue any of the survivors, it would have been difficult?

A. I was thinking about that on the way out, watching the rollers come over the deck, and I was thinking how I could take my boys down without having to hurt them, because I am sure with the sea rolling up -- at that particular time it started to abate quite rapidly, because you will notice how small the storm is.

It did moderate after daylight. Even after 8:00 o'clock when we were maneuvering around in the debris, we did slop some water, but I really have my doubts. We would have been extremely lucky to get somebody.

Q. Were you on board, how would you have gotten these people on?

A. I would have had to check her right down, get upwind and try to hold her while the sea and wind would bring them to the ship. This is the only possible way.

If we could get them close, maybe we could throw them a ring buoy, but I couldn't put my crew to the middle because then I would have some broken bones.

It would have to be back or on the poop deck up where they would be out of the weather, because the seas were
nasty, rolling back to the deck there.

Q. One thing I would like for you to touch on again, Captain, is the sequence of events about you calling the Soo and that process, please.

A. I am not sure. I made so many calls right in that particular area.

To the best of my knowledge, as I have thought about it, I think that around quarter to or 10 minutes to 8:00 I was trying to contact the Soo, and at this time the Soo was having their problems with their high winds down there.

I later found out that their high antenna was down.

I thought I got ahold of the Soo Control. I told them to go to Channel 12, which is our working channel in the river. I didn't get them on.

In the meantime, I tried to call one of the saltwater vessels, and I was not getting an answer from them.

I don't know whether the pilot was not in the wheelhouse or what, but I didn't get an answer.

Then I tried to call the William Clay Ford, who was behind Whitefish Point, to affirm whether my signal was good. In the meantime, I had been calling the Fitzgerald.

I called them several times. The mate called him several times.

We tried to call them on AM and FM. We thought maybe
something had been carried away and could get him on AM.

I was told that my signal was very good. I heard
the Hilda Marge Ann going up behind Whitefish Point. I
did talk to the Nan Free, but I never got ahold of the
Ben Free, which is the sister ship, and there was another
little salty.

After I talked to the Nan Free, I think I called
again, and that's when I informed them that I was sure
that the Fitzgerald was gone. That is when they informed
me to look for a 16 foot boat that was lost in Whitefish
Bay.

10 or 12 minutes later I called them again, and I guess
it was pretty evident that the Fitzgerald was gone. I said,
"Let's get it out and let's start it." I think they were
like I was. I don't think they believed, because of the
size of the Fitzgerald, that she disappeared. I couldn't
believe it, even though I was calling them and telling
them.

So about 2000, everything started to move. The
choppers were out, in fact, within an hour. He was on
the scene within an hour.

REAR ADMIRAL BARROW: You have been on here
for two hours, and I think that you probably need a
rest. Let's take a 10-minute recess at this time.

(Recess had.)
REAR ADMIRAL BARROW: Let the record show we reconvened at 1546.

Counselor, do you have some questions of this witness?

MR. MURPHY: Yes, Mr. Chairman.

Thank you.

EXAMINATION

By Mr. Murphy:

Q Captain, just for the record, I would be interested in knowing how much your vessel was lengthened this year?

A 120 feet.

Q Would you be good enough to tell us, over the period that we are concerned here, say from about 7:00 o'clock, who were the members of your crew who were in the pilothouse during that period, the mate on watch and the wheelsman and then any changes that were made for relief purposes so that we will know who the individuals were that were present at any particular time?

A At noon the second mate came on watch. His name is Roy Anderson.

His wheelsman is Frank Fakatty, and the watchman is Clayton Stergell. He was in the wheelhouse off and on wiping up the water, because we were leaking around the doors a little bit, and he wanted to keep the decks dry so it wouldn't be slippery, but he was not observing anything.
He was up and down.

Q. Now, the second mate, Mr. Anderson, did he stay there during the entire watch?

A. Yes. He went off watch at approximately 3:30 along with Frank and the watchman. Morgan Clarke, the first mate, relieved him, and Bob May relieved Frank Pakatty and Joe -- have you got his name there? I can't remember his name. Joe, the watchman, he relieved -- he didn't come to the bridge until about 1800.

Q. Excuse me. Before you go on, would you tell us why it is a man such as a second mate has a four-hour watch, yet he went off at I think you said 3:30?

A. All the mates' watch relief comes a half hour early for supper. They stay on a three and a half hour watch, and they come back up at 4:30 to relieve the mate's watch, and after the mate's watch returns, then they go back.

Q. At the commencement of the watch, using the second mate's watch, did that group of men start that watch right at noon or a few minutes earlier?

A. They are usually in -- they relieve a few minutes early.

Q. When Mr. Anderson, the second mate, left the bridge or the watch by 3:30, by whom was he relieved for that supper hour?

A. Morgan Clarke.
Q. And he is the second mate?
A. Yes.
Q. How long did he stay in the pilothouse before Mr. Anderson returned?
A. Mr. Anderson stayed in and was relieved by Morgan. Morgan went about 1625 to 1655. The second mate relieves the first mate.
Q. I am sorry, I'm confused. The first mate's watch normally wouldn't commence until 4:00 o'clock; is that correct?
A. They come on around 3:15 or 3:25 and they relieve a half hour early to pay the fellow back for standing there and watching for suppertime.
Q. And that is what time?
A. 1630 to 1730 for the galley.
The second mate would come back up around 1625, and Morgan would go aft. So would the other fellows relieve and have their supper. In turn, they would come on and 2000 would be their official watch.
But here again, they relieve 10 or 15 minutes early, normally.
Q. I see. Then the first mate would be on watch until the end of his watch shortly before 3:00 o'clock; is that right?
A. True. It takes a little longer for a mate.
I mean the crew members, when they are relieved, they are gone. All they do is steer the boat. The watchman will tell them what he sees as far as lights or ships in the vicinity, but the mates do have a little more to do because they have to sign off the logs.

A mate will be around for 10 or 15 minutes longer just signing off after he is relieved. In other words, he is signing off, and the other mate is taking over.

Q. Captain, what then with respect to your presence in the pilothouse and on the bridge during that interval of noon to 8:00 p.m. would you say, what periods were you up there or in there?

A. I can't tell you, Tom, when I was up there. I know of certain times, because of instances that happened, but I was up and down all the time.

At noon I would come up and check the weather. If there were special reports, I would come up and check them.

I was always up there when we started getting the 2:30 weather, so I could make out my weather charts, and if we were near a point where I was going to have a course changed like from Otterhead down to Michipicoten -- like I was down in my room when the wind started blowing. I never took my clothes off. I did lay down for an hour when Morgan was on watch.

I think that was from 1815 to 1915.
Q. As your vessel and the Fitzgerald proceeded across the lake, you described the course generally that you followed and the changes that you made.

Did the Fitzgerald make similar course changes?

A. Very, very generally a similar course. I mean, he maybe was steering five degrees off of my course or some-thing, but we were always within a reasonably close proximity.

The Fitzgerald told the mate that he cut 10 rpm's and we closed down. In fact, we passed him, and evidently, he might have been springing. The old man might have felt she was in labor.

We continued on this way. He ran over closer to the Canadian shore than I did when he hauled down. Here again, we closed a bit, because I cut a corner and hauled down before he did.

We were riding all right. In other words, I took the shortest distance between two points.

So the result was he never did get that far ahead of us at Michipicoten. He was about eight or 10 miles, as far as I can recollect.

Q. Up until what time did the two vessels have visual contact?

A. I can't say for sure, but whatever the logs stated. It was around Michipicoten. I can't remember whether I
saw them. I think I saw them on radar going around the
east end of the light. That would be like 1445 or whatever.

It was even before that, whenever it was snowing, be-
cause I don't remember seeing them. I remember seeing
them on the radar as he passed off the West End
Light.

Q    But generally, up until that time, in addition to the
radio contact --

A    He was always in my sight visually from Two Harbors
up to this point.

Q    Based on the conversations you had, everything was
proceeding aboard his vessel the same as aboard your
vessel?

A    No problem.

Q    You mentioned you had made some weather determinations
from your weather maps that you drew, based upon information
that you received. I think at one stage you did indicate
that your computations were based upon the isobars which
indicated winds as high as 80 or 90 knots?

A    That's what it indicated on my map, but I have to
take that with a grain of salt. I have to improvise.

I don't have enough barometer readings to give me a
real good plot.

Q    Did you, in fact, experience winds at those velocities?

A    I can't remember. I know at times I felt it was above
75. At times there I noticed it had got up to 70 or 75
with a following wind, so, yes, I would say a gust at times
was probably 75.

Q. And those were the readings on your anemometer?
A. Yes.

Q. Is your anemometer company-owned?
A. Yes.

Q. Is it calibrated frequently, or would you tell us
the situation?
A. No. It has not been calibrated, but the mate has
checked it against other ships in our area to see
whether it was reasonably close, and it was reasonably
close to other weather ships.

Q. To the best of your knowledge, it was accurate?
A. Reasonably. I can't remember which way it was off.
It was off a couple, three miles an hour, but I can't
remember.

Q. You reported it as high as 75 or better?
A. I didn't record it as that.

Q. You observed it?
A. Our highest sustained wind was 58 on a steady basis,
but I did observe gusts of 70 or 75.

Q. Making reference to the reports which you had indicated
that were called in by your vessel, I believe you said
that there were seven such reports or four set reports?
A. There are four in a day.

Q. I would like to hand you what has been marked for identification as 34-A, B, C and D.

I would ask you if you would be good enough, Captain, to read those reports and the weather velocities that were recorded and reported?

A. Frankly, I would need something back on the ship to interpret it.

Although Morgan and Roy makes these out -- there are numbers in code which are sent in. There were just too many codes there to remember them all. I can't do it.

Q. Is there a member of your group present who can do it?

A. Yes. He could do it if he had the book. He might be able to do more of them, because he made out a lot more than I have lately.

I can't remember.

Q. If your testimony is that you are not able to do it, I won't ask you then.

A. I would say I could do it if I had my book with me.

Morgan would remember some of the numbers.

Q. Mr. Clark, the first mate?

A. Yes. If you want to check back with him --

Q. I would ask you if you would be good enough to examine your log book and turn to the page referring to this trip.

You have previously described the time period that
those weather broadcasts were made.

Do you recall that, sir? The reports were made to WMI or to whomever they were made based upon this exhibit?

A. Yes.

Q. And those time periods were what?

A. The time periods are 0100, 0700 --

Q. Let's take them one at a time. The first one was 0100?

A. Yes.

Q. And by whom aboard your ship was that reported?

A. The second mate.

Q. And that was Mr. Anderson?

A. Yes.

Q. And what are the wire readings in your log at 0100?

CAPT. ZABINSKI: What day are we talking about?

MR. MURPHY: The 10th.

A. I don't have an 0100, but there is an 0200, and the barometer was 29.40. The wind was northeast by east at 42.

Q. 42 knots?

A. Yes.

Q. And that is the report, to the best of your judgment, that would have been made?

A. No, not necessarily.
Q. Well, what would have been made?
A. I don't know; I would have to interpret it on here.
Q. Is it this Mafor?
A. No. It is a much more complicated book than that.
It is a big, long book.
Q. Without belaboring the point, I am trying to find out from what information on your vessel that is conveyed to the station that is called?
A. It is transmitted over the FM station to a shore station.
Q. And what information from your ship is transmitted?
A. It gives a latitude and longitude. It gives the degrees in tenths, the longitude, degrees in tenths, the time of observation, the GMT, which is to the nearest whole hour, and it gives the direction of the wind, true degrees.
Q. Now, is that shown as taken from your log?
A. No.
Q. That is taken from the anemometer at the time it is made?
A. Yes. At the time it is made. And it also shows the speed -- the direction true. It has the speed and knots. It says, "Direction, nearest 10 degrees, relative true to north and speed in knots."
Q. So that the reports that are made are not necessarily correlated with what appears in your log at that particular time?
A. Not unless I would happen to be making an entry at that time, and then he would put the wind in the same as he put in for that particular time.

Q. Then the next report, that you said was made at 7:00 a. m.?

A. 0700.

Q. And that was by whom?

A. The first mate.

Q. And is there a weather entry in your log for 7:00 a. m.?

A. 700 on the 10th. We have one at 0730.

Q. And what is that entry?

A. The wind is northeast, 31 with rain.

Q. All right. And what is the next entry then -- I'm sorry. What is the next time that call was made with respect to that weather information?

A. I would have to look in a telephone log, but usually you would make them before -- they start to make them 0630, 0645. That doesn't necessarily mean that that was it, because every time they change course, they recheck the anemometer, which can be five or 10 degrees different.

Q. I understand, but after the 0700 report, what is customarily the next report?

A. That would be 1300.

Q. 1300? All right. Would you look in your log and tell us for the neighborhood of 1300, what the direction
and velocity was?

A. We have one here at 1252 at Otterhead and I would imagine that probably would be what he probably put in at Southwest 11, overcast.

Now, here again, it might not be because the wind at that particular time, as I said before, was fluctuating very greatly because we were in the eye of the storm.

Q. Who made that?

A. That was Roy Anderson, the second mate.

Q. And the next one, then, was made at what hour?

A. At 1900. Now, I am saying 1900. They are usually made before this. They are supposed to be in by these times.

Q. I see.

A. Then they are set up in respect that that is where we would be at, 0100, 0300, so when the weather reports do come out and our positions are reported with the wind and the velocity, this is where we would have been at that particular time.

Q. All right, sir. At that hour or in the vicinity of that hour, 1900, is there a weather entry in your log?

A. No.

Q. What is the closest entry to that?

A. 1652. There is one at 1652 and one at 1950.

Q. What is the one at 1652?
A. Northwest by west, 58, with light snow.
Q. 58 knots at that time?
A. Yes, sir.
Q. Is that correct?
A. That is correct, that 58 knots would not necessarily
have been reported unless the anemometer was reading 58
knots when the recording was called in.
Q. Is that correct, or unless the conversion to the
anemometer was to that amount?
A. Right, which is the actual true wind. Actual true wind
is different than what you have on it because you have
to interpolate to get a true wind because of vortex, if
you know what I mean.
Q. The point I am making, though, sir, it is entirely
possible that the highest wind reported in your log was
not the highest wind recorded throughout the weather
reporting?
A. Observed. I don't know, it is possible. It was
observed higher than that in gusts, and I still don't know.
I don't have the book to interpolate. I doubt it.

Maybe Morgan might have gotten a 58 knot wind,
and maybe that was because it was pretty consistent
there for a long time as of 1950. This was three hours
later.

When he was signed off, it was still west-northwest 52.
Q. Yesterday we had testimony, Captain, to the effect that there was a report from the Anderson setting forth the velocity of the wind during different times and at no time did they indicate a velocity of 58 knots from the Anderson.

The point is that your log shows, does it not, an entry of 58 knots of sustained winds?

A. That is correct.

Q. And that time, sir, was when?

A. I believe it was at 1652.

Q. Where was your vessel at 1652?

A. That was during the time that we were dead abeam of the north tip of Caribou Island, six miles off.

Q. Is there any weather entry in your log from 12:00 noon until 1900, which is a higher wind velocity reported than that?

A. Not logged, no.

Q. That is the highest logged wind velocity?

A. That is the highest sustained wind logged; yes, sir.

Q. And that is when you were in the vicinity of six miles abeam of Caribou Island?

A. Yes.

Q. Thank you, sir.

Now, when the Captain of the Fitzgerald reported to you that he was in difficulty, as I recall, you said he
reported that some of his fence was laid over.

A. This was what I got and I kind of believe that probably
I didn't hear that. Now, the other two boys say that they
heard the fence rail was gone.

Q. All right, sir.

A. I would be inclined to believe it because of the winds
and so forth and this sort of thing, but although I know
you are going to ask me, I think that probably he said that
it was gone.

In retrospect, in thinking about it, I believe he
said it.

Q. Did he indicate what part was gone or what?

A. No.

Q. Did he indicate on what side of the vessel?

A. No.

Q. You didn't hear him indicate one side or the other?

A. Never did.

Q. All right, sir. When he reported to you with respect
to the events, will you tell me again what you heard him
say?

A. He said the fence rail was gone, or laying over,
"I have lost two vents." This was specific and very clear.
"I have lost two vents."

Q. Did he say what vents?

A. He did not.
Q. Do you know which two vents he was referring to?
A. I know to what he was referring. I don't know to what
specific vents.
Q. What vents do you know that he was referring to?
A. On our deck of our ship, we have two vents on each
tank, which we close in bad weather, to eliminate getting
any water in.
Q. Those are the ballasting tank vents.
A. The ballasting tank vents.
Q. And you are certain that he was referring to the
ballast tank vents?
A. I am absolutely positive that he was referring to those.
Q. Did he tell you what caused this damage to his ship?
A. He did not.
Q. He didn't indicate that it was for any particular --
from any particular cause?
A. No, he said nothing at all about it, nothing.
Q. As far as you are concerned, was there any understanding
that was conveyed to you as to what caused it?
A. No, not one bit.
Q. Do you at this time have an opinion as to what
caus ed it or what could have caused it?
A. This is conjecture again. I mean, it is all supposition
and I don't think that I could really give an answer to that
until they find that hull down there to get a look at her.
Q. Based on your experience, do you have any opinion, sir?

A. Yes, I have an opinion.

Q. What is your opinion?

A. Well, based on the previous experience, I think that he put his pumps on. I think that when those vents let go -- I kind of -- I don't know whether they were taken off or whether the vents are material or not, I don't know at this point, but I do have the opinion that when he put his pumps on and he is pumping water from a ballast tank, and I am assuming that it is from the same tanks and her vents were gone. Otherwise, he couldn't pump it out. He couldn't put the pumps on it if he wasn't getting air down to them, because all you are going to do is create a vacuum and you are going to have to do something and that's it.

I believe that she was cracked somewhere. She was taking water fast enough because what he told me was that, "I have a list and I am taking water," and I said, "Have you got your pumps on?"

And he said, "Both of them."

So from my experience on a previous occasion, I think what he did, he took that list which seemed to be real fast, as far as I was concerned, and that water level would have reached a level of his draft and it would stay constant,
no matter whether he had the pumps on it or not, if there was water coming in from below.
Q. From an opening in the hull?
A. From an opening in the hull. No matter how much you pump, if water is coming in faster, you are not going to lower the water in the tank because that water will stay at a constant level with the same list, if the water is flowing in faster than the pumps, because you can't bring it down. You have the lake right there.
Q. What effect would that have on the vent covers?
A. Nothing.
Q. So the vent covers were gone before he started pumping?
Is this correct, based on your theory?
A. Based on what he said; yes.
Q. And that would be true also of the fence rail, is that correct?
A. Well, the thing is that it couldn't pump on a tank -- again, unless these vents were gone. You had to have them open and I am sure at this time that nobody was going to go on deck to open them up.
Q. My initial question was, I think, relating to your opinion as to what first caused the vents to go or the rail to either go or to be set over.
A. A hogging situation would cause the fence rail to break.
Q. What would cause the vents to go?
A. I don't know. They found stagings. I understand they found stagings in the debris. We have safety blocks that are heavy.

There was a good possibility of something that was adrift in the sea that would come along and slap one of those and would take it off. This is a possibility.

I can't -- I can't foresee how the sea could knock one of those off, the way they are built, because they are round already and you have a natural cushion on it. It would almost be a physical impossibility for a sea to knock it off.

Q. But something adrift could have done that?
A. Very possibly, yes, sir.

Q. As I recall, you stated this morning, sir, that approximately 10 minutes after you were due west of the West End Light of Michipicoten Island was the time that you received the call from the Fitzgerald indicating what you have just described.
A. As near as I can recall, yes.

Q. Now, have you had the opportunity to determine the distance between that point abeam to Michipicoten Island and the next check point abeam from Caribou?
A. At that time, I automatically checked the radar because he said he wanted me to follow him, and I automatically
checked and he was 17 miles ahead of me. I did mark it.
I put our Auster on him. This is a range finder.
Q While you previously testified you didn't plot his
position by using your radar, you were able to determine
his position in relation to your ship?
A His difference in degrees, too.
Q My point then is that if you were 10 minutes beyond
the West End Light at Michipicoten, you know by looking at
your log how fast you were traveling by determining the
time and distance between Michipicoten and Caribou?
A True.
Q Have you had to determine that, and if not, I would
like for you to determine that, please.
A I have to figure it on the chart.
Q Would you do that, please, sir?
A From the north end of Caribou? Do you want me to go
from Michipicoten to the northern tip of Caribou?
Q Your log shows a position 7.7 miles off of the light,
is that correct?
A Yes.
Q Captain, I would appreciate it if, for this purpose,
you would use Exhibit No. 30 for identification, which
you have previously identified as the log which you were
using at the time of this occurrence; is that correct?
A Yes.
Q. And on that exhibit, you have marked -- there is marked the position of your vessel at 7.7 miles off of Michipicoten Island, is that correct?
A. True.
Q. On that log also is marked the position of your vessel when the figures were taken off of Caribou, is that true?
A. True.
Q. Would you be good enough, then, sir, to determine the distance between those two points as shown on the log which you were then using, on the chart that you were then using?

MR. KEENEN: Why don't you use a different colored pencil so we can distinguish the original markings?

By Mr. Murphy:
Q. For the record, it is 22.5 miles, according to the Captain's measurements, from the position shown on the chart which he was using for navigation at the time, and that is a point 7.7 miles off of Michipicoten West End Light; is that correct, Captain?
A. Yes.
Q. From that point to the point shown on your chart as being your point of reference, when you were abreast of the north end of Caribou -- and how was that shown in your log, sir?
A. That is shown six miles off of the north tip of Caribou. That is an hour and 32 minutes.

Q. An hour and 32 minutes?

A. Which breaks down to 14.6 miles an hour. Now, this here is the engineer's log.

Q. This is the engineer's log?

A. This is the engineer's log that will show you that we never checked or did a darn thing and it gives the average speed. It gives the average speed from Davieaux Island to Whitefish Point, 85 extra miles. Our average rpm's were 102.7, 420 average per mile, an average speed of 14.6.

Now, my figures here came out to 14.6.

Q. Just so I understand it, Captain, when these figures were taken, which appears in your log as being six miles off of Caribou, this would be the north tip right here?

A. Yes.

Q. And that is the measurement you just used?

A. Yes, that is right.

Q. When you determined six miles?

A. Six miles was right there where we crossed, from the beam of the north tip, which is up a little bit above that.

Q. I don't know what you mean by your cross.

A. We were running on this 125 until we got down here 7.5 miles from the north tip, which I hauled down, which was a 142, which was almost at the same time
and the mate did not mark it.

Q. Captain, I will get to that, but my question, though, was from the point where you took the figures to the point where your chart shows where you reached Caribou.

A. Yes, 22.5 miles.

Q. And the point that you reached was this point which has a circle on the chart, is that correct?

A. Right.

Q. And that is a point which you measured to be six miles from the north tip?

A. Yes.

Q. All right, sir. That distance, then, from those two points, that is the point where you actually were at Caribou to the distance, to the point when you were off of Michipicoten. That is the distance. Am I correct?

A. That was 22.5.

Q. Do I have the dividers correctly?

A. Yes.

Q. I get closer to 20.

A. No, you have 22.5.

Q. Do I?

A. Yes, sir.

Q. All right, sir.

A. This one is 20 and each one is a half mile.

Q. You are the navigator. I won't question that.
So now then, you were traveling how much per hour?

A 14.6 miles per hour in the stretch.

Q How much were you traveling per minute, then, on that basis, sir?

Isn't it generally a rule of thumb that for every mile an hour, you travel 88 feet per minute?

REAR ADMIRAL BARROW: I think the witness can figure it out.

THE WITNESS: I don't know. I don't use that rule of thumb. In fact, I never have, but I can certainly figure it out. What do you want, now?

By Mr. Murphy:

Q I would like to know how far you traveled in that 10 minutes prior to the time that you received the call.

A 10 minutes is one-sixth of an hour, so it would be one-sixth of 14.6, so that would be two, approximately 2.4 miles.

Q All right, sir. That is an approximation.

Would you show us, then, and we won't mark it on the chart that you were using for navigation, but would you show us on this chart which was Exhibit 28 for identification, where your vessel was, then, 10 minutes after Michipicoten?

A Right here.

Q Would you make a mark there?
A. Now, this is all generalities because I am not sure of the exact times, as I have told you before. I mean, this is about. I am not that far off, but it is about.

Q. That is your best recollection?

A. This is my best recollection, true.

Q. Thank you, sir.

A. Now, what do you want me to do? Make a mark?

Q. Make a mark there and we better indicate that.

CDR. LOOSMORE: Make it Circle 7.

MR. MURPHY: Circle 7, please, sir.

(Witness drawing.)

By Mr. Murphy:

Q. Now, then, would you mark off a distance of 17 miles from that point which is the point where you stated that you observed the Fitzgerald to be on radar at that time.

A. (Witness drawing.)

Q. All right, now, you are marking that point based upon the heading that you have drawn on this Exhibit 28, is that correct?

A. That is true.

Q. And that heading is a compass heading of 125, am I correct?

A. True.

Q. All right, sir. Would you mark that point at 17 miles, as close as you can, and put No. 8 next to that.
A. (Witness drawing.)

Q. In general, those were your best recollections to the relative positions of the two vessels at the time the captain of the Fitzgerald reported its difficulties to you.

A. At that time, yes, sir.

Q. Now, sir, referring again to your navigation chart, I believe you said that you took that digression of 230 degrees in anticipation of the fact that the wind -- you were in the eye of the storm and the wind would be picking up?

A. Yes, that is correct.

Q. You wanted to be clear of Michipicoten?

A. I wanted to be far enough off of it so that if I had to, I could haul right now and put the thing over my tail, until I was clear of Caribou Island.

Q. You wanted to be clear also of Chummy Banks?

A. Not necessarily the Chummy Banks. I wanted to be clear of the sixth fathom mark down there. I did go through the Chummy Banks.

Q. It wasn't your intention to be clear of the Chummy Banks?

A. Not necessarily. I was concerned of the six fathom bank primarily because the other has more water over it.

Q. Captain, I would like to state at this time that
you were good enough to meet with me within 24 hours
or so after this occurred and you were very kind to relate
to me your understanding of what had occurred, and I
appreciate that very much and I thank you for that, and
the other members of your crew also.

Now, did you give me a statement at that time?

A. Yes, and I was telling you I was taking it right off
the top of my head. I was over in the office at that
time and I was tired. I had been up -- what? I had been
up 36 hours or something like that.

Q. I understand, Captain. Did you tell me at that time
that one of your intentions was to miss the Chummy Banks?

A. I would have to reread it in its entirety.

Q. Would you like to read it?

A. No; if you say I did, I probably did, but I considered
the Chummy Banks. If you look on my charts, you will see
where I explained to the mate and the second mate and
there is a circle on it that denoted the sixth fathion
spot that I wanted to clear.

Q. I will get to that.

A. All right, but you are talking about it now.

MR. KEENEN: Wait a second. Just
answer his questions.

MR. MURPHY: May I take it step by
step?
By Mr. Murphy:

Q. The point was that you set a heading at Michipicoten at 125 to miss, among other reasons, to miss the Chummy Banks and that was one of the reasons that you had in mind?

A. Right.

Q. Is that correct?

A. Right.

Q. The fact is, however, that the track that you have shown on your chart passed right over the Chummy Banks?

A. It doesn't pass over the six fathom mark.

Q. It didn't pass over the six fathom mark?

A. It didn't.

Q. Excuse me, sir. Would you be good enough to answer the question and I will give you every opportunity to explain what I know you want to explain, but I would like to make the point that you did intend, by setting a course of 125, to miss the Chummy Bank, which is marked on the chart as the ninth fathom mark.

A. Would you please read the statement at the top of the --

MR. KEENEN: Answer his question, Captain.

THE WITNESS: Yes; the course went across there, yes.
MR. MURPHY: Then, as it turned out --

REAR ADMIRAL BARROW: Excuse me. Just a minute, Capt. Cooper. If you would just answer the question, we will give you plenty of time to clarify any points that you want to.

THE WITNESS: Okay.

By Mr. Murphy:

Q. And I will give you every opportunity, Captain.

I am just simply -- I would like to say, as I have related to you, and I have told you that I appeared with you when you were so helpful and cooperative, that our only intentions here, and this includes this Board and this includes Oglebay-Norton as the Operator of the Fitzgerald, and all of the people that are interested, that our only intention is to try and see what happened, and you were the closest to the scene and you had the best opportunity to help us try to reach that conclusion.

I am just asking you in connection with some observations that I had made, and I want to find out whether you think they are correct or not.

So based upon the course heading that you took of 125 degrees and based upon part of your indications, part of your reasoning, you have stated several reasons, but one of your reasons was the point designated on the chart, the Chummy Banks, which is the ninth fathom mark,
and as your vessel traveled, it passed right over that mark, did it not?

A. That is what the chart shows.

Q. That is what the chart shows, indicating, of course, that you did not have any difficulty passing over the Chummy Banks, and the Chummy Banks didn't bother you?

A. As I testified to before --

Q. That is correct, but it also indicates, Captain, that your vessel was on a heading of 125 and was setting toward the right because the track you made was to the right of the actual heading on which your compass was set; isn't that true?

A. No.

Q. Would you tell me why that is not true?

A. Because I took the bearing off of the north tip of Caribou on the 141 course. The mate neglected to mark down the change five minutes before in the log book. It wasn't exactly. I didn't run down to 125. I hauled down when I was clear in the deep water. This was seven and a half or eight miles from Caribou from the north tip.

Q. Beyond the north tip, when you were abreast of Caribou?

A. No, when I was seven or eight miles north of the tip on the 125 course.

Q. I see.
A. I hauled her down there to the 141 course, which
brought me in closer.

Q. Would you be good enough to come to the chart and
explain this to me so I can understand what that is?
I didn't understand that.

A. There is seven and a half miles from this tip on this
125 course right there.

REAR ADMIRAL BARROW: Just a minute. We are
trying to get this on the record, so would you refer
to geographic points there when you are trying to
explain it.

THE WITNESS: When we were seven
and a half miles --

CDR. LOOSMORE: Can I put this up so
we can all see it?

THE WITNESS: Fine.

CDR. LOOSMORE: The Captain is now
referring to what has been marked for identification
as Exhibit 30.

THE WITNESS: When I was seven and
a half miles from the tip of Caribou Island on the
125 course, which showed me in 70-some fathoms of
water, I hauled the boat down there and we took the
beam bearing on Caribou at six miles off on the
141 course.
If you will notice, that point is in a line
with the 141 course true for Whitefish. This would
make a difference of two miles.

By Mr. Murphy:

Q  Captain, there is a mark here across that line that
runs perpendicular to that 125 course. Is that a mark
which normally would be made to indicate when you're
abeam or abreast or opposite a particular point from which
you are trying to take a bearing?

A  Of the light proper.

Q  This is a radar bearing, is that correct?

A  The radar bearing off of the north tip of the island
that we used for determining when we were coming across
the Chummy Banks and coming down.

Q  But may I ask you, sir, does that mark which is a pencil
mark on a right angle to the 125 course, does that denote
a radar bearing taken by your vessel?

A  Not necessarily. We have them there, which means
on a course line for a fixing for a mile run from one mark
to another, there is a beam bearing 90 degrees to your
course line.

Q  So that this would be the point you would expect to
be, is that what you are saying?

A  That's where we would be if we continued on the 125.

Q  All right. Captain, then, if you will be good enough
to tell me what, then, is the line which extends from Michipicoten to the point six miles off of Caribou?

Why is that line on there? What is the point of that?

A. Which line do you mean?

Q. The line that runs from your previous check point at Michipicoten down to the mark which shows it to be six miles off of Michipicoten, the north tip of Caribou?

A. All that is a continuation of 141.

Q. The line, then, that extends between the two islands, the two check points, has no significance on that chart, is that correct?

A. Not really, no.

Q. All right.

A. I don't know who put this one on.

Q. Captain, let me just ask you this, then.

This 125 course, which was drawn at the time you made the haul opposite Michipicoten, had your vessel stayed on that course, that would have taken you to the north and east, toward the ninth fathom mark at the Chummy Banks.

As shown on here, it would have taken you a mile or so eastward, as it is indicated on that chart.

A. Yes.

Q. And it was your intention to miss that mark, if possible.

That was one of the intentions of your taking that 125 course.
A. All right, yes.

Q. Thank you, sir. If there had been a drift to the right, it could have been explained by the fact that you were encountering northeasterly winds prior to the time that you were in the eye of this storm and the wind switched around rapidly.

A. No, that is not so.

Q. It wasn't your testimony earlier to the effect that the winds were out of the north and the east until you got into the eye of this storm when you anticipated a violent shift back to the northwest?

A. Yes, they were on the north-northeast, but there was very little of it because we were in the lee of the land and there was very little.

Q. Whatever sea there was caused by the wind, would be constant with the prior winds?

A. Not necessarily because when we were in the Caribou -- excuse me. When we were in the Michipicoten area, we were actually -- I noticed that there was actually a slight southwest swell, and if you look at your log books down there for that particular date, you would see it was southwest down there and south-southeast at Whitefish.

Q. Is there any record that would show that when you were seven and a half miles off of the tip of Caribou that you made your change?
A. Yes, the mate will testify to that.

Q. However, what is the entry, the official entry that is made in your log in that respect, sir?

A. Well, 1652, north tip of Caribou, 141, which is what we were steering, a 141, six miles off.

Q. And the course prior to that time is 125?

A. True.

Q. Is it customary to show your course change in your log at the time that you make the changes?

A. Yes, it is.

Q. Thank you. Captain, I would like to explore with you and I would like for you to tell us all, please, whatever you can about what you observed about the Fitzgerald as you were proceeding in the vicinity from Michipicoten to Caribou.

Now, of course, you were not seeing her visually; you were observing her on radar. I don't know whether you were observing her constantly or not, but did you make any observations as to how she appeared to be traveling by that same course, the track that she seemed to be following?

A. Well, as far as this is concerned, a radar plot is not always what it seems to be when you are looking at it. Isn't that true? It's not like a rapid radar plotting.

I want some verification from some of these people
who should know about it. When you look at the plot, you could have any kind of a course, depending on the speed of a ship. We were steering 125.

Now, between the point of Michipicoten and Caribou, I don't know what the Fitzgerald did. I have no idea.

Q. Did you make any observations, Captain?

A. The mate and I both had the impression by watching it and, again, this is an impression. I did not plot the Fitzgerald. We watched the Fitzgerald on radar and kept its target in sight all the time, but as far as plotting him, we did not.

I don't know what course he was steering down to and, in fact, down below Caribou, but the mate and I both had the impression that he went down possibly to the south a little bit and got a lee of Caribou for a while, for whatever it was worth.

This is the impression we got.

Now, whether he did it or not, because we were hauling and we were on a 125 course, and he's over here, and we couldn't be sure.

Q. He was off to your starboard?

A. He was off of our starboard, of our heading flasher.

Q. I understand.

A. So I do not -- I mean, unless you plot him, you don't know what course he is steering, but I assumed again that
she was steering 141. I don't know, but here again, the impression was, and it was a distinctive impression that the mate and I both had, and we thought that he came down and came back out. I don't know whether he did or not.

Q. Just to understand what you mean when you say off of the heading flasher, if your compass heading is on 125 true, then you have a flasher which shows on your radar; is that correct?

A. It shows the direction I am going on my radar, which is relatively straight ahead always.

Q. And the target on your radar which was the Fitzgerald was to the right of that?

A. About a point to a point and a half.

Q. All right. Now, as you observed this or as the impression developed, were you watching it rather constantly?

A. Reasonably close because he appeared that he went in closer to Caribou than we did.

Q. All right, and did you and your mate have any conversation about that?

A. Yes.

Q. Would you tell us what that was, please, sir?

A. Generally we got the impression that we kept wondering whether he was -- how close he was in there. This is all.

Q. What is your present best judgment as to how close you observed him to that area?
A. I don't know, four or five miles. I don't know.

It's eyeballing it. I don't know.

Q. All right.

CAPT. ZABINSKI: Off what point?

THE WITNESS: Off Caribou Island.

CAPT. ZABINSKI: North tip, Captain?

THE WITNESS: Yes, the beam of the Caribou itself.

By Mr. Murphy:

Q. You passed six miles off of the north tip of Caribou, right?

A. Yes.

Q. With respect to that point where you passed, can you relate what you observed his position to be when he went by the same point?

A. Not really.

Q. Would you give us your best judgment, based on what you observed?

Of course, sir, realizing you were not taking measurements, but you were the one who was there to see it, you and your mate, and of course, we will talk to Mr. Clarke about it, but we would like your best judgment on it.

A. Here again, I would say he appeared to be -- well, the thing that I am wondering about, after we got to Caribou and hauled on the 141 course, he was ahead and
on our starboard side a little bit. That was after we
hauled down at the north tip.
Q That was after he was past Caribou, wasn't it?
A Yes.
Q And after you were past it?
A Yes, he was down there; he was 14 or so miles ahead
of us at that time.
Q I am concerned, though, sir, about what you observed as
he approached Caribou as he went by.
A I got the impression that he was four or five miles
off, as I said before. I can't go any better than that.
Q At one stage, you made a statement, I believe, that he
passed close aboard.

Were those the words that you used?
A True.
Q Would you tell us what your definition of that term
was when you made it?
A Close aboard means that if you pass a ship that is
laying in a dock and you are 50 feet off, you are close
aboard.

If you are going up to Manitou Island in a regular
course and the course would be 12 miles off of the island,
I would wind up six miles off and you are close aboard
because you are closer in to where you should be.

So close aboard is a terminology that was used in
relationship to any object.
So, in other words, to me the Fitzgerald was close aboard the Caribou Island because he was closer to the island than I was going to be.

Q. All right. He was closer than you intended to be and what you expected to be when you reached it in the course that you set?

A. Right.

Q. In your opinion, Captain, was he closer than he should have been?

A. Here is an impression again. I don't know. I had the impression that he was a little close. Now, here again, you are four to five miles. This is an impression again.

Q. I understand. When you used the term, did you use the term because you thought he was closer than he should be? Was that your purpose in saying "close aboard"?

A. No, not necessarily, because he cleared it when he was down by it. Evidently he had no problem. I mean, as far as navigating that particular point was concerned, he cleared it.

Q. I am talking now, as you observed him approach and pass, not after he got by.

A. Right.

Q. Did you make a comment a few moments ago to the effect that he seemed to go in and then out or something
like that? I don't want to misstate it, but you made
some comments that I didn't quite understand.
A. You mean when I was coming across?
Q. When you watched him in that vicinity.
A. This is what I said. He appeared that he headed in
a more southerly direction while he was in close and
here again this is an impression.

I thought he was going in there to get as much lee
as he possibly could when he hauled down for Whitefish,
yet when we hauled down from the northern tip of
Caribou, he was just a shade to the right of our heading
flasher on the 141 course.

Q. But you said earlier you don't know what actual course
he was on?
A. I had no idea.

Q. Do you know or have any idea between Manitou and the
point that he was on your heading flasher, below that?
A. No, because you would have to plot a ship to get
an exact course. You can't get an exact course without
an accurate plotting.

Q. Captain, did you have any genuine concern or did
you express to your mate any genuine concern as you
watched the Fitzgerald pass in the vicinity of Caribou?
A. No. I think I made the comment and I asked Morgan
if he thought he was a little close.
Q. Did you ever make a comment something to the effect that, "We are holding our breath," or words to that effect?
A. No, sir.
Q. I misunderstood that. I am sorry; I didn't mean anything by that.

I believe you did say, Captain, that this Caribou area was shown in your log to be the highest velocity of wind that you recorded as when you were opposite Caribou and also -- is that correct?
A. Yes, but we had the highest sustained winds off of the north tip of Caribou and we had a high sustained wind, as the log notes, at 1950.

Morgan signed off and it was west-northwest, 52 knots, so the wind was pretty well sustained there for three hours.
Q. I think you also indicated that where you do find a shoal area --
A. They were either coming or breaking because normally when the sea comes in off of the deep water, it starts to hit a shelf and the bottom starts to drag and the top drops off just like coming in on a pipeline in Hawaii; yes.
Q. In your opinion, at that time what was the direction of the sea, as you recall it?
A. Right there, northwest by west.
Q. Would you just --
A. 300 degrees.
Q. Would you just step to the chart and would you show us with a sweep of your hand, indicate which way the sea would be coming at that time?
A. Here is a 320 (indicating). There is a 320, so 300 would be coming about like that (indicating).
Q. That would be the general sweep of the sea, sir?
A. Right.
Q. I don't want you to mark that exhibit because that is your navigation chart, but referring to Exhibit 28, would you place the wind direction on a line in any location on that chart to indicate the wind direction?
CAPT. ZABINSKI: Just a minute, Captain.
The witness tells us it is 300. What do we gain by putting 300 bearing on the chart, counselor?
THE WITNESS: It is a 300 course line right here, which I was just going to show him.
CAPT. ZABINSKI: The testimony speaks for itself.
MR. MURPHY: My only problem is, Captain, that I don't know that northwest by west is 300. If that is the testimony, then, I will accept that.
CAPT. ZABINSKI: Putting it on the
chart will not change 300 degrees.

MR. MURPHY: I understand.

REAR ADmirAL BARROW: Let's take a five-minute break.

(Recess had.)
NEAR ADMIRAL BARROW: Let the record show
that we convened at 1702.

Counsel for parties in interest the same as of
the commencement of the day.

Counselor?

MR. Thank you, Mr.

Chairman. I am almost through.

By Mr. Murphy:

Q. Captain, I am a little bit confused about the height
of the waves as you have described them.

Am I correct that you had indicated that above
Caribou in that area in your best estimate the waves were
as high as 10 to 15 feet and below Caribou your estimations
went as high as 20 to 25? Is that your general statement?

A. In general, yes.

Q. I also thought, and correct me if I am wrong, that I
understood you to say that there were one or more extremely
high waves?

A. Yes. There had to be.

Q. Would you be good enough to give us your best
description of that type of wave and where they were? How
would you describe those waves?

A. On any body of water, it is like the kids that go out
on the surfboards and wait for the one big one. Somewhere
along the line, there is one that probably came from China.
There is usually a big one. You don't get very many
of them. The averages are much lower as far as your
average height is concerned, but the one I think -- Morgan
and I both watched from our quarter back there, not even
on the quarter, but a point and a half off stern, there
was one the height of the lifeboat, and seeing where the
port of that lifeboat was, it drive into the saddle. That
wave had to be about 30 feet.

Now, we took another one below Caribou farther down
after we were down in there beside that one, and it didn't
crawl aboard aft, but it practically flooded our deck with
practically six feet of water.

Morgan told me he was looking straight out at it in
the wheelhouse. Now, here you are talking 30 or 32 feet.

I mean, these are big ones. If this is what happened --

Q  There were some big waves down in that area?
A  Like I say, the kids go out and wait for the big
wave of the day, and there is one in every storm.

Q  Would you consider this to be a severe storm, Captain,
as it developed?
A  I would consider it a severe local storm, because it
was intense, but it was not a vast wide two-day storm. To
me, it looked more like a hurricane storm, which I am
familiar with, plotting down in Florida.

Q  Were the winds in which you forecast like Florida
winds?

A. As I remember correctly, it followed along pretty much with what I anticipated, except I don't think they had as much wind predicted as what I plotted or what my plot showed.

Q. They didn't predict a hurricane?

A. No.

Q. And you described it as being close to that?

A. Yes.

Q. To me it looks like a hurricane plot?

A. Yes.

Q. And you experienced that type of localized storm?

A. This is the first time I ever came across one that was confined up in this area, since I have been plotting. It has just been the last eight or nine years after I got a boat to sail that I really started doing a little bit of the weather bit.

Q. When you described the wave, the waves that were set off by the pilothouse, what level, approximately how much of the pilot house was out of the water based on draft and height and so forth?

A. Well, for day to -- while I would have been 32 feet above the mean water level.

Q. Just again to give us an impression of how much of the level was under water, how much was still out under those
circumstances?

A. Well, I was looking on the deck and I noticed that rolled up, and I think we were damn near under six feet of water on our deck.

Q. I see.

A. Not the houses or anything else, but as the deck, and she was raising it, too, she come out of there, I mean, like this (indicating), and like while it come and then was washing off.

Q. Was some of the water going not necessarily blue water or green water as we call it, but was some of the water going over your pilot house?

A. No, no, never did.

Q. A spray going over?

A. We didn't have any spray -- very little.

Q. Mostly --

A. It come up, like it dropped it, waves were following us.

As far as I was concerned, the blunt edge was taking us different and as I was following, see, I can remember when I was in the room I got out and looked on my deck and I watched one drop on my deck, which is 20 feet above water.

It just dropped down on it.

Q. And as I understand it, because from this weather situation do you know that the Soo Locks were closed?

A. Yes, they were closed.
Vessels were not holding their anchor, they were having difficulty maneuvering.

Q. Is this a common occurrence in your experience?
A. They have on occasion before closed, I believe because of wind but this is the first time I've ever been so involved this close.

I have heard it being closed because of wind. I know there have been many captains, when the wind was blowing as hard, would not go through the locks, they would anchor.

Q. Do you have any knowledge as to the water conditions within the city itself, about any flooding or anything?
A. Do you have any knowledge of that?

Q. No, the last master -- all I can repeat is what they said, they said that the southwest up here had water coming up over the poer, that we might be able to make a landing at that time at the McArthur Lock.

Q. One more question.

You mentioned a number of items on the deck of your ship broke loose. You mentioned a wheelbarrow and I think you also mentioned that in this rescue effort you retrieved a tank of some kind?

A. No.

Q. No?

A. We didn't retrieve it. One of the fellows saw what looked like a propane tank, a bottle-type.
Q Would you describe that?
A Silvery, five, six feet long.
Q Metal? Steel?
A Yes.
Q Something like that?
A Yes.
Q And you observed that?
A I didn't see it.
Q I withdraw that.
A I didn't see it.
Q You didn't observe it?
A One of the other fellows saw it with the searchlight—
as we went by, and as to the time when I looked the search
light would have gone beyond, and there was a wave, and by
the time I looked, I was looking a couple minutes right
thereafter before it came up on a wave.
Q In your opinion if a tank such as the one you
described, a propane tank, had broken loose on the deck of
a ship, would it have done the damage that was described to
you by the Master of the Fitzgerald?
A I think if it had been pushing it and it hit one
square, conceivably it could have taken off.

MR. MURPHY: One moment.

(Brief pause.)

I have really just one more question.
By Mr. Murphy:

Q. With respect to your fixes that you took in addition to your radar, were you using your radio direction finder?

A. We took a beam bearing at Caribou with our radio direction finder, and he also took a pickup at Whitefish which he could not get, which we later found out malfunctioned.

Q. But Caribou was functioning?

A. It was working. He had a beam bearing on it.

Q. Was there any other station in the area which could have provided a cross bearing or fix?

A. At Daveaux Island, the east end has a radio beacon, but we didn't need that particular -- we didn't need cross bearing, we had our fixes.

Our radars were working real well.

Actually, you get a better fix with your radar than you do by crossing two beacons, because there is more room for error when you are trying to get it by sound, so you get a false fix.

MR. MURPHY: Thankyou very much.

ADMIRAL BARROW: Captain Cooper, there are a couple of items that I think we would like to get in the record which I don't believe has been introduced as of right now, and that would be your radio log for the 9th and the 10th.
THE WITNESS: All right.

ADMIRAL BARROW: Commander Loosmore, would you take care of that?

THE WITNESS: That is the engineer's bell book if you wanted that.

ADMIRAL BARROW: While they are locating those particular pages, perhaps I could just ask you just one or two questions, and this deals with your emergency power -- the power emergency system for, and I mean specifically, should you have a loss of power, do you have a lighting system for the deck?

THE WITNESS: Yes, we have a diesel generator aft that will give us minimum power.

We are steering it, if it electrical steering. It would give us some lighting. It's very fringent. You have, like I know they have used it in port on a couple of occasions we went to pull up anchor and the cook put on the electric stove and he kicked the breaker system.

ADMIRAL BARROW: How about lighting?

THE WITNESS: Minimal lighting would take care of --

ADMIRAL BARROW: Lights on the deck and anywhere?

ADMIRAL BARROW: How about rafts? How about close to your launching position for your rafts?

THE WITNESS: Well, yes, I think the lighting would stay on.

ADMIRAL BARROW: Do you have lighting there?

THE WITNESS: Yes, there are, like flood-types.

ADMIRAL BARROW: On the emergency power system?

THE WITNESS: Yes. Well, this means when you turn on the generator, that locks right into the board to take care of what the two generators run by the steam that would be malfunctioning if we lost power.

ADMIRAL BARROW: The power from this is from your after spaces, from your after house emergency power?

THE WITNESS: Well, it would be our diesel -- it's located in the engineroom.

ADMIRAL BARROW: Well, you have no other power systems for the lighting system excepting --


ADMIRAL BARROW: In effect --

THE WITNESS: Everything comes from aft,
yes.

ADMIRAL BARROW: Have you located it?

COMMANDER LOOMIS: Yes, sir.

The information pertinent are the days of the 7th of November through 0924 on the 12th of November and are contained on Sheets 57 of the ship radio log and Sheet 58 of the ship radio log. I believe those would be marked 35A and 35B.

ADMIRAL BARROW: 35A for 57?

COMMANDER LOOMIS: Sheet 57, yes, sir.

ADMIRAL BARROW: And 35B for 58 marked for identification.

(Exhibits 35-A and 35-B were marked for identification and made a part of the record.)

MR. KEENAN: We would ask the Board if we can substitute copies for the original logs.

ADMIRAL BARROW: I think we would like to see those and perhaps counsel.

COMMANDER LOOMIS: You have copies?

THE WITNESS: I thought a copy of the radio logs.

ADMIRAL BARROW: Well, we will mark them for identification and hold them as to identification at this time.
MR. MURPHY: I would like to say that until we are concluded with all of the witnesses from this vessel, I would like to reserve the right to determine what pages are appropriate.

REAR ADmiral BArROW: We have marked two pages as of right now for identification. If it is determined there will be additional pages, we will bring additional pages in.

Captain Cooper, did you bring, other than the engineer's log, any other documents?

THE WITNESS: I have the engineer's bell book, and I have the engineer's log.

I have my radio telephone sheet. I have my log, my official log, and I brought the weather reports.

I mean, this is -- Morgan kept a period of the knots, the winds that were blowing. That was for four hours that morning up to eight o'clock.

REAR ADmiral BArROW: What day is this?

THE WITNESS: The morning of the 10th as we were moving across the northern end. 0700, 48 degrees at 34 knots. In other words, I picked this up specifically, because it is logged sometimes even to the half hours.

REAR ADmiral BArROW: Do you want to read all those?
THE WITNESS: This shows more than the entries. We had no weather across the north end, even though northeast galse were in effect.

REAR ADMIRAL BARROW: The early part of the 10th?

THE WITNESS: In the early morning of the 10th, right. You say, "Why did we go out in a gale?" Truly, it was not a gale. It was a breeze. It was a fresh breeze.

If you want these, they are the weather reports, the 11th/11th at 0002, which is the second mate's watch. Here is one at 1420 on the 10th.

REAR ADMIRAL BARROW: What is this you are referring to?

THE WITNESS: These are just weather reports and barometer readings, and so forth that I had used for my plots.

Here is the official weather reports as they came out, which I am sure you have for that particular period.

This is on the 11th, 062 --

REAR ADMIRAL BARROW: I think probably we would like to get these into the record.

How many of these do you have, Captain?

THE WITNESS: I have quite a few. I have just pretty much covered the whole few days in
here. Like this one is the 11th, 062, and this shows
the storm warnings.

REAR ADMIRAL BARROW: I think the ones we are
interested in would be for the 9th and 10th.

THE WITNESS: This is 062 on the 10th.

REAR ADMIRAL BARROW: If we could get copies for
the 9th and 10th, Commander Loosmore, and mark them for
identification. Let's go off the record.

(Discussion had off the record.)

MR. MURPHY: I would like to reserve the
right to move for the introduction of all these
documents at a later time, with the exception of the
one exhibit which was the chart on the vessel and
actually in use at the time. I would like to move for
its introduction of that exhibit at the conclusion of
this witness's testimony. I was not sure whether you
were finished or not.

I will move for the admission of that at this time.

REAR ADMIRAL BARROW: Shall we finish this first?

CAPTAIN ZABINSKI: I think we ought to go on,
because there may be more exhibits.

COMMANDER LOOSMORE: Do you have one for 2030
on the 10th, a LAWENB for 2030 on the 10th?

MR. KEENEN: There is 1920 on the 10th.

THE WITNESS: 1420.
REAR ADMIRAL BARROW: Off the record.

(Discussion had off the record.)

REAR ADMIRAL BARROW: Back on the record, please. Commander Loosmore?

COMMANDER LOOSMORE: Yes, sir. I have Great Lakes Weather Broadcast: LAWAB, two sheets for the period of the 9th and 10th of November. The sheets have information front and back, and I have marked them 36-A, -B and -C.

REAR ADMIRAL BARROW: They will be marked for identification as 36-A, -B and -C.

(Exhibits 36-A, -B and -C were marked for identification and made a part of the record.)

REAR ADMIRAL BARROW: We have one other matter that we would like to --

COMMANDER LOOSMORE: There were two different items of information.

REAR ADMIRAL BARROW: Excuse me?

COMMANDER LOOSMORE: There is also a Great Lakes Marine Forecast, a Mafor, and there are four sheets of these, which would be marked 37-A, -B, -C and -D for the 9th and 10th.

REAR ADMIRAL BARROW: The 9th and 10th? All right. Mark them so for identification.
(Exhibits 37-A, -B, -C and -D were marked for identification and made a part of the record.)

COMMANDER LOOSMORE: These also have information front and back.

EXAMINATION

By Rear Admiral Barrow:

Q Captain Cooper, we have a substantial amount of testimony which indicates that the Fitzgerald may have been, I think, in terms that you used, a little bit closer than you were intending to pass, somewhere on the order of four or five miles.

This question has been raised several times here.

I think probably what we would like to do at this time is to take the data which you have presented and placed on the chart and put that same chart on an additional chart, which we have in our possession here, one of the Canadian charts, which seems to be a little more definitive in terms of the water depth in the Lakes.

I think it would be useful if we could do that at this time.

I know you are weary and have made your mark on many charts. I think, however, this will be useful.

A All right.
By Captain Zabinski:

Q. Captain, I have a Canadian Chart 2310 for Lake Superior, Caribou Island to Michipicoten Island, and it is only a section of what you have drawn, but based on the testimony you have given, I wonder if you could reconstruct the track, your track as you have it on the other exhibits.

MR. MURPHY: May we have the date on the document, please, sir?

CAPTAIN ZABINSKI: The date is 1974, Chart No. 2310. There is a notation that the chart was corrected to August 29, 1975.

REAR ADmiral Barrow: We'll mark that chart 38 for identification.

(Exhibit 38 was marked for identification and made a part of the record.)

REAR ADmiral Barrow: If we could go off the record while the Captain constructs the chart here, it may expedite things.

(Discussion had off the record.)

REAR ADmiral Barrow: Gentlemen, back on the record.

Captain Zabinski.

By Captain Zabinski:

Q. Yes. Captain, you have made a drawing of your courses
or some courses on this Chart 2310 and you have a track
line, what appears to be a track line starting 7.7 miles,
a beam 130 degrees true from the west light on Michipicoten
Island, is that correct?
A    That's true.
Q    You have a course 125 degrees true. How long were you
on this course, Captain? Do you recall?
A    I don't remember.
MR. KEENEN: Right here.
THE WITNESS: Well, this one mate forgot to
log. It was about a mile or two before we logged north
into Caribou. He has an hour and 32 minutes here which
is --

By Captain Zabinski:
Q    One hour 32 minutes?
A    Approximately.
Q    All right. It shows you making a course change when
you were ab ut one point north by east, I guess, of Caribou
Island and then you went on to, what course is this, 141?
A    141 true, yes.
Q    And you passed on that course, you passed Caribou
Island?
A    Six miles.
Q    Six miles off?
A    Off the northeast.
Q. And this is the same (indicating)?

A. I had better mark that as "6 miles off the northeast tip." It didn't take the light.

Q. Very good, Captain. And this is the same track line that you drew for us on Lake Survey Chart No. 9, is that correct?

A. That is correct.

Q. Captain, in referring to this chart, I see Chummy Bank which you made reference to, and it looks like your course line was very lose, possibly a little, for Chummy, track to come back the way you have it here?

A. Yes, sir.

Q. Also I notice other banks in here that are not depicted on Lake Survey Chart No. 9?

A. That's right.

Q. Are you familiar with Hummock?

A. No.

Q. Have you ever seen that chart before?

A. Yes, sir.

Q. Captain, do you use this in navigation in tracking?

A. No, no.

Q. How about McMillan Bank?

A. No, we prefer this -- we prefer to use a more, a larger map because we can project ourselves more to whatever -- once in a while we do come into like a confined area, if
we are going to do some maneuvering, very definitely we
make one of those out but if you’re passing through, you
know that the water is good in these areas as the chart shows.

Q. Now, Captain, on this Chart 2310, it indicates to the
north of Caribou Island for a distance a shoal extending up
approximately five miles, is that correct?

A. Yes, sir, that’s true.

Q. The water shoals from about 25 fathoms -- well, down
to the beach.

When you indicated concern before about the passing,
passage of the Fitzgerald north of Caribou, were you aware
that the shoal extended out that far?

A. Yes, it shows up on this chart here (indicating).

Q. Referring to the Lake Survey No. 9?

A. That is correct, sir.

Q. Was that the area of your concern, Captain?

A. Yes, sir.

CAPTAIN ZABINSKI: That’s all I have.

REAR ADMIRAL BARROW: Thank you, Captain.

Would you have a seat, please.

(Witness resumed the witness stand.)

EXAMINATION

By Captain Wilson.

Q. Sir, I have a few questions here. A little bit of
general information: On this trip did you load down to your
marks?

A. Yes, we loaded right to the Plumsill lines for the winter draft.

Q. What emergency radio capability do you have in the pilot house that are on battery?

A. We have an emergency AM 51, Channel 51 was an open-call frequency, and we have a battery-operated FM set that we can call on, a calling frequency of 16.

Q. 16. During the two big seas that you mentioned, did you take any water on your Texas deck?

A. Yeah. Yes, I think they kind of lopped over on there, it wasn't -- it seems like they were just a crest, it didn't seem like it was dry, it was a crest, but maybe because of the force of the ship through the weight it did wind up dropping, lopping over and dropping down on the deck, not rolling along the deck.

Q. In both of these seas, they both took place before you lost contact with the Fitz?

A. No, I think these couple of seas took place, oh, while I was in the wheelhouse before I went off at 1800 hours, we were pretty well down Caribou, had run out of whatever lead we had -- it was 1800, and we had at 1652 another hour we were down in this area here (indicating).

COMMANDER LOUSMORE: Indicating the vicinity of Circle 4 on Exhibit 9.
By Captain Wilson:

Q Where was the Fitzgerald at that time?

A At that time he would have been down here, 14 miles or so (indicating).

Q Did you still have contact with him?

A Oh, yes. We never lost contact on the radar -- we --

Q No, I meant --

A Yes.

Q This was before you had the fear that --

A Right.

Q -- that he may have gone down?

On Lake Survey Chart No. 9 that we have, about four charts under there, on your chart, your navigation chart --

A Yes?

Q -- which is marked Exhibit 30, north of Caribou there is on this chart a 6-fathom sounding?

A Yes.

Q And there is a pencilled circle drawn around that?

A Yes, sir.

Q Was that done in your hand?

A Yes.

Q For what reason, Captain?

A When the second mate was up and the first mate, we were reliving, and I explained to them why I wanted to steer up to the 125 to stay clear of the 6-fathom.
Usually on that -- in this shoal of water with the
sea building like it was under larger seas --
Q So you circled that to explain it to the mate?
A Right, both mates, first mate and the second mate.
Q Yes, sir.

Now, based on your observations, and I realize that
you never -- you stated that you did not take a radar fix
on the Fitz, and you didn't track her, but based on your
observations at that time and everything else, do you believe
that the -- do you think that the Fitz may have gone over that
spot?
A Eyeballing her down there, all I can say, it's clear
she was closer than I would want to be.

Here again I can't be definite, but -- and I think when
you talk to my mate he will tell you, he will give you the
same, it was an impression that we had that she was in too
close.

I can't say specifically we were looking at it, we
were eyeballing her going in there near Caribou Island.
Q You mentioned at one point based upon your previous
occasion when you were talking of pumping, and I am probably
putting words in your mouth, it's been quite a while ago,
but something to the effect of a vessel with, I think, a
crack and pumping it out. Did you have an experience like
that before where you had a vessel --
A. Yes, where we pumped and it didn't change the level in the tanks because the water was running in as fast as it was running out and we maintained the level of our draft on this particular ship.

Q. At that time were the vents open?

A. There were no vents on that particular vessel.

Q. No vents?

A. It was a different type of ship.

The vents didn't come through the deck, they had an opening lower.

I think you will remember some of the older vessels. This is where we could go down and put screw plugs into them to shut them off if any such occasion arose; you could go into the cargo hold and put the plugs in.

Q. Captain, if you had an opening to the sea below the water level and you put your ballast, pumps on without opening the vents, what do you think would happen?

A. Without having the vents open?

Well, we would pump so long and eventually you would create a vacuum and at that point conceivably pull your tanks in.

I don't know how much pressure it would take, it would take somebody who knew strain and design and vacuum-wise to do this.

We have had experience with tanks blowing the other way.
You put water in and expand the air and the tank would bulge, so I would assume it could go the other way, too.

CAPTAIN ZABINSKI: Captain, if you would confine your answer as much as you can, we can press this right along.

Thank you.

Q During your experience, have you ever had occasion to see or hear of a fence rail snapping due to the hog of a vessel?

A No.

Q I thought you had mentioned that, and that's why I asked.

A I believe I did mention it. I said I would think it would be a distinct possibility that if a vessel hogged enough, it would have put a strain, where it could snap a cable conceivably. In fact, it would be broken this way (indicating).

Q Again, based upon your knowledge, possibly your experience, what would you expect the handling of a vessel or the behavior of it to be if you did have one off center, one of your ballast tanks filled or partially filled with water up to, say, your load waterline?

A Well, in heavy weather, now, here again, I assume that if you had a starboard list, the seas are coming from the starboard side, depending on how much list he had, and he
would be taking an awful lot more water, because he would
have a certain amount of water. His port side would be
under the water. The low side, which was a starboard list,
which I assume it was, this is where the sea was coming.
Then, you would say that the water would be hitting him much
harder and coming aboard in a greater volume, because his
freeboard is less on that side.

Q  Would it change the steering and handling of the vessel?
A  I think it would depend on the amount of the list.

REAR ADMIRAL BARROW: Captain Zabinski?

EXAMINATION

By Captain Zabinski:

Q  These are questions from parties in interest.
    Captain, do ships report their movements during a
    storm? Are they required or do they as a matter of course
    report their positions to anyone?
A  Yes. We make out a position report to our office.

Q  But I mean during storm conditions, do you make, as a
    matter of practice, is there any requirement to report your
    position periodically?
A  No, not at this time of year. Later on when the ice
    starts, then, we will report, but generally only ships, when
    they happen to be in an area of a storm, usually they are
talking back and forth.

    So if you are monitoring your conversations and paying
attention to what is going on, you know who they are, whether it is snowing or what. So you do keep pretty good tabs on them.

Like we monitor six on one and monitor sixteen on another phone.

We try to monitor and keep on top of every conversation, which involves us in that particular area.

Q. So they know where you are and you know where they are?
A. Primarily, yes.

Q. Would you know how many ships or what ships may have taken shelter during the storm, if you know?
A. I found out later that the Blough II under the Isle of Royale, in other words, he laid in the protection of the beach from the wind, but the wind wasn't as severe out there. He didn't want to come down into it after he got the reports that we were putting into it.

He probably heard us talking, I would imagine.

Q. Are there any requirements for ships that are unable to hold at anchor to make reports to the Coast Guard or anyone else?
A. Not unless they are going to be getting in trouble, because sometimes the Coast Guard will hold you to anchor.

If it starts to drag, you would have to notify them to the effect that you have to move anchors.

Q. When would they tell you to go to anchors?
The Corps of Engineers closed the locks this time, and the Coast Guard advised all the ships to seek anchorage in a safe place in as short as possible time, which is common practice for fog also.

Q. Captain, what was the time lapse between your receipt of the message from the Fitzgerald and her disappearance from the radar?

A. Do you mean the first time?

Q. Yes.

A. About three and a half hours.

Q. Well, assuming the Fitzgerald was loaded and proceeding in the same area that you were, the same sea and wind condition and the Master had reported that he had some difficulty, he was experiencing some difficulty, his ship was listing and possibly taking on water and caps were missing, would you say, based on those given facts, that the vessel was in some trouble?

A. At no time did he -- the mate talked to him several times, and the one time I talked to him -- at no time did he initiate a call or state that I have got more than a problem.

In other words, when he told the mate that I am holding my own, you have to assume he has no problems. He is only 15 miles from Whitefish. He is going home.

Q. If you were faced with the same problems on your ship,
would you consider that you had problems?

A. Under the same conditions, yes.

Q. What do you think, and I am asking you for an opinion, what do you think a master should do to protect his crew under those conditions, knowing that he was experiencing difficulty?

A. I don't believe that he really knew it.

Q. I am saying, what would you have done?

A. If at that time Captain McSorley knew that vessel was in danger, I know he would have went right up on the beach in Caribou, because he was in that position. He would have put it on the beach. I am sure of it.

Q. But what in your judgment should a prudent master have done to protect his vessel, knowing he was in trouble?

A. In the position he was in, he should have run down there and put it on the beach in the best lee he could find.

Q. Should he have alerted the crew that there was a problem?

A. Oh, yes. Lifejackets should have been on and things should have been prepared as much as possible.

Q. Even though it may not have happened?

A. Yes, but you can go by word of mouth real quick and have everybody alerted real quick.

REAR ADMIRAL BARROW: Thank you. Commander Loosmore?
EXAMINATION

By Commander Loosmore:

Q. Captain, there are three different versions of tracks here, 28, which is up there, 30, which was the chart that you used on board the ship, and 38, which is an expanded view of that area.

A. Right.

Q. In the course of your questioning with Mr. Murphy, it appeared to me that you perhaps changed your interpretation of the information that you plotted up there?

A. Yes, I did.

Q. Is that chart and the plots that you did, were they plotted consistent with your turn beam of Caribou or before your beam of Caribou?

A. Well, it is both. Before I got a beam, part of it is and part of it is below it.

Q. Which chart are you indicating?

REAR ADMIRAL BARROW: Which chart are you referring to?

COMMANDER LOOSMORE: Lake Survey 9, 28.

A. We were steering a divergent course from the Fitzgerald from where he was down here until the time --

Q. Circle 37?

A. -- until the time we got back on course from here, and he was under our heading flasher, or close to our heading
flasher.

We didn't plot him in here, but when we came down and made this maneuver, he was also dead ahead of him.

Q. I am concerned about whether the lines that are drawn on this chart, Exhibit 28 for identification, are consistent--

A. With this one?

Q. With your final explanation of the courses as shown on this chart, which is Exhibit 30.

Do they agree or not?

A. Yes, they agree, with the exception that this 30, a line comes back. This is what I told you about the one entry, where they logged it --

Q. But you didn't say anything about an entry they forgot to log, when you plotted that in the beginning, and that is precisely why I am asking the question.

Let's eliminate a replott of 28.

A. I was just going to recheck.

Q. Let me go to 38, which is the large scale.

Captain Cooper, does this include the course change that was not logged?

A. Yes, it does. We hauled her and logged this.

Q. And that is marked --

A. I don't know what the time was.

Q. You hauled 2141 T?

A. Yes, true, but this was taken abeam on the 141 course,
so you have the difference of this much.

Q. Would you mark that point with a circle and mark that No. 9 and mark the next point with a circle -- mark a line across the course line.

Circle that and mark that No. 10.

Now, what is No. 9?

A. That's hauled to 141 degrees true.

Q. Is that the location at which you made --

A. I made the haul.

Q. Your best estimate?

A. Seventeen and a half miles from the northeast tip of the island.

Q. And what is circle 10?

A. Circle 10 is 6 miles of the northeast tip of Caribou Island on a 141-degree course.

Q. Is that when you were abeam?

A. Yes.

Q. On a 142 heading?

A. Right.

Q. Is the latter No. 10 in the log?

A. Yes, and it was made all in one entry. In other words, he didn't log this one.

Q. That's the next question. Is No. 9 in the log?

A. No.

Q. Is No. 9 the course changed that you say is not in the log?
That was our position on the 130 course.

Okay. Fine. Thank you, Captain Cooper.

We had one additional exhibit that I think we wanted to get into the record.

A.

No, not that one. It would be at right angles to 130 degrees.

---

That is a dead beam bearing on a 130-degree course, 7.7 miles.

One other small point, and I realize that you are plotting on a table and so forth, but how did you determine this point, which I would ask you to circle and mark No. 11?
That would be the 9th and the 10th and the bell book for the same period of time.

COMMANDER LOOSMORE: I believe that would be 39.

REAR ADMIRAL BARROW: How many pages?

COMMANDER LOOSMORE: We can cover that in two pages. That would be 39-A and 39-B.


(Exhibits 39-A and -B were marked for identification and made a part of the record.)

COMMANDER LOOSMORE: Captain, I am going to need some help.

THE WITNESS: I probably will, too.

REAR ADMIRAL BARROW: Off the record.

(Discussion had off the record.)

REAR ADMIRAL BARROW: Back on the record.

We have marked for identification the engineer's bell book covering the period of time from Two Harbors to Whitefish. That would be marked 40 for identification.

(Exhibit 40 was marked for identification and made a part of the record.)

COMMANDER LOOSMORE: 40, yes, sir.
MR. MURPHY: In view of the additional questions that were asked by the Board, may I just ask one or two more questions?

EXAMINATION

By Mr. Murphy:

Q Captain, you were asked a question by Captain Zabinski about what you would do with respect to putting on life-jackets if there were some concern in a storm such as that that you experienced, you would expect the vessel to be pretty battened up, would you not?

A Oh, yes.

Q Meaning that doors would be all closed tightly to keep the water out so you really don't have any way of knowing whether they did or did not have life-jackets on?

A No, no. He was asking me on the presumption of what I would do on the particular instance.

Q I understand that.

A Yeah.

Q And secondly, I am interested in your comment about beaching the vessel at Caribou.

Again I think your testimony is you didn't think the man knew he was in trouble?

A Very definitely.

Q But in terms of practicality, I think you stated it would be impossible to turn the vessel around down in that
area.
Would it have been conceivable, was that your
testimony?
I am just concerned with what you said because of the
weather and because of the seas that were so bad. I didn't
think that you would turn the vessel around.
A That the Fitzgerald in that particular area at that
particular time, but when you do, you do come -- you will
lie out 350 degrees and you do need a little bit of a lead
where the seas would allow, you don't have that much if you
have a fetch, you would have to make your mind up in a hurry.
Q If he knew he was in trouble?
A You are talking about me and my ship. If this was it,
and I knew it, yes, regardless, I think I would do it; but
as a rule, if we are beam end over or not, you have to try it
if you figure you are in kind of trouble and you have less
strain than you are rolling then you do when you are heading
into a seaway.
Q Captain, based on everything that you saw the day you
were out there and out of your knowledge, do you think it's
possible that you might hit bottom and not have known it?
A I have thought about that and I -- I can't believe it --
I can't somehow believe it after watching my ship perform
there because the Fitzgerald was not that much shorter than
my ship, with the minimum amount of pitching that we were
doing and so minimal a roll that it was hardly noticeable
and riding on top of three waves, as I observed, I can't
feature -- I think if she was drawing 27 feet at this
particular time and she wasn't setting, and we had over 29
feet of water, with the way the seas were.

Q Of course it is possible. My question was was it
possible?

A If there is --

Q In your opinion.

A We have uncharted shoals that probably claimed a lot
of ships.

It's possible that there was a shoal there or a high
spot, maybe a sand has built up.

There is always the possibility.

MR. MURPHY: Thank you, Captain.

REAR ADmiral BARROW: Did you say there was a
shoal?

THE WITNESS: I said there is always
the possibility. I know of one other instance we
found a shoal where a ship was supposed to be in good
water.

MR. MURPHY: No more questions.

REAR ADmiral BARROW: Captain Cooper, for your
work that you have produced here today, we need a
signature from you and today's date on each one of
the charts which we will make part of the exhibits.

May we do that now?

THE WITNESS: Sure.

REAR ADMIRAL BARROW: If there is no objection

on these specific items which we have identified, being

Items 28 through 40 --

MR. MURPHY: No objection.

REAR ADMIRAL BARROW: 28 through 40, unless you

have an objection, I would admit them into evidence.

MR. MURPHY: No objections.

REAR ADMIRAL BARROW: Captain, for all of your

very forthright testimony, we thank you for coming.

I would like also to, and I am sure on behalf of

many people, express appreciation for your activities

in support of the Fitzgerald; and when called upon by

the Coast Guard for your work in proceeding back into

the Lake and searching people there from the

Fitzgerald, we thank you very much.

THE WITNESS: Well, I just hope I have

helped.

REAR ADMIRAL BARROW: Thank you, sir.

MR. KEENEN: Is he free to leave now?

He has a vessel in Conneaut.

REAR ADMIRAL BARROW: Yes, sir.

MR. KEENEN: Thank you.
REAR ADMIRAL BARROW: We will take three minutes and call the next witness at that time.

(Recess had.)

REAR ADMIRAL BARROW: Let the record show that we reconvened at 1813.

Counsel for parties in interest are the same as when we commenced this morning.

Commander Loosmore, call the next witness.

COMMANDER LOOSMORE: Yes, sir.

The Board will call Malcolm Clark.

REAR ADMIRAL BARROW: Morgan Clark.

(Witness sworn.)

COMMANDER LOOSMORE: Would you be seated, please.

MORGAN E. CLARK was called as a witness and, being first duly sworn, was examined and testified as follows:

EXAMINATION

By Commander Loosmore:

Q Mr. Clark, would you please state your name and your address and occupation?

A My name is Morgan E. Clark. I live at 23344 Shenandoah Drive, South Bend, Indiana.

I am First Mate on the Steamer Anderson.

Q Do you hold a Coast Guard License?

A Yes, sir.
Q. Would you describe it, please?

A. I hold a Master of Steam or Motor Ship, any gross tons, upon the Great Lakes or connecting tributaries, and also a First Class Pilot's License between Duluth, Gary, and Buffalo.

Q. Do you have your license with you?

A. No, sir.

Q. How long have you held such a license?

A. 1951.

Q. How long have you been sailing as First Mate on the Anderson?

A. On the Anderson, well, this season since around the 22nd of May.

I went aboard in the shipyard in Superior, Wisconsin.

Q. How long have you been sailing the Great Lakes?

A. The Great Lakes, this will be -- well, this is my thirty-first year, but I had two years out for Service, so it would be 29 years.

Q. And of those 29, how many were in a licensed capacity?

A. Well, six years, it would be about 23 years.

Q. Twenty-three years.

Mr. Clark, would you describe as best you can your connection and your role as the First Mate or anything else that you know about the incidents which occurred to the Fitzgerald on the 11th of November of this year?
A. You mean from the time I came on watch at 1530?

Q. Start at the time when you came on watch.

A. 1530.

CAPTAIN ZABINSKI: This is on the 10th?

THE WITNESS: Yes, sir.

By Commander Loosmore:

Q. On the 10th of November, excuse me.

A. Actually, I came -- it was before, because I came on the watch at 1530 to relieve the second mate and I was up there a couple of minutes before that and I walked in the pilothouse, I went in the chartroom and got a cup of coffee and when I came back to relieve the second mate he was just logging that they were at abeam of the Michipicoten, west end light, and at that time they were bringing over a course, they were going to lay a course for 125 degrees.

They were talking about steering a course of 130 but the Captain was explaining with a circle at the sixth fathom, light, he said that we will steer 125 to make sure we stay away from the sixth fathom.

That is the time I came on watch.

Then, well, I was on watch till I got relieved for supper at approximately 1620 or maybe a little bit later than that, and then while I was back for supper, half hour, which was at least a half hour because I was slow getting off of the bridge on account of the water.
When I came back, the second mate, I relieved him
and we were at the north tip of Caribou, and by that time
they were on a 120-degree course and I double-checked, had
both radars going and I double-checked with Caribou
and then I put on the direction finder.

At the time the Caribou Island light wasn't working at
this west end and I was double-checking the position we were
in, and I was relieving the second mate and that was just --
everything checked out, what they had, so the Captain said,
"We will steer 142 degrees," and, well, we stayed on 142
degrees all the way through to Whitefish Point.

Q  Did you at any time during this period talk to the
Fitzgerald on the radio?

A  Yes. He called me -- can I look at my notes?

Q  Please, sir.

Do you have some notes?

MR. KEENEN:    Radio logs.

THE WITNESS:    I have them here, it

is the same difference it's the same paper I gave you.

By Commander Loosmore:

Q  Did you use a radio log?

A  Yes, it's the same as the radio log.

COMMANDER LOOSMORE:    The witness is referring
to Exhibit 35-B.

A  All right, at 1701, until 1701 to 1702 I gave the
Fitzgerald his position from Caribou Island.

He called up and said his radars wasn't working, that both of his radars was out, and if we would keep track of him, and I said I would. At any time he needed a position fix or anything like that I would give it to him upon request or would watch him on the radar.

And at that time I think on the original chart there is a dot where I took the readings off of Caribou Island. We had both radars going, we had both radars going.

I laid our position and at that time he was 15 minutes ahead of us.

Q Now, Mr. Clark, I hand you what is Exhibit 30, which is supposed to be the original chart which was in use.

Can you identify that dot?

A Right here (indicating).

Here is our position (indicating).

Here is his position (indicating).

Q All right, hold that.

MR. MURPHY: Show me.

THE WITNESS: Right here (indicating).

His position at this time is right here (indicating).

MR. KEENEN: Do you want him to put it on one of your charts instead of our original?

COMMANDER LOOSMORE: That is exactly what I am going to do.
MR. KEENEN: All right.

By Commander Loosmore:

Q. What I'd like you to do is to lay this chart back down here and if you could plot each of those positions on Exhibit 28, which is up there.

REAR ADMIRAL BARROW: Shall we go off the record while he is plotting that?

(Discussion had off the record.)

REAR ADMIRAL BARROW: Back on the record.

Commander Loosmore, you may continue.

By Commander Loosmore:

Q. Would you describe what you have plotted now here on Exhibit No. 28?

A. Well, the Fitzgerald called and I wanted a position, so, as I say, I took this reading plus if it was still snowing at the time near Caribou Island and it was starting to break through the snow squalls and I took this reading off of both of our radars, which checked out, I think, it was within one-tenth of one another, and I laid our course out off of Caribou and at that time it was 15 miles.

Q. The reading that you took from Caribou Island was a radar bearing or a radar range?

A. That would be the bearing I got off of Caribou Island, off of both of our radar sets.

Q. Did you measure this by a radar range and bearing?
Q. How did you determine your position?
A. By this here (indicating). We were steering 141 degrees. I put our curser on. I put both of them on, both radars. I used our range marker to get it. This time, I was picking up Caribou Island light. It was showing on both radars. I measured that on both radars, on our range markers, and came up with this position here.
Q. For the record, you came up with this position here on Exhibit No. 30, and how did that position get there? Is this the position which you have just transferred?
A. I transferred it on Exhibit 28.
Q. And we are referring now to the position marked Circle 11 on Exhibit 28?
A. Yes, sir.
Q. Now, at that time, where was the Fitzgerald?
A. Well, the Fitzgerald was 15 miles ahead of us, just a shade to the left of our heading marker. He was just 15 miles, so I laid his course out and that is where the other dot came from on the dot and I laid his position off of there to Whitefish Point and then I called the Fitzgerald and told him that his position was 35 miles from Whitefish Point and at Whitefish Point, the light was 144 degrees from his position.
Q. From the position to which you are pointing out, which is marked Circle 12?
A. Yes. He didn't answer right away, as though he was trying -- I assumed that he was calculating 35 miles times he was steering 141, so 141 times 3 degrees, because then he came back and answered. He says, well, that looks fine because, he says, "I want to be two, two and a half miles off of Whitefish Point," which with drift would have taken him around two or two and a half miles of Whitefish Point at that time. So that was the end of the conversation here.

Q. Okay. Did you have any other conversations with -- excuse me. Let me make one more other point.

How far, approximately, east of Caribou Island was position No. 11?

A. I think I measured it off at 8 miles, 8 miles at the time. I would have to recheck it.

Q. Would you recheck it, approximately, please?

A. Yes, sir.

(Pause.)

Q. Are you ready?

A. It's around 4 to 5-tenths east, just about due east. I think it's 88 degrees from Caribou Island.

Q. That was the Fitzgerald's position? Is that what you are giving?

A. No, sir. That was our position at the time the Fitzgerald was asking for a fix on his position.

COMMANDER LOOMORE: For the record, that
position is off the track on Exhibit No. 38, so it
can't be plotted there.

Q. Was that the first time you had talked to the
Fitzgerald since you had gone on watch?

A. No. There was one other conversation in there that
I had in my notes.

I thought I had it logged in the radio log. No.

That was the call there.

That's when the Captain of the Fitzgerald -- when I
looked up at the clock, yes. There was one other call in
here that I have in my other notes. It was around --

Q. Go ahead and refer to your notes.

A. It was around 1610 to 1615. It was about five or ten
minutes. That's when the Fitzgerald called and asked if we
would keep track of him, because his radars weren't working.
He just used the plural, that they weren't working for him,
and I said that I would keep track of him, or if I had seen
anything coming, I would notify him.

Q. Did you have any idea to whom on the Fitzgerald you
were talking during either one of those conversations?

A. I don't know the men for the company of the Fitzgerald,
but I heard, which we assumed, was the Captain when he called
about the damage earlier in my watch.

We assumed it was the Captain, because he said --well,
the way he talked. "I have lost a fence." and I have got a
list," and stuff like that.

Q Would you tell us about that call? You haven't mentioned that yet.

A That came within the period of 1530. When I looked up after the conversation was over, Captain Cooper said that it was around 1530, which it was, but we come within three minutes of one another or four minutes of the time.

After the call was over, I looked up at the clock, which I was busy, because I was checking our position on Michipicoten and everything on radar.

Q Let's go back.

You arrived on the bridge in the wheelhouse at 1520?

A Yes, sir.

Q When was the first time you heard from the Fitzgerald?

A Approximately a little after 1530.

Q And what was the gist of that conversation?

A Well, I heard the Fitzgerald call the Anderson. At this time I was over at the chart table rechecking a course on the six fathoms.

The Fitzgerald called the Anderson. As I turned around to answer the phone, the Captain was over looking in the centimeter radar.

He turned around and picked up the call.

So I continued and started to work on the chart until I heard the Fitzgerald say he lost some fence rail.
Q. If the Captain was talking, how could you hear the call?
A. Because it comes over the loudspeaker.
Q. It was loud enough to hear both sides of the conversation?
A. Yes.
Q. Clearly?
A. Yes.
Q. What did you hear?
A. He told the Captain he had lost some fence and that he --
Q. Back up. What were the first words that were said? Was it, "This is Fitzgerald," or "This is the Captain," or tell us as best as you can.
A. He never identified himself as a captain, but, as I say, the way he was talking, he said, "I have lost some vents," or like, "I have --" he said, "I believe that we have lost two air vents." He said, "I have." If it was a mate, I don't think he would say, "I." He would say "We," or in that respect.
Q. So that conversation took place at 1530 or so?
A. A few minutes after 1530.
Q. Did the Fitzgerald inform you that they had a list and a problem with the fence?
A. Yes.
Q. Did they ask the Anderson to do anything?
A. The Captain of the Anderson?
Q. Either that or the ship.
A. No. He said he wanted to know, he said if we would check down and stay with him. Captain Cooper said, "Yes, we'll check down and stay with you."
He said, "Have you got your pumps going?"
He said, "Yes, we have got our pumps going," and there were a few other things said, but as far as the conversation, that was about it.
Q. Can you recall what the other things were?
A. No. It was just general talk that the Fitzgerald said he would check down and Captain Cooper said, "Yes, that would give us a chance to close up or watch out for you."
Q. What do you mean when he said he would check down?
A. Well, I assumed that he meant --
Q. What did that mean to you?
A. That he was going to cut his revolutions, because under normal conditions, he is a little faster. He was going to give us a chance to close up.
Q. How fast was the Anderson going at the time?
A. At that time when we figured it out, it was between 14.5 or 14.6 that we were making down there.
Q. Is that full speed or reduced speed?
A. That's full speed.

Q. When was the next time you talked to the Fitzgerald?

A. I called him at 1820.

Q. Again, referring to Exhibit 35-B?

A. At 1820 I called him, because he was working -- when we had squared off abeam of the north tip of Caribou Island and came down at 141 and held at 142, he was, for all practical purposes, right dead ahead. All right?

At 1620 he worked from dead ahead to maybe --

Q. At 1620 or 1820?

A. At 1820 I mean.

Q. All right.

A. At 1820 he was working just a shade to the left of our header mark.

So I called him up and asked him, I told him that he was working a shade to the left of our header marker, and I said, "What course are you steering?" And he said, "141."

At that time I said we were on a 142 course and we were holding up at 1 degree.

I said, "You are widening out a little to the left of our header mark."

That is the time he told me that he was steering 141 degrees.

Q. Okay. Did you discuss the problem, the problems he had mentioned earlier in that conversation?
A. Do you mean about the list?

Q. About the list and the vents.

A. That problem was never brought up to us. At the
times I talked to him, it didn't seem like there was that
much concern.

Q. Are you saying it was never mentioned again?

A. Yes, one other time, but I was the one that mentioned it.
That was at 1900. No, it was the last call that I made
to him at -- around 1906 or 1907.

Q. Okay. We have a call at 1530 and one at 1710 and
one at 1820.

What was the next call?

A. At 1900. At 1900 on our radars, I was picking up
the Highland at Crisp Point.

I took the reading of the land from our position, and
at this time the Fitzgerald was 10 miles ahead of us, I
would say a mile and a half or two miles to the left of our
marker.

I said, "We have a good idea how we are heading on
Whitefish Point with you," but we couldn't be sure, because
the radio beacon wasn't working.

The Fitzgerald was a mile and a half ahead. At this
time he was 15 miles from the Highland of Crisp Point.

Q. Did you plot the Anderson's position and the
Fitzgerald's position in order to obtain that position of
the Fitzgerald relative to Crisp Point?

A. I plotted the Fitzgerald's and drew it out to see how far he was from Whitefish Point.

Q. Does a marker exist on Exhibit 30?

Is there a mark on this chart, Exhibit 30, which indicates the Anderson's position at the time?

A. The Anderson's position, no.

Q. Is there any other mark on this right now which indicates the whole sequence of telephone calls, radar bearings and ranges or whatever else you did in order to determine where the Fitzgerald was at that time?

A. No, as I say --

Q. You are indicating northerly-southerly direction?

A. Yes, south, yes, sir.

The Fitzgerald at this time, as I say, was about a mile or mile and a half to the left of our header mark.

Q. To the left of your header mark?

A. On the port side, yes.

Q. And he was just 10 miles ahead?

A. Yes. I then plotted his position. I called him up, and I told the Fitzgerald, I said, "I am picking up the Highland at Crisp Point. We're 25 miles from it, and you are 10 miles ahead, and you are 15 miles from Crisp Point."

You see there is a mountain in back.

Q. Indicating on Exhibit 28 the landmast just below the
red light, the red mark indicating Crisp Point.

So in order to determine this 1920 position, you
didn't do any plotting at all?

A. No.

Q. Was there anything else in that conversation of 1920?

A. Yes. I said to him, I said, as I say, he was 10 miles
ahead of us.

He only had less than -- he had the 10 miles that he
was ahead of us to go. I made the remark, I said, "It
won't be long now, until we have it made."

MR. MURPHY: Excuse me. I didn't
realize this was a 1920 conversation.

COMMANDER LOOSMORE: I am going to get to that.

THE WITNESS: 1900.

COMMANDER LOOSMORE: He originally stated it
was 1920.

THE WITNESS: It was originally 1900.

By Commander Loosmore:

Q. All right. We had an 1820 conversation?

A. Yes, sir.

Q. What's the next conversation that your radio log
indicates?

A. At 1900.

Q. At 1900?

A. Yes, sir.
Q. And what did you do at 1900?
A. That's the time I gave him his position from Highland to Crisp Point.
Q. You previously called that 1920?
A. I meant 1900.
Q. That happened exactly at seven o'clock?
A. Yes.
Q. What else went on in this 1900 conversation?
A. We were talking. As I say, I said, "Well, you haven't got -- " or "We haven't got far to go now."
I said, "We will soon have it made."
He said, "Yes, we will." Just before I hung up, I said, or before I signed off the telephone, I said, "It is a hell of a night for Whitefish radio beacon to not be operating," and he said, "Yes, it sure is."
And that was the end of the conversation.
Q. He didn't mention the other problems at all?
A. No, sir, there was nothing; he mentioned nothing to me.
Q. What was the next conversation?
A. About 10 minutes, I was watching the radar and right ahead -- well, I would say I called him within approximately 10 minutes after that, but when it first showed up, it was a target that popped up on the radarscope that was about 19 miles ahead.

I watched it for a minute or so to make sure that it was a steady target.

So after, I found out that it looked like a ship coming, I called the Fitzgerald up and at this time he still -- well, it was still under the 10 miles. I didn't measure it for the exact distance, but 10 minutes elapsed there that we had been gaining on him because he was supposed to have been waiting for us to catch up.

So I told him there was a target 19 miles dead ahead of the Anderson. I didn't say Anderson, but I said "Dead ahead of us," and I said, "You are ahead of us, so the target is nine miles on ahead."

Then he asked me, he said, "Well, am I going to clear?" and I said, "Yes."

I said that the way he is working when I found him there and everything, it looked like he had crossed just a little bit more under our header marker.
I said, "He is going to pass to the west of you,"
and he said, "Well, fine."
I just started to sign off the phone and, as an after-
thought, I said to him, "Oh, by the way, how are you making
out with your problems?" and he said, "We are holding our
own."
That's the only thing he said. I said, "Okay, fine.
I will be talking to you later," and that was the signoff.
Q. During this conversation, did you plot any position?
A. No, sir.
Q. Of yours or his?
A. No, sir, but it was right after that I gave him
within 10 minutes of when I was picking up the high land
at this point.
Q. All right. Did you have any further conversation with
the Fitzgerald at all?
A. No, sir.
Q. Could you describe the sequence of events from the 1910
conversation until you had gotten to Whitefish Bay?
A. Well, in fact, I think I might have still been
on the phone, but I could hear the captain come in.
He has an inside stairway from his office to the pilothouse
and you could always tell when he opens the door because
there is a breeze that comes in through the front window.
And he was up on his way to the pilothouse just about the time
that I signed off this conversation at 1910.

About that time I turned around and I was looking, and I could see the lights of the ship that I had been picking up on radar, which at that time was probably up around 17 or 18 miles.

So the Fitzgerald was still showing on the radar and I made the remark as the captain was just walking up, and I made the remark to the wheelsman and the watchman up there, I said, "We should be able to see if that is the Fitzgerald."

We could see the guy coming and so the watchman, he was standing over there looking and everything, and the captain, we all started looking, and we never seen no navigation lights or no lights of any kind.

When this salty had broken through, it had been snowing, and when we could see the lights of the salty, that is when I made the remark and that is when I had the glasses. And the watchman was looking.

I had the glasses and I thought maybe he had a blackout or we could see a silhouette or something on the horizon, but then I told the captain -- well, not told, but we started discussing that we should see his lights and then we started calling him, and I must have made, I don't know, six or seven calls at that time and everything, and I couldn't get ahold of him. And the captain tried
to get ahold of him.

In the meantime, when we got around, say, nine miles, that is when we had lost them in the sea return, and I was trying to do everything with that Calvin Hughes and I was using the compressor and everything, and he disappeared. And I was trying to get a target and I could never get a target.

I didn't actually measure him because we was looking, but it was around eight or eight and a half miles or so.

Q. You just said "disappear."

A. Well, I mean there was so much sea return, I was trying to adjust the radar, cut down the gain, do everything, you know, try to -- because on those radars if, just like if you are going up to a point of land, say you come to Blake, Michigan, Big Suba, Little Suba, if you cut the gain down, the only thing that will show is the land or the point so that is the same thing that I was trying to do with the radars; cut the gain down on a solid mass, I couldn't, there was so much sea return.

Q. Okay. But you said you had a pretty good radar contact with the Fitzgerald?

A. Up around 10 miles; yes, sir.

Q. Did you ever see anything that looked like a radar contact once the range cut down?

A. No, we had something around six and a half, seven miles
that the Captain and I discussed but it would hold, maybe
two sweeps, and then it would disappear and the next time
it would show up and it would look like it was a contact
but it would be changed too much of a position, say,
you had like 40 degrees only -- but it held for maybe
two sweeps and then maybe the radar might make five sweeps.

If it would show up as a solid mass, again, it
would be like a back beam and it would hold it, a sweep,
and then it would go, maybe you'd get another solid target,
say maybe 40 degrees again, which was just sea return
showing up.

Q. You are talking about a sweep of one circle?
A. Yes, sir.

Q. Did you try to limit the sweep, look just ahead
rather than all the way around?
A. There is no way we can do that.

Q. All right.

You said that the Captain came up to the bridge just
after your conversation at 1910. How much of this whole
watch was he on the bridge?

A. He was on the bridge, oh, he went down one time for
two or three minutes to pick up a pipe and came back,
then he left the bridge right after I got the 1800 weather
at which time I get it and it takes a couple of minutes.

He was down below for, say, one hour.

Q. What do you mean you got the 1800 weather?
Q. Well, the 1800 weather from -- at 1802, the Mafor.
A. Incoming weather information?
Q. Yes, sir.
Q. Okay. Let's go back to this course change at the Caribou.

Were you the mate on watch at the time that course change was made?
A. I really -- I think if we lay the course change out, I think that the course change was made about the time that the watches were changing for supper at that time because I was plotting after the Captain said -- we had figured whether we were going to make a course change to head to Whitefish Point. We were well clear of the sixth fathom mark.

I wouldn't truthfully say I was prepared for the course change.
Q. Did you make a log entry for the course change?
A. No, sir.
Q. Would you refer to the log which is in front of you? You are talking about November 10th?
A. Yes, sir.
Q. Looking at -- we are both looking at Exhibit 33-D and 33-E.

What log entries did you make on this four to eight watch?
A. The four to eight watch on the 10th, this is just when I signed off the watch at 1950 near the beam of the north tip of Caribou Island, while I was off for supper.

Q. The entry immediately preceding the 1452 entry, is that yours?

MR. MURPHY: 16?

By Cdr. Loosmore:

Q. 1652?

A. No, sir, that is the second mate's because all of my entries in the log book, I print.

That's the second mate's.

Here is the second mate's (indicating).

Q. All right. Who was the second mate on that particular trip?

A. Roy T. Anderson.

Q. Roy Anderson?

A. Yes, sir.

Q. From the time you came on the watch that evening did you ever see the Fitzgerald visually?

A. No, sir.

No, sir.

Q. Did you stand the four to eight watch in the morning?

A. Yes, sir.

Q. Did you see it then?
A. Yes. When I came on watch, 4:00 o'clock in the
morning, the Fitzgerald — well, he was right, practically
alongside of us all watch.

Q. Where were the two of you on this chart?

A. Well, I can show you better on this one (indicating).

After we relieved the second mate we had the radars

going.

Q. Indicating on Exhibit 30 a position roughly south of
the west — of the east end of the island.

A. The second mate told me that it was a course of 55
degrees. When he left actually it was at 42 and I had
the radars and I was getting the course check to make
sure we were in the right position he said we were in.

I measured off this tip which was coming in very
clear on the radar. I marked it with a circle, a little
dot.

Q. Is the circle marked there on the chart?

REAR ADMIRAL BARROW: Which exhibit?

CDR. LOOSMORE: On Exhibit 30, sir.

THE WITNESS: As I say, visibility was
probably maybe not too good, we go down here (indicating)

Q. Okay.

MR. KEENEN: Wait.

A. I am using the direction finder for Passage Island

but as we are going along the break point light here,
this tip of land is showing real good on the radar 
and I take another fix to double-check the fix here 
which it was at 0510.

Q: All right, Mr. Clark. Good, thank you.

Just a little question about how the weather and 
the sea was like. You came on watch at roughly 3:30.

What were the weather conditions and sea conditions 
as you proceeded down from 3:30 until the end of your 
watch?

A: You mean 1530?

Q: In the afternoon.

A: 1530.

Well, I'd say about 1530 the wind -- as the second mate 
said, was still up there, we run our courses, and we were 
talking, and he says -- I had a chart, and the reason that 
we were rolling was just a little this one time, not 
very much, just a little, when we made the course change 
to get out of the last of this Michipicoten, then I 
think it was at 1530 the wind had pretty well established 
itsself at 300 degrees, 280 to 300 degrees, it was in 
that general direction.

Well, you would get gusts and we made a change of 
five degrees but during this whole time the wind never 
got over 280 or 300 degrees.

Q: How far was it blowing?
A. I think in that log I had -- well, the second mate logged it at 58, that was during my supper hour and then I had it at 52 but it was --

Q. What time was it 52?

A. This was at 1590.

Q. What were the sea conditions like?

A. We were getting down by Whitefish Point.

You mean the time I am going off watch or before?

Q. In the middle of your watch.

A. In the middle of my watch I would say that the weather, the sea conditions were about the worst, the wind was gusting; I would take the plots and the wind was gusting, I would say, up to 68 knots or --

Q. True or relative wind?

A. That is true, that is after I took the directions off of our Weather Bureau gauges, we plotted them on a little spin dial.

At that time I would glance up at the wind and I would say it would be registering up to 55, 58 knots, up to sometimes over 60, and we are going 12 knots away from it, so it was like 68 to 70 knots.

Q. And the seas?

A. The seas were, I am not an expert on seas, but 18 to 24 knots, 25 maybe, some were bigger.

Q. Where were they coming from with respect to the ship?
A. With respect to the ship it would be 300 degrees which would be two points or something on the quarter or starboard quarter, because they would hit on the starboard quarter and they would hit right along the deck coming forward.

Q. All right, sir.

REAR ADMIRAL BARROW: Captain Wilson?

EXAMINATION

By Capt. Wilson:

Q. Yes, Mr. Clark, you said that you had the Fitz on the radar at 19 miles and you had a target come out of Whitefish -- I'm sorry -- you had a target come out of another vessel?

A. At 19 miles; yes, sir.

Q. At 19 miles you had the Fitz at 10 miles giving you a nine-mile difference?

A. Yes, sir.

Q. What was the other vessel? Did you ever identify it, the one coming out?

A. Yes; it was three of them in a row, they were salt-water ships, it was -- there was two of them with the same name.

CAPT. ZADINSKI: If you can recall.

THE WITNESS: I know the name if I hear it. There was two of them with similar names.
By Capt. Wilson:

Q. Were either of the vessels the Nan Free?
A. Yes, sir; that was one.
Q. Was that the first one?
A. At this time I didn't know this was the Nan Free, but I heard him talking.

I monitored everything that had been going on in this area and I knew that the Nan Free was in that area and the Fitz, I -- I knew it was a saltwater ship by the lights because all I could see was the navigation lights.

Q. Did you ever establish it was the Nan Free?
A. Yes, sir, the Captain was talking to him.
Q. It was the Nan Free, okay.

Did you ever have a conversation with him or did you overhear a conversation with him at any time subsequent?
A. Did I? No, sir.
Q. You didn't?
A. I heard -- overheard a conversation.

No, I don't know who made the call into the Soo Control by Whitefish Point but Whitefish Point came on the security call that the Whitefish beacon light was not working properly and I think they were -- that Soo Control got ahold of the Nan Free or one of those to verify this.

At this time he was upbound in the vicinity of Whitefish Point.
Q. Okay, fine.

While you were looking for the lights of the Fitz at that time, what lights would you expect to see, given the Fitz' apparent course and yours?

A. Well, with the way that, as I say, the last time that I had definite contact on radar of him, under normal conditions with the snow clearing and even at the time when the salty broke free of the snow, when it started clearing up, the snow was moving from the west to the east --

Q. No, I think you misunderstood my question.

A. Okay.

MR. KEENEN: What lights would you expect to see?

By Capt. Wilson:

Q. Were you looking for his side lights, range lights, or stern lights?

A. I don't know if I could see the side lights because he was still ahead.

We should be able to see his range lights, and under normal conditions we have all kinds of lights on our vessel, cabin lights, he had a lot more lights than we had.

There was sufficient, probably a hundred bulbs on the cabings and decks and we should be able to see.

Q. Okay, what was approximately the height of his range light?
A. The height of his range light, I would have no idea.
Q. Five feet? Ten feet? Twenty feet?
A. The aft range light would be, oh, from the deck up there -- well, overall it would be probably over 50 feet.
Q. You said the winds and the sea at that time were heavy or moderate?
A. No, they weren't moderate.
Q. This was during the heavy seas?
A. Yes, sir.

REAR ADMIRAL BARRON: Capt. Zabinski.

EXAMINATION

By Capt. Zabinski:
Q. Mr. Clark, I'd like to talk to you a little bit about the cargo, okay?

As I understand it, on the Lakes the chief mate, that is his ball of wax; is that right?
A. No, not necessarily unless -- the only time that the chief mate, it would be his responsibility, is if you have a green third mate or a new third mate that doesn't know the loading procedure, but if you have three experienced mates, everyone stands their own watch.

Q. Who on the Anderson now, who designates, and I'm talking now about loading, who designates where the cargo will be taken and so forth?
A. Well --
Q. Or how is it handled?
A. -- we have a loading procedure, that it's -- well, like the Anderson is a real, what we call, as far as shipping goes is a real easy ship to load. It's sort of standard procedure every time, the procedure that we use every time is sort of standard.
Q. Coming up to some ballast on the ship, is that right?
A. Yes, sir.
Q. When you start to load, what would normal procedure be?
A. Well, if we come into a dock and as soon as we get tied back, the Captain will call back on the walkie-talkie for the mate to turn watch, that he's started pumping, 5, 6, 7, 8 ballast tanks, and that is the standard rule if you do start loading, but within five minutes you shut off the ballast tanks, off, but most of the-- 99 per cent of the time, as soon as you get in and get secured, they are ready to load, so you start in No. 24 hatch taking them one hatch at a time going forward, and if they have got a good crew sometimes, they are a little short but they are working with the normal crew of two or three men where one man is doing the sweep spreading the pellets, another guy is closing the gates behind, and the next guy is pulling up the spout.

If you are at say, No. 15 or 16 hatch, you call the wheelsman and sometimes with that close aft, I walk back
to the galley and call the engine room and tell them to
start pumping out all ballast tanks.

Under normal conditions with the pellets that we
are taking and them pumping, we stay just about the same
because under normal conditions they pump out the ship
in, well, we can get three hours, three hours and 20
minutes load, and we come out just about, sometimes maybe
we will have to wait five or 10 minutes but we may have
one tank that is a little slow, and maybe five minutes
you have to wait but we will wait until that tank is
dry before we finish up.

Q. Are there any difficulties with taconite which is
what you carry normally?
A. Yes, sir.

Q. Is there a shift, is there a tendency to shift or is it
pretty stable?
A. As far as I know, I think on some ships we have
roll and everything. I have never known it to shift.

Q. Do you have it peaked or do you try to spread it out?
A. No, I always -- even before we start loading, I
always holler to the dock boss, "Make sure it's spread."

What I mean by "spread," he brings the chute down
there and then about amidships the pellets come on at an
angle and they will hit the outboard side, then they have
the trim lights and when it starts a little light, he
spreads it and brings it back up and by that time we
are back and the ship is holding on an even keel.

Q. During loading is there, do you pay any attention to
the draft of the vessel?

A. Yes, sir.

Q. Or do you only do that when it's finishing up?

A. No, if you do that, you will end up in trouble.

Q. Why is that?

A. If you don't keep track, really you don't know what
position you are in.

If you are -- when I get two runs in the ship, which
you have got the water ballast and the pellet, if you
have these other plates, this same thing, we have draft
gauges.

We have experienced deckhands, most of the times I
will call the wheelsman up forward, "What's the forward
draft," and he will walk over and look at the draft gauge.

Then I will say to him, "What's going on at the deck
gauge?" and then he will give me the draft, and this
corresponds to the gauge up forward, and I do the same
thing aft when what I am doing there is standing about
midships, looking at the gauge draft and then I read it
amidships.

Q. Why is that important?

A. So I don't get a belly in it or get her hogged or
something like that.

Q. What is wrong with a belly or a hog?

A. Well, I am no ship designer, but I can't see where you force one thing down or one thing up that it is going to do much good.

Q. You would strain the vessel?

A. Yes, sir.

Q. So you try very much to keep her level?

A. Yes, sir.

Q. How about when you are all loaded and getting ready to sail, what do you do with your hatches? Is there any part of the year that you sail with your hatches open?

A. No, sir.

Q. How about during the summer when you had all that nice weather?

A. No, no.

The only time that I know of that we have a hatch open and stuff like that is when we take a couple of them over in the river, sometimes, when they are cleaning and scraping and pulling and doing maintenance on the headers and combings.

Q. How about the hatch dogs? What do you do with those?

A. You mean the hatch clamps?

Q. Yes.

A. That secures the hatch and those are all put on.

Q. Are they put on all the time?
A. No, sir; in the summertime when the weather is real good, we will use every other one, loaded, or if there is any weather forecast, they are all put on, but most of the time with the weather in the summer, we will use every other one.

Q. When you are loaded or when you are light?

A. Most of the time, I would say 99 times out of a hundred, you've got them on because I finally found out over the years that it is better to pull them all out the first time around than to mess around with them six hours later.

Q. How long does it take, let's say if you had half of the dogs on and half of the dogs off, how long would it take you to put the others on, let's say?

A. After you had half on, how long would it take her to put the other half on?

Q. Yeah. I am talking about a ship your size.

A. When we are talking about if you've only got half on, really you've got more than half on to begin with because you've got all of the corners on and when you go across the end of the hatch, it would only be two clamps missing in those.

Probably with three men, I don't think it would take them over -- to put the rest of them on, over 15 minutes.

Q. 15 minutes?

A. Yes, sir.

Q. What is entailed in putting one of those clamps on?
A. Well, they are a spring clamp. You have a wrench that they use that they lift. Most of them are right-handed, and they lift the clamp up with their left hand on top of the hatch and you have a bolt that locks it in place in the hatch.

They lift it up and in the meantime they bring the wrench up like this and it has something like a fork and they put pressure on it and it snaps the clamp in place.

Q. That's all it takes?

A. Yes.

Q. How about vent pipes? On the ballast tanks, what do you do with those when you are sailing loaded?

A. Loaded?

Q. Yes.

A. Well, as soon as the water or the ballast tanks are dry at the loading dock, as the Captain stated earlier, we have just one deckhand, which I think has been -- well, it is a policy and I shouldn't say deckhand. It is a policy, really, at the company that those vents are all closed. They will report to the mate on watch.

If I am on watch, he will come to me and say, "The starboard side, all of the starboard side tanks are dry," and the oiler says that means that he shut the pumps off. We don't want to close the vents if they are still pumping, and the oiler says, "I can close the starboard side," or
maybe on the port side.

As I said earlier, maybe we've got one or two tanks
that have three or four inches of water that they are still
trying to get out, and as soon as those tanks are dry,
those vents are closed.

Q. You do this both summer and winter?
A. Yes, sir.

Q. During the wintertime?
A. Yes, sir.

Q. All the time?
A. Well, just when we -- they are open when we are light.

Q. You leave them open in ballast?
A. Yes, sir.

Q. How long does it take to swing a lifeboat out on the
Anderson?
A. To swing one out?

Q. Yes, sir. To secure the covers and everything?
How long does it take?

A. I wouldn't say it takes over three or four minutes.

Q. How many men would it take?
A. On the Anderson?

Q. Yes.

A. Well, two men could do it.

Q. In three or four minutes?
A. Not in three or four minutes; you have got to crank her
out. We have got automatic winches, and we have got cable, but four men on each end, as I say, I think the Captain even said it earlier, you sort of cheat on those lifeboat and fire drills, because when we have emergency drills, the emergency squad is back taking the covers off, and they have the strong backs and everything. That is their duty during emergency to get the lifeboats ready for launching.

Q. So they can get it out quicker for launching?

A. Yes, sir.

Q. Normally, how many men would you use to swing out the lifeboat? As I understand two men could do it, but I mean how many is a desirable number?

A. I think on our station bell there are four men -- I think there are two men -- you see, we only have a crew of -- well, 28. I think there are two men assigned to the forward and aft decks.

Q. And four men could get them out in three or four minutes?

A. Once we have the screw -- you have a crank and after you get it out, we have got cables and electric hoists. The boat is raised by electric hoists.

Q. All right. How many times have you been in a lifeboat in the last year?

A. In the last year?
Q. Yes. Drills or otherwise?
A. Do you mean in the water?
Q. In the water, yes.
A. I don't think I have.
Q. When was the last time you were in a lifeboat, personally?
A. Well, I understand it was probably -- well, I should take that back. There was an inspection this year, and they had it at our spring fit-out, and they had the crew in the lifeboat. Everyone was in it, but the second mate was the one that took them around.
Q. You yourself didn't go?
A. No, I was with the inspector.
Q. You helped them launch it?
A. Yes, sir.
Q. When was the last time you personally were in a lifeboat?
A. I would say it was a little over -- I can't recall.
Q. It has been quite a while?
A. I would say a year and a half or so; yes.
Q. Are you responsible for training the crew at these drills, lifeboats and fire drills?
A. Yes. Sometimes I give them a talk for a fire and boat drill.

Of course, my job is to supervise the launching of one
or two boats, and the second and third mate, they have their check off list, which they have muster lists, which we have the duties of the crew on it and their bunk number, and we always check that off and ask them what the bunk number is and what the duties are.

Q. How about the inflatable rafts; how many of them do you have on the Anderson?

A. As permanent equipment, two.

Q. What kind of releasing gear do they have?

A. Well, I guess you would call it --

Q. Do they have a hydrostatic release?

A. Yes.

Q. That holds them down?

A. Yes, sir.

Q. They are not a float-free type?

A. Yes, sir.

Q. You have to go there and hit the button on it to let them go?

A. Yes. We do carry one. We have one and carry it on our winter run. That would be the float-free. We just secure it.

Q. Have you ever seen an inflatable life raft inflated?

A. Yes, sir.

Q. When was that?

A. Well, it was some time during the summer -- our company
had two men, one a mate and an engineer going around to
all the ships and everything, giving safety talks, and
demonstrations on it, well -- one of the main things
was safety and the breathing apparatus tanks.

On every ship they went on, they brought a life raft
aboard, and we popped it. In fact, I happened to be
over on the Blough when they did it, and every ship had a
life raft popped this year. They all crawled in it and
looked around.

In fact, I think it was probably the first time that
50 per cent had ever seen a life raft inflated.
Q. Do you think it is good training?
A. I think it is one of the best.
Q. Do you feel if you had to use the equipment in an
emergency, you would know how to do it?
A. Yes, sir.
Q. Mr. Clark, one other thing, and I am asking for your
opinion: Something went wrong, obviously, on the Fitzgerald.
Here we have a ship, a big ship, 29 in the crew,
there are lifeboats and life rafts and life jackets,
and we don't have anyone in life jackets.
What went wrong; why couldn't we save someone or at
least find someone?
A. Really, I don't think I am really qualified to even
have a guess.
My own opinion is that after I talked to him, I think it was probably just a matter of 10 or 15 minutes that he sank. I think everything must have happened so fast that everyone was inside.

There was no concern with them at the time I talked to him at 1910. There was no concern of the man sinking.

He didn't give me the opinion; he said he was holding his own.

In that short period of time, I don't know why anyone would be out on the deck in a life jacket. I know on the Anderson we had all of our ports on our doors, all our hallway doors. Everything was secured.

We used our tunnels going aft and everything. The crew said, one man said to me, "I will go and get the wheelbarrow," because some stuff went over the side.

I told him that he better not have the thought of going out there. I said, "I don't care how many wheelbarrows we lose, but I can't replace a man."

So I don't know of any reason that anybody would be out there.

When I talked to him, as I say, at 1910, he said he was holding his own. There was no indication that he was in trouble.

Q Where was this wheelbarrow? Was it on the spar deck?
A Yes.
Q. Do you think if that wheelbarrow had hit one of the vents going into the ballast tank, do you think it could have knocked it off or caused it to be damaged or ruptured?
A. Do you mean my opinion?
Q. Yes.
A. Well, I would say on the Anderson I don't think a wheelbarrow could break our vents.
Q. Why not?
A. I don't know. They must be a quarter of an inch.
Q. What are they made of?
A. Steel.
Q. Are they round or square?
A. They are round. They are mushroom type caps.
Q. How high off the deck are they?
A. I would say they must be 24 or 28 inches.

CAPT. ZABINSKI: That's all I have.

EXAMINATION

By Rear Admiral Barrow:

Q. Mr. Clark, you had talked with someone on the Fitzgerald or overheard conversations on the Fitzgerald on perhaps four occasions or five occasions.
I think you have testified that you did not know anyone there?
A. Yes, sir.
Q. Was the person that you overheard or that you
talked to the same person each time? Could you tell that?
A. Of all the conversations I had over there, there
would only be one that I would have any doubt about, and
that would be the last conversation.
Q. The last conversation?
A. The last conversation that I had -- well, I am talking
about 1910. I am not sure -- I am pretty sure it was the
captain.

He sounded like he was -- as I said, it had been a
long drag down the lake. The skipper had been up and down,
and it seemed like his voice was a little different from
the gentleman who had been giving him his position and had
been talking back and forth.
Q. Are you saying that this one sounded like the same
person, but perhaps tired, or was it a different person?
A. No. I think it was a different person.

As I say, we didn't say really that much. I told him
about the ship coming and everything. The conversation
wasn't that long.

Then, as I say, as I was getting ready to sign off,
we hadn't talked about it recently as an afterthought,
that's when I asked him how he was making out with his
problem. That's what he called it.

You don't like to discuss over the phone that a guy
has a problem. At least at the time he said it wasn't
serious, and he said he was holding his own.

I couldn't swear to it, but it didn't sound like the other guy that I made the other three or four calls to, but it may have been the third mate.

Q. You indicated on all the other occasions the term "I have lost vents" --

A. On that one conversation with the Captain; yes, sir.

Q. Well, I think you also said perhaps that the one you overheard talking with Capt. Cooper -- that's the one I am talking about.

The same terminology was used there?

A. Yes, sir.

Q. The list reported on the Fitzgerald was a starboard list, was it not?

A. On the report I made, I never reread that after I wrote it, but there was never anything established definite that it was starboard.

That is something I assumed; that the starboard side was the side we were taking all the seas; that we were taking everything on, and that would be the side that you would get the force to take off the vents.

Q. So you don't know?

A. No, sir. That just is something that I assumed; that it was a starboard list. I can't say that he ever had a starboard list.
Q. Do mushroom caps have locking devices to keep them from coming off, if you know, if you unscrew them?
A. Do you mean if you screw them all the way off?
Q. Yes.
A. No. If you want to screw them all the way -- which we do every five or six weeks to clean the threads.
Q. There is no locking device if you go counter-clockwise far enough?
A. No, sir.
Q. You can take them off; is that correct?
A. Yes, sir.
Q. Do you recall any conversations with Capt. Cooper some time during the afternoon off of -- when you were still probably to the west of Caribou Island commenting on the Fitzgerald's position with relation to Caribou Island?
A. Yes, sir.
Q. What was the subject of that conversation?
A. Well, at 1520 or a few minutes after, we had got around on our 125 degree course.
At that time I looked up, and the Fitzgerald -- well, I didn't measure him, because there was no reason. Here was a ship faster than us that was going along.
There were no problems. This was before the phone call and everything.
We were on a 24 mile scale, and I know that when I glanced at the radar and I was watching, he was just over the fourth ring up, which would be 16 mile plus, because the range was four miles apart.

At that time I thought he was on a parallel course with us, but after watching him, evidently he had been up high enough that it looked like he was squared off Whitefish Point or whatever distance he was going to pass off Caribou Island.

He started to widen off our header marker when we were on this 125 degree course.

We had the discussion after we came down that 125 track, and he gave the appearance -- now, I won't say how far, because I wasn't watching him really that close, how far he was past the tip of Caribou Island, but he gave the appearance that he was headed more down under the island.

I think myself that that was just an appearance, because when we get over and get on a 141 course, he was right under our steering pole again and header mark, and if he had run this extra distance in the meantime, and made this call that he was going to start slowing down for us to catch up, if he had run that extra distance, I can't see why, because when I took that 61 -- he was still up there at 15 miles.

As I say, when we were squaring off -- I made the remark,
I said, "Maybe he didn't go over there."

I couldn't say one way or the other, but if he did go over -- he couldn't have gone too far.

He had run over that extra mile to get over there, and we should have picked up some mileage because we were going full speed, and he was supposed to be in a check condition for us to catch up.

As I say, when we were on our Whitefish course for all practical purposes, he was just maybe a shade to the right, right dead ahead of us.

Q. Mr. Clark, in response to the question about how you indicated that it must have happened rapidly on the Fitzgerald, you indicated that on your vessel proceeding along, your doors were closed and so forth.

A. Yes, sir.

Q. If, heaven forbid, something had suddenly occurred to the Anderson, you mean no one would have gotten off of there either; is that what you are saying?

A. Well, when I was talking to him at 1910 --

Q. No, I am talking now about something else.

I asked you about how come no one got out and weren't found in life jackets or used a lifeboat or seemed to have used the inflatable rafts; you indicated that the Anderson was going along with all of the doors shut and so forth.

No one was outside or with life jackets on, and I am asking
you now hypothetically, if some unfortunate thing had happened to the Anderson, some immediate thing, are you indicating there would not have been any survivors from the Anderson either because they would have been trapped?

A. Well, in the seas that we were going at the time, I shouldn't say I know, but with the seas that we had, I would say it was impossible to get a lifeboat off. Your only chance would have been inflating a life raft and trying to get in.

I would say you couldn't throw one over the side to inflate it with the idea of getting in it after you got it in the water.

Myself, I think you would have had to take the chance of inflating it at some spot in the position that it was in and just taking a chance of riding it off, because the waves were so big, if you threw the raft over and tried to get in the raft, it might be 2,000 feet away from you by the time you decided that you were going to jump into it.

CAPT. ZABINSKI: Thank you. That's all.

REAR ADMIRAL BARRON: Counselor?

MR. MURPHY: Yes, thank you.

EXAMINATION

By Mr. Murphy:
Q. Mr. Clark, am I correct that you came on watch somewhere in the vicinity of your vessel being near the Michipicoten Island?
A. Right, at the beam of Michipicoten Island; yes, sir.
Q. And you were here when you heard the captain testify that the Fitzgerald was already below Michipicoten?
A. Yes, sir.
Q. So it wasn't necessary for the Fitzgerald to make that jog, in his opinion, or at least he didn't observe the Fitzgerald make any jog?
A. I heard that testimony, yes, sir.
Q. Then assuming -- did you observe as you watched the Fitzgerald in your radar, did you observe her make any course changes before she reached the vicinity of Caribou?
A. No, sir. As I said before, we were on a 125 course going across when we squared off, when I first looked in the radar right after 1520. That's when he was up ahead of us, and he appeared to be on a parallel course, but after watching him for a few minutes, you could see that he was working more down toward the south crossing us, not crossing, but he was just widening out from us.
Q. When you say he was working more down south, you mean working in this type of a direction (indicating)?
A. No, sir.
Q. Would you explain what you mean by that?
A. I think this is that 125 course (pointing).

It seems like he was up in here, that he is maybe -- he is already up in this position that we were shooting for.

Q. In other words, it looks to you like he was working to his port; is that what you mean by more south?

CDR. LOOSMORE: The witness and counsel are pointing to Exhibit No. 28 in the vicinity of Circle No. 3.

THE WITNESS: More to his starboard, to his right.

MR. MURPHY: To his starboard?

THE WITNESS: Right.

By Mr. Murphy:

Q. When it was looking to you that he was working more toward his starboard, where was he with relation to Caribou Island?

A. Well, at the time, as I say, when he was just about ahead of us, when I thought he was steering a parallel course, it was up there about 16 miles.

Well, it seemed like he was starting to work south more.

Well, maybe when we were in here, maybe he has reached the point that we were going to reach at 1652. Maybe he is already squared off for Whitefish Point; but when we were coming here, he is down in here. He is up here. The farthest
point that he got away from us was 17 miles. He is over
16 here. We were down here.

REAR ADmirAL DARROW: I'm sorry, but I don't
think any of that is getting through on the record.

MR. MURPHY: I don't think so either.

I agree with you, Admiral.

By Mr. Murphy:

Q My real question, Mr. Clark, was, and let me state
my question again:

From the time you came on watch until the time that
he appeared to be in the vicinity of Caribou Island,
you did not observe him making any course changes.
His relation to your vessel was changing because you were
making course changes in there.

A Well, that is possible.

Q Right, but you didn't see him change course?

A No, because we wasn't plotting him as far as getting a
plot of him.

Q I understand. Now, assuming that he was in the position
that the Captain described he was, and I think he said two
to two and a half or three miles off of Michipicoten,
when the Fitzgerald passed by Michipicoten, and assuming
that the Fitzgerald did not change course, as he proceeded
down in there, would you just take this, this T square,
this triangle, and use it on the chart that you were
using, and it is Exhibit No. 30, and would you just extend that line and just measure the distance that the vessel would pass off of the Caribou Island, if that were a fact?

I just want to see what that distance would be.

A VOICE: What is the question?

REAR ADmIRAL BARRoW: I'm sorry. I don't understand the question.

MR. MURPHY: I am asking the witness to assume the course that is shown on this chart, which was the chart that the Anderson was using prior to -- let me put it on the board. It might just be easier, so that everyone will understand what I am talking about.

I didn't want to mark it on the chart. I thought it might be a little easier for him to understand it on here.

Now, my point is this, sir: I understand the Captain --

CAPT. ZABINSKI: Why don't we go off the record?

REAR ADmIRAL BARRoW: Let's go off the record.

(Discussion off the record.)

REAR ADmIRAL BARRoW: I think we can go back on the record.
MR. MURPHY: Have we been off the record?

REAR ADMIRAL BARROW: We went off at the time we started picking up that chart.

If you would like to go back --

MR. MURPHY: No, that's all right. I wanted to be sure I knew when we went off the record.

I think it is on the record, however, that this witness never saw or observed the Fitzgerald change course until after the Fitzgerald was below Caribou.

Isn't that correct, sir, Mr. Clark?

REAR ADMIRAL BARROW: Why don't you go ahead, counselor, and ask him the question?

By Mr. Murphy:

Q. Do you understand my question, Mr. Clark?

A. I'd like to ask for a repeat.

Q. All right, yes.

Is it true that you did not observe a change in the Fitzgerald's course subsequent to the time that the Fitzgerald passed Caribou?

A. No; the angle that we were coming across on the 125, the only thing that I could say is -- I don't know if he changed course or what, but when we got down and make our haul for 141 degrees for Whitefish Point, the Fitzgerald is 17 miles, just about dead ahead of us. How he got over
there I don't know.

Q. Thank you, sir.

Let me just ask this: I did have the impression from one of the Captain's answers there was some indication of a discussion between you that the Fitzgerald seemed to move away from Caribou while she was in the vicinity of the island.

Was that a correct impression or am I incorrect, and if so, would you tell me I am?

A. What do you mean by -- I mean, where is he at?

Q. Again I will put it as a question.

Did you say, sir, in observing this on the radar, did you observe any change in the movement of the Fitzgerald herself while she was approaching or alongside of Caribou?

A. No.

Q. All right, sir.

The discussion which you and the Captain had with respect to how close the vessel might have been passing was solely as you have just described it just a few moments ago for the Admiral, that that was the entire conversation?

A. We were in the discussion of that and as I say, one time or at the angle we were or something, we thought it appeared that he was in a position to put Caribou Island over his stern.
Q. I believe that the Captain referred to some notes that were yours and you were explaining.

Would you tell us what those notes are?

If these are what they are identified as, those documents, tell us what that is.

A. Well, this is a scratch -- a piece of scratch paper that when I came on watch at 0300 or 0400 that morning they told me they put up storm warnings and any time there is a lot of wind forecast and anything, it's from my own personal notes, not a record but my own personal use, I can glance back at the weather, and if it starts to get worse, every 30 minutes I plot the weather and the wind down and the barometer, what it's doing.

It's the same way when you are looking at the chart, when they have gale warnings: I draw my course lines and to try to project every hour, I have done that ever since -- I don't know -- 10 years.

Q. Is there any record made any place of these particular entries that you made other than just for the scratch paper?

A. No, that was hanging on a paper clip above our chart desk. That was just a record I was keeping for myself, or if the Captain wanted to see it or something like that, I can tell him exactly what the wind has been doing for the four hours I have been on watch and what the barometer
With reference to the weather calls that were made and the entries that constituted this instance on Exhibits 34-A through D, did you make any of the calls that are reported, the weather ones that are shown on those documents?

A. That one I made (indicating).

Q. What time was that, sir?

A. That was 1840.

Q. And this is on what date?

A. The 2nd.

Q. Let's refer to the days involving the tragedy.

A. All right.

Q. If the 10th is on this, okay. If the 10th is not on this, just say so.

A. No, sir; here is the 10th (indicating).

That is my initials there. We initial.

Q. And calling your attention to what was made on the 10th, what time was this, sir?

A. 1849 to the Duluth Coast Guard.

Q. What do you report the weather at that time?

A. I don't know if I can interpret all this.

Q. Again it is the subject of interpretation and not necessarily simply so many notes?
Yes.

CAPT. ZABINSKI: This is subject to determination what is on that paper, or the observations, what he observed, to make those.

THE WITNESS: If the wind is 180 degrees, I forget where the border line may be, maybe between 178 and 182, that would be Code 18 and the only thing that we do is put down the speed of the wind, this one here, that I sent in that night; the wind was 30, a code figure of 30 which would be probably several hundred degrees at 50 knots --

The visibility was 98, that means -- I think that is five miles, whatever it was.

By Mr. Murphy:

Q. Well, sir, without asking you to go into a whole discussion of this, I just want to ask if you can tell when you made that report whether you reported the actual wind velocity and the direction to be.

A. Yes, sir. As I say, I know the velocity, I can read the velocity, but the direction I can, if I had the card, we have the wind and this thing and I can figure it out but these are code figures that we use.

Q. What was the true velocity that you reported that out as?
A. As I recall, the velocity was 50 knots.

Q. All right. Now, is there any place on that report which covers, as I understand it, the calls made on the 10th, is that correct, it covers that?

A. Yes.

Q. Is there anything on that report to indicate the velocity of the wind which was in fact shown in your log as 58 knots?

A. No, because this weather here was sent in at 1550 in the evening, probably around 1830 or 1835 I started figuring it out, the weather, at the time of the observation, that I made this observation.

Q. I understand.

A. The only time that you refer back to what has happened is the visibility or fog or something like that.

Q. Thank you.

You mentioned -- withdraw that.

Did you have any conversation with the Fitzgerald about the velocity of the weather and the height of the seas?

A. Yes. During one of our conversations we -- well, it was just more of a thing where I said, we was talking about the seas and the condition and how big they were.

Q. Approximately what time was that, if you recall?

A. Well, it would have been in one of those notes. I have to look at my notes to find out.
(Witness looks at document.)

That was the call I made at 1820 when I was inquiring if he was still in a 141 course.

Q. Do you recall what he conveyed to you as to the velocity of the wind and seas, what message was conveyed from you to him?

A. Not really. It was -- well, it was just something that you, one of us made the remark about not that we were saying he was concerned or I was concerned, but we remarked -- the remark was made, "How big the seas were," and the wind wasn't dying down, the wind was holding, it was steady, it was going 50, 80 knots, gusting up to maybe 10 more knots.

Q. Your comments were on how high the seas were and how high the wind was, is that a fair statement?

A. Yes, sir.

Q. Thank you.

That statement you referred to are your notes, that is a copy of the statement that you gave me, is it not, Mr. Clark?

A. Yes, sir.

Q. You did state in the statement that the information which was conveyed to the Anderson was that the Fitzgerald had a starboard list?

A. Yes, sir. I made that.
At the time I made that statement, if I had reread it before it was turned over, I would have corrected that; that should be that I just assumed that he had a starboard list.

I made the statement that he said he had a starboard list. He never did that I can ever recall him stating that he had a starboard list.

MR. KEENEN: Just answer the question.

REAR ADMIRAL BARRON: Yes, Mr. Clark, it is getting a little late.

If you could confine yourself to the question asked, I think we will get through much quicker.

THE WITNESS: Yes, sir.

By Mr. Murphy:

Q. Mr. Clark, do I understand that it was the original intention of the Anderson to set a course of 130 degrees from Michipicoten?

A. Originally I think he was, not after I came on watch.

Q. But it was prior to that time?

A. Prior, yes.

Q. But in fact the course was set at 125 degrees, that was the way, that was the course that was set?

A. Yes, sir.

Q. And of course a 125 degree course would put you further away from Caribou than a 130 degree course?
A. Yes, sir.

Q. Is it also true that the Fitzgerald at all times while you were in the 125 degree course was to the starboard of you?

A. Right, after -- as soon as I saw the first time I looked on the scope, 1520, which I seen him, I thought it was running parallel, he was just a shade of the right ahead of mine.

After that he started widening.

Q. To the right?

A. Yes, sir.

Q. Now, just one more question, sir.

Did you hear the Fitzgerald have any conversations with any other vessels?

A. No, sir.

Q. And you left the pilothouse at what time?

A. About 2030, 2040.

Q. You were up there after your watch?

A. Yes, sir.

MR. MURPHY: Thank you, Admiral.

No further questions.

REAR ADMIRAL BARROW: Does the Board have anything further?

CAPT. ZABLINSKI: No.

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

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

I appreciate very much your taking the time, and looking through the testimony and your testimony before the Board, it appears to me that certainly you did a considerable lot in the way of assistance to another ship that was having difficulty, and for that we would like to express our appreciation.

THE WITNESS: Thank you.

MR. KEENEN: Is Mr. Clark free now?

MR. MURPHY: Not as a part of this record, but perhaps this witness might know where the second mate on the Anderson is?

MR. KEENEN: I believe he's on the ship.

CDR. LOOSMORE: Off the record.

(REcess had.)

REAR ADMIRAL BARROW: Let the record show we reconvened at 2011.

Counsel for parties in interest are the same as we started with this morning.

Continue, Cdr. Loosmore.

CDR. LOOSMORE: The Board would like to call
Robert May.

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ROBERT L. MAY

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

EXAMINATION

By Cdr. Loosmore:

Q. Mr. May, would you please state your full name?

A. Robert L. May.

Q. And your address?

A. Martin, Kentucky.

Q. And what is your occupation?

A. Wheelsman aboard the Anderson.

Q. Mr. May, will you speak up a little bit so the people can hear you?

A. Yes.

Q. Do you hold a Coast Guard license or document?

A. Yes, sir, I do.

Q. And would you describe that?

A. Any waters unlimited, AB document.

Q. A document?

A. Yes.

Q. May I see it?

A. Yes.
Q. Would you read the number?

A. ZA27262.

Q. How long have you had that document, Mr. May?

A. Well, ever since I have been sailing, practically -- I have been here on the lake for 20 some years.

Q. 20 some years?

A. Yes, sir.

Q. And has all of that experience been on the Lakes?

A. On the Lakes; yes, sir.

Q. How long have you been sailing on the Anderson?

A. Four years.

Q. Four years?

Mr. May, I believe you know this Board concerns the loss of the Fitzgerald and in answering the questions that I ask you, I would like you to confine your answers to information concerning the period of time about which the previous questioning has covered, and about the Fitzgerald.

Were you on watch as a wheelman on the 10th of November?

A. Yes, sir, I was.

Q. What watch?

A. From four until eight.

Q. And what time did you relieve the watch?

A. Approximately 1515 or a few minutes after.
Q: 1515?
A: 1515.
Q: At a quarter past?
A: That is right.
Q: What were your duties?
A: Wheelsman.
Q: Does a wheelsman steer the ship?
A: Steers it; that's right.
Q: Do you recall what courses you were steering at that time on that watch?
A: At the time I was steering 130 and then I went over to 125.
Q: And whose orders were you on?
A: On the mate's, sir.
Q: On the order of the mate?
A: Yes, sir.
Q: Were you aware at the time that there was anything going on with the Fitzgerald?
A: That she was ahead of us; that's all.
Q: Did you become at any time during your watch, aware that there was a problem with the Fitzgerald?
A: When they called and the Captain answered and that they lost a fence railing or words to that effect. I am not sure of his exact words.
Q: Did you hear the conversation?
A. Parts of it. I was busy steering the ship.

Q. What other incidents occurred concerning the Fitzgerald?

A. They said that they had lost some vents. I couldn't say the number.

Q. Later on when it became apparent that there was a serious problem with the Fitzgerald, what happened on the wheelhouse?

A. Well, when they called -- let me see. We was steering 141 at that time. We were below Caribou.

Q. You were steering 141?

A. Steering 142, but a true 141 course.

Q. All right.

A. They also said that they had a list. I don't remember the time of the conversation. They had their pumps on. They were holding their own.

Q. All right.

A. And there was various conversations during the watch there that I didn't pay much attention to.

Q. Did you have the wheel watch for the whole four-hour period but were you relieved?

A. I was relieved for supper.

Q. And after supper?

A. And after supper; that is right.

Q. You came back to the wheel watch and had it for the rest of the time?
A. Until approximately 20 minutes of 8:00 or 2000.

Q. What happened in the wheelhouse when it became apparent that the Fitzgerald was lost?

A. When there was the radar discussion about the sea return and being lost, that's when the Captain tried to call the Coast Guard. They were in the process of calling the Coast Guard when I left the wheelhouse.

Q. When you left the wheelhouse?

A. That's right, when the other watch came on.

Q. All right. Did you look out of the wheelhouse at any time?

A. When the salty or some boat showed up on the screen there, and I don't know how far away, the mate said that the Fitzgerald was approximately half the distance, and we could see the lights on it, the other boat, but we could not see the lights on the Fitzgerald.

It showed on the radar screen, and he said, "There is the Fitzgerald."

I glanced over the ring, and I could see what he said was the Fitzgerald.

Q. Outside or on the screen?

A. On the radar screen. Later, no.

He said he was adjusting the radar or something.

I don't remember, but you couldn't get it in the scope or something. I don't know. It seemed to have disappeared
according to the mate and the captain.

Q. Did you look out the windows at that time?
A. Yes, sir. I did.

Q. Did you see anything or think you saw anything?
A. I saw a red light to the port.

Q. Where with respect to the ship?
A. I would say on the port side. I would say it was maybe two or three points to the port side.

Q. Two or three points after the bow?
A. After the bow, but you couldn't see anything else.

I thought once I saw an imaginary light, but I am not sure myself.

Q. Did you think that the red light was the one that you were not sure of?
A. No, it was a radio tower or a TV tower or something.

Q. All right. And what was this other light?
A. It could have been an imaginary light; I don't know.

Q. What color was it?
A. I thought it was a white light.

Q. Where was it?
A. It was on the port side. I couldn't say how far off or anything.

Q. Forward or aft this TV tower?
A. Forward.

Q. Did you tell anybody about it?
I mentioned it, and none of the rest of them seen it so the discussion was dropped there.

Q. Did the other people appear to be looking for it?

A. We were all looking.

Q. How long did you see it?

A. Just for a fraction, if it was.

Q. Do you know roughly what time this was?

A. I would say between 7:15 and 7:30. I don't know. I know the captain came back in the wheelhouse.

CDR. LOOSMORE: Thank you, Mr. May.

I have nothing further.

REAR ADMIRAL BARROW: Capt. Wilson?

EXAMINATION

By Capt. Wilson:

Q. This white light that you saw, was that just -- you saw it for a very short time?

A. Just a fraction of a second. When you are steering in the dark, you can imagine an imaginary light.

Q. Just a dim light?

A. Just a very dim light, if it was.

CAPT. WILSON: I have nothing further.

By Capt. Zabinski:

Q. How long have you been to sea?

A. Since 1952.

Q. Just the Great Lakes, or have you been in deep water?
A. I have been in the Great Lakes and the deep water also.

Q. You were up on the wheelhouse there in the Anderson, and the ship up ahead indicated they had some little problem?

A. Yes, sir.

Q. While you were up there, just before you left the watch, did you have any feeling?

A. I was concerned.

Q. You were concerned?

A. Yes, sir.

Q. Why were you concerned, Mr. May?

A. Because there was a discussion that the Fitzgerald was not on the radar screen.

Q. You felt there was something wrong?

A. I felt there was something wrong.

Q. Do you know how many men perished on the Fitzgerald?

A. Somebody said 28 or 29. I don't know.

Q. Do you feel that the captain on the Anderson, the mate on watch, they were all concerned about it?

A. Very concerned.

Q. Very concerned?

A. Yes, and if they could have done anything in the world to help, they would have. I know them both very well.

Q. Did you hear the conversation of the captain trying to reach the Coast Guard Station?
A. Yes. Just as I was ready to leave the pilothouse, they tried to call the Soo Coast Guard, and they had made no contact when I left.

Q. Did the captain seem to be kind of excited?

A. Capt. Cooper is very cool.

Q. He is a cool customer?

A. Yes, sir.

Q. Do you belong to any union?

A. Yes, sir; the United Steelworkers Local 5000.

Q. And where are they located?

A. Here in Cleveland.

Q. Did you get this job through the union?

A. I got it through the company. At the time I was employed by the Great Lakes fleet, there was no union.

Q. When you are steering, Mr. May, you take your instructions from the captain or the mate on watch; is that the way it works out?

A. Yes.

Q. Do you initiate any course changes on your own?

A. No; I don't, sir.

Q. You don't?

A. Unless I am told, and I repeat it.

Q. Mr. May, when was the last time you were in the lifeboat?

A. In the lifeboat, I don't know if I was in this spring or not. I am not sure.
Q. When was the last time you were in a lifeboat?
A. Well, when they have lifeboat inspections in the
   spring.
Q. When was the last time you were in a lifeboat?
A. I don't remember if it was this year or last year;
   I don't remember.
Q. Do you think it was within the past two years?
A. Yes, sir.
Q. During the Coast Guard inspection?
A. During the Coast Guard inspection; yes, sir.
Q. What are your duties in an abandon ship situation?
A. It's to knock down the saddles on the forward drafts.
Q. Knock down what?
A. The saddles, where the covers are in the forward
drafts.
Q. You are a life boatswain, a life --
A. I have a lifeboat endorsement; yes, sir.
Q. How long have you had that?
A. Well, ever since --
Q. You think you could take charge of lowering a lifeboat,
   launch a lifeboat by yourself?
A. I have.
Q. You have?
A. Yes, sir.
Q. When was that?
In the last 10 years. I went out, it was on the rudder, a Coast Guard inspection.

Q. How about life rafts, Mr. May? Are you charged out on inflating the raft itself?

A. I only saw one in my life, that was the one this summer.

Q. Where was that?

A. On board ship, there was two company men was demonstrating this.

Q. You think with any degree of confidence you could launch a life raft and get it into the sea and know how to use it?

A. Yes, sir.

You pull that, jerk that (indicating). That inflates itself.

Q. You think the instructions you got were very valuable?

A. Yes, I do.

Q. Do the men of the crew feel the same way?

A. The other members of the crew feel the same way.

Q. Have you talked about it?

A. A lot of people feel that one of the safest things is if you get one of those boats, sir, and that is a lifeboat.

Q. Mr. May, we are concerned, the Board is concerned as
many other people in the Great Lakes area where we have a
ship with 29 members aboard, we have life rafts, lifeboats,
life jackets, yet we haven't recovered any either by use
of life-saving equipment -- why haven't we, in your opinion?
A Sir, when you are out there, the ship is rocking,
I think it would be impossible to launch a lifeboat, and
this new setup, the inflatable raft, they are closed,
and again, I think in my opinion, and I think I said this,
you had a better chance.
Q How about if you throw the raft overboard, with the
sea conditions that existed, could you get into it, do
you think?
A That is questionable.
Q How cold was the water that day, the temperature?
A I don't remember; I think it was around forty-some
degrees or something.
I heard -- I couldn't say.
Q How long do you think you could stay alive in the
water before you --
A The rescue or the Coast Guard inspectors at the Soo,
they said three and a half hours.
Q He told you that?
A I read that or heard that on the radio.
Q What do you think we could do to improve the life-
saving situation on the Great Lakes vessels?
A. If you could, where the lifeboats are fixed, have a platform with those inflatable rafts where they would inflate, you could inflate and stay, go down with the ship, and come back up, I think that would be safer than trying to launch a lifeboat under heavy seas.

Q. Why do you think no one got off the Fitzgerald?

A. I don't think; I know that we found nobody.

Q. Well, why couldn't they get off, Mr. May?

A. Because the seas were so big, it was impossible to launch a lifeboat.

They may have jumped over with a life jacket or something like that because we saw two or three life jackets.

Q. But nobody in them?

A. But nobody in them.

CAPT. ZARINSKI: Thank you.

REAR ADMIRAL BARROW: Counsel?

MR. MURPHY: Admiral, may I have 30 seconds to confer with my client? It's quite important.

(Discussion off the record.)

REAR ADMIRAL BARROW: Back on the record.

MR. MURPHY: Yes, please.

EXAMINATION

By Mr. Murphy:

Q. Mr. May, do you recall giving me a statement when I
came on board the vessel?

A. Yes, sir.

Q. And you mentioned there was something wrong with your hand, you have difficulty writing, so you asked me to write it for you?

A. That's right. I sort of get a nerve.

Q. And you told me what happened as you best recalled it then?

A. That's right.

Q. And I wrote it down and read it back to you?

A. Yes, sir.

Q. Did that statement state the things as you best recalled them then?

A. That's right, it was a short time after you come on board ship I was on watch, you said come in.

Q. Did the captain stand over my shoulder when I read that statement to you?

A. I don't remember exactly where the captain was.

MR. MURPHY: I have no further questions.

Excuse me just a moment.

{Brief pause.}

REAR ADimirAL BARROW: Back on the record.

By Mr. Murphy:

Q. Do you remember my talking to you about your steering
the vessel, you said, you told me about what you were
doing, steering.

Would you describe that for us, please?
A. You mean the way I was steering?
Q. The manner in which it was necessary for you to respond
to keep the vessel on course; would you describe that?
A. I said she was taking a lot of left wheel. She was
wanting to work to the right, and if I would get too much
left wheel, she would come back left.
Q. Did you have trouble keeping her on course?
A. I was keeping her pretty well on course, but it took
a lot of wheel; you had to concentrate quite a bit.
Q. You had to keep a swing, did she keep swinging on
you?
A. That's right.
Q. This was because of heavy seas?
A. Because of stern seas; yes, sir.
Q. Did you say you did go back through the tunnel to
supper?
A. Yes, sir.
Q. Tell us what movement there was in the ship as you
walked through the tunnel.
A. Well, there was a squeaking noise which always is not
much, but you know, you go down the tunnel and you hear
all kinds of noise any time.
Q. Did you have any trouble keeping your feet?
A. No, sir.
Q. You weren't being thrown from side to side?
A. No, sir.
Q. What time did you go to supper, Mr. May?
A. It was approximately 20 after 4:00 or 16:20.
Q. When did you return?
A. I'd say around 20 minutes after 5:00 or a quarter after 5:00, something like that.

MR. MURPHY: We have no further questions.

REAR ADMIRAL BARROW: Yes, sir.

Thank you very much, Mr. May. We appreciate your testimony.

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

MR. KEENEN: Is he free to leave?

REAR ADMIRAL BARROW: He is indeed.

Thank you very much. We appreciate it.

Just a minute, please.

Is the other wheelsman here?

MR. KEENEN: Yes.

REAR ADMIRAL BARROW: I recognize we had said perhaps we wouldn't need him, but I think
there is a period of time here when Mr. May was
gone, so perhaps we can get him in.

THE WITNESS: That is not the wheels-
man that replaced me for dinner.

CAPT. ZABLINSKI: That is not?

I would like to talk to him anyway.

(Witness excused.)

end 36

DARpz
HARRY CLARENCE HILGEMANN

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

COMMANDER LOOSMORE: Please be seated.

EXAMINATION:

By Commander Loosmore:

Q Would you state your name, sir?
A Harry C. Hilgemann, H-i-l-g-e-m-a-n-n.

Q And your address?
A Box 276, Sault Sainte Marie, Michigan.

Q And what is your occupation, Mr. Hilgemann?
A Wheelsman.

Q Do you hold a Coast Guard License or document?
A I hold the document, yeah. I've got a license.

I've got a First Class Pilot's License.

REAR ADMIRAL BARKOW: Would you speak up just a little bit.

T:E WITNESS: I hold a First Class Pilot's License, all except for Detroit and St. Clair River. I don't have those two rivers.

By Commander Loosmore:

Q What was that? All except for what?
A I have Lake Superior, Lake Michigan, Lake Huron, Lake Erie and St. Mary's River, but I do not have the Detroit or the St. Clair River on my licenses.
Q. All right, and you have a document?

A. "Any unlicensed rating in the deck department including able seaman, any waters, unlimited," and also a wiper and an endorsement.

Q. And the number of that document?

A. The number is 313224427.

Q. May I see that, please?

A. Yes, sir.

(Handing.)

EXAMINATION

By Captain Zabinski:

Q. Mr. Nilgemann, this investigation is convened to try to find out what happened to the loss of the Fitzgerald. You are aware of that.

A. Yes, sir.

Q. And while you are here, I want to ask you some questions. How long have you been going to sea?

A. I started in October of 1965.

Q. Have you been sailing mostly on the Lakes or otherwise?

A. On the Lakes only, yes, sir.

Q. In what capacity?

A. I started out as wiper in 1965 and switched to the deck department in 1966 and I have worked my way on up through then and since then and I have been continuously with U. S. Steel.
Q. Mr. Hilgemann, when were you first aware that there was anything wrong aboard the Fitzgerald?
A. After I came up watch and relieved the four-to-eight man.
Q. What time was that?
A. About 1740 or :45, somewhere along in there.
Q. What was going on in the bridge of the Anderson that led you to believe there was some trouble?
A. The Captain was trying to get ahold of the Coast Guard and there was concern expressed that something had gone wrong with the Fitzgerald and we were trying to get ahold of them and couldn't raise anybody there, and the Captain talked to the William C. Ford, and asked whether he had seen anything of them and that's about all I can tell you.

REAR ADMIRAL BARROW: You said 1745.
Do you mean 1945?
THE WITNESS: 1945, yes.

By Captain Zabinski:
Q. Did the Captain seem concerned?
A. The Captain was very concerned.
Q. Captain Cooper we are talking about.
A. Yes, sir.
Q. How could you tell this? How did he display his concern?
A. By the fact that he was trying to get ahold of the
Coast Guard at Sault Sainte Marie and to inform them that he thought there was something wrong.

Q. Did he reach them? Was he able to reach them?
A. Not right away. After a little while, why, we did get ahold of them and they said they had trouble with their antenna. I did hear that much, but other than that, why, like Bob, I was pretty busy keeping the thing on course on a following sea.

Q. Is it hard to keep the ship on course in a following sea?
A. Yes.

Q. And in a head sea, too?
A. It is easier on the head sea.

Q. It is easier on a head sea?
A. Yes.

Q. Do you belong to any union?
A. The U. S. Steel Workers, Local 5000.

Q. What are your duties or responsibilities during a boat drill?
A. A boat drill?
Q. Yes.
A. I have to release the saddles and attend the forward davit.
Q. On the port side?
A. Yes.
Q. When was the last time you were in the lifeboat?
In the spring.

Q A Coast Guard Inspection?

A Yes.

Q Do you ever get into a boat, other than a Coast Guard Inspection?

A Yes. We lowered them up at Duluth some years ago and paddled around there.

Q That was several years ago?

A In '68 or '69, somewhere around there.

Q Who did that, the mate or the captain?

A The captain.

Q Was the fishing good that day or something?

(Laughter)

A No, no.

Q Mr. Hilgemann, we lost 29 people. We had lifeboats, liferafts and lifejackets, plenty for all hands; yet, we have not recovered anyone wearing a lifejacket or any of the lifesaving equipment.

Why is that in your opinion?

A Well, the only opinion that I could form is that whatever happened, it happened so fast that nobody had time to get into anything. That would be my opinion.

Q If they had time, do you think they could have used some of that equipment?

A Certainly if they could have gotten into their
lifejacket -- I mean, that would be the first thing I
would be getting into.

Q. Do you think you could have launched a lifeboat on
large seas?

A. I doubt very much. I would have been heading for the
inflatable rafts.

Q. Do you think you would stand a better chance in an
inflatable raft?

A. Yes, sir.

Q. Why is that?

A. Like I said, in those seas, I don't believe it would
have gotten possible to get a lifeboat over. With the life-
raft, if you could have inflated it on the deck and gotten
into it, I believe you would have had a pretty good chance.

Q. But that is not what they recommend.

A. No, but if you would have thrown it off the side and
let it inflate, I don't think you could have gotten to it.
The wind would have taken it away, unless you had some way
to lash it to the ship.

Q. Do you have any idea how cold the water was?

A. I think it was in the high 40s.

Q. How long do you think you could have survived in that
water?

A. I don't know what the Coast Guard statistics on the thing
is, but I wouldn't say much more than two hours, maybe three.
Q. Do you have any recommendations as far as life-saving equipment? What could be put on that would be more beneficial?

A. I think the liferafts are the answer.

Like Bob said, it is my opinion, too, that if you have those things someplace where they could be inflated on the ship itself, you get in them right there and let them go, if she is going to go.

Q. That would be fine if the ship sank straight down, but if you turned turtle, that wouldn't help much?

A. No.

Q. Have you ever been in an inflatable liferaft?

A. No.

Q. Have you ever seen one inflated?

A. Yes, sir.

Q. Under what conditions?

A. They were just demonstrated on board ship by the Safety Committee.

Q. What ship was that?

A. The Clemson this spring.

We demonstrated one there, and when I was transferred to the Anderson, we had another demonstration on the Anderson.

Q. Do you think it was good instructions?

A. Yes.
Q. Do you think every sailor ought to get it?

A. I think they ought to all see the thing inflated and have the equipment shown and see how it is laid out on the inside and the makeup of the raft.

Q. Do you have anything else you would like to add that might help the Board to find out what might have happened to improve the situation?

A. I couldn't add anything else. It was just one of those regrettable things. As far as adding anything, I think everything has been said that could possibly have been said.

REAR ADMIRAL BARROW: Counsel?

MR. MURPHY: Just one matter.

EXAMINATION

By Mr. Murphy:

Q. Do you recognize that, sir?

A. Yes. I tracked that out for you.

Q. I am handing the witness a piece of paper with a tracing on it.

Would you identify that as what you did?

A. Yes, it was the course that we came down from Michipicoten heading from Whitefish.

Q. You traced it off what?

A. Off the chart.

Q. At the time this incident occurred?
A. Yes.

Q. And that was an accurate tracing that you made for me shortly after this accident happened; is that correct, sir?

A. Yes, sir.

MR. MURPHY: May we have this marked as-

REAR ADMIRAL BARROW: Which chart are you indicating?

MR. MURPHY: I am indicating Exhibit 34, Chart No. 9.

CAPTAIN ZABINSKI: We have it on a chart. Why do we need a sketch. The tracing of what we have already in an exhibit. I am at a loss. Are we trying to demonstrate that this man can trace something?

MR. MURPHY: No. I was trying to avoid going through it and saving time, but I think a tracing made within a few hours after the casualty compared with the chart as it now appears in view of a question which has arisen with respect to the placing of the six o'clock check taken at Caribou, I think it will be of assistance in reaching a conclusion as to the issue which has been raised in that connection.

If the Board is not interested in it, that is all right.

REAR ADMIRAL BARROW: Are you suggesting there
has been a change in the chart?

MR. MURPHY: No, sir. I am suggesting that the lines as they appear on the tracing have a different significance than they have on the chart. All right. What I am suggesting, sir --

CAPTAIN ZABINSKI: The hour is late and I am not with it, but go ahead, counsel.

MR. MURPHY: All right. The only point I am making is that I would like to have the Board, in reaching its conclusion, examine the tracing that this gentleman made shortly after the occurrence took place with what appears on the chart at this time.

CAPTAIN ZABINSKI: Counsel, do you feel that it is important?

MR. MURPHY: Captain, a very significant question has been raised here with respect to an entry, which appeared in the log.

The witness who made the entry is not here. It is a question having bearing on where this vessel was when a certain check point was made.

I think any evidence which may assist the Board in reaching a conclusion on the validity on the testimony heard here today with the entry which appears in the log, I think, is significant.

I think the Board would find it significant.
If the Board is not interested in the observation, in making the observation, I will withdraw the request.

REAR ADMIRAL BARROW: Let's recess for five minutes.

(Recess had.)

REAR ADMIRAL BARROW: Thank you very much.

We are back on the record at 2054.

Counselor, you've brought before us a tracing. I would like for you to explain the purpose for which you would like this introduced.

MR. MURPHY: I believe the record will show that this witness testified that he made this tracing.

Is that correct?

THE WITNESS: Yes, I made the tracing.

By Mr. Murphy:

Q Would you tell us for the record when you made this tracing approximately?

A It was after we got into Sault Ste. Marie, through the locks, and anchored in the harbor there.

Q It was on what date, sir? The date after this occurrence?

A Yes.

Q This would be --

A The morning after.
Q -- the 11th of November?
A Yes, it would have been on the 11th. Yes.
Q Would you mind just looking at the log which appears here before you and indicate what the log shows as to the arrival and the path of the vessel through Soo on that date?
A It was after noon here.
Q At what time, please, sir?
A 1345 is when we anchored.
Q 1345 is when you went to anchor?
A Yes, sir.
Q During the evening at approximately 8:00 p.m. I came aboard the vessel --
A Yes.
Q -- is that correct, and it was during the next hour or two --
A I believe I just came on watch.
Q -- you made the tracing at my request?
A Yes, sir.
Q All right, sir.

MR. MURPHY: For the Board, I am referring now to what has been marked for identification as Exhibit No. 41.

In my comparing the lines on the tracing with the testimony, with the lines as they appear on the chart at this time and with the testimony that has been heard
today on the answers with respect to what track the
Anderson followed from her position 7.7 miles off of
Michipicoten Island, there are some minor differences
which I think the Board will find significant in
analyzing the evidence that has been presented on
that point, and it is for that purpose I offer this
tracing into evidence along with Exhibit No. 30 at
this time.

REAR ADMIRAL BARROW: Mr. Hilgemann, if you
would take a look at this Exhibit 41 for identification,
there is off of the Caribou Island at about 7.7 miles,
a course line and a specific circle with a dot.

THE WITNESS: Yes.

REAR ADMIRAL BARROW: To the north of that, there
is another line which is perhaps 5 degrees further to
the north.

Do you have any idea of the significance of the two
lines?

THE WITNESS: No, sir, I don't have any
idea of the significance of those lines at all.

REAR ADMIRAL BARROW: To your knowledge, which
one of these specific courses was followed?

THE WITNESS: The only course that I
have knowledge of would be this one down here.

I went on watch when they were just about an hour
above Whitefish.

REAR ADMIRAL BARROW: You have no knowledge of this?

THE WITNESS: No, I don't know what was going on up here. This was on the chart as it looks right here.

REAR ADMIRAL BARROW: Thank you.

CAPTAIN ZABINSKI: Counsel asked you to trace it for him, is that right?

THE WITNESS: Yes, sir.

REAR ADMIRAL BARROW: Counselor, it is not readily apparent to me at this stage what significance this is.

I am going to be lenient at this hour and say that we will accept this into evidence as Exhibit 41 and use it in connection with testimony which has been given previously.

MR. MURPHY: Thank you, Mr. Chairman.

(Exhibit 41 was marked for identification and made a part of the record.)

MR. MURPHY: I have no further questions of the witness.

REAR ADMIRAL BARROW: Any further questions?

I think the one thing that we need to do is have you
sign this tracing.

MR. KEENEN: Sign it and date it.

REAR ADMIRAL BARROW: It probably should be dated the day that it was made.

MR. KEENEN: Put it on the corner away from anything.

REAR ADMIRAL BARROW: Commander Loosmore would like to ask you some questions.

It has been introduced, but I think there are a few clarifying points here.

COMMANDER LOOSMORE: Thank you, Mr. Hilgemann. Would you sit down for a second?

EXAMINATION

By Commander Loosmore:

Q Thank you, Mr. Hilgemann. We've seemed to have some things out of order here, but I am afraid I have a couple of more questions for you.

A How long have you been serving on board the Anderson?

A I came aboard June the 8th of this year, but I spent five years on her previous to that from 1967 to 1972.

Q What were your duties in the '75 season?

A '75 season, wheelsman.

Q What do those duties involve, sir?

A Steering the ship.

Q And what else?
A. Any other duties that would have to be performed in
the pilothouse that the mate would ask me to do, nothing to
do with navigation of the ship or anything like that.
Q. Can you give me some examples of that?
A. Clean the windows for one. I would just keep track of
the course, steering, and see to it that she stays on course.
Q. Sir, do you ever plot the position of the ship?
A. No, sir.
Q. Do you ever do anything with the radar?
A. I look at it, but I don't fool with it.
Q. Do you ever put anything in the log? Do you make a
log entry?
P. Not in this log.
Q. Smooth log or rough log?
A. Oh, yeah, I have in this. When was it? I think it was
three weeks of temporary third mate duty during this season,
this summer, in July.
Q. Were you licensed to be a third mate?
A. Yes, yes, sir.
Q. In the introduction of your testimony you talked about
a pilot's license. You didn't mention a mate's license.

A. Registered Mate's License, the same as any, it's First
Class Pilot's License on the Great Lakes.
Q. All right.
A. It was issued here in Cleveland.

MR. KEENEN: Wait until he asks you a

question.

By Commander Loosmore:

Q Did you plot any positions that were on Chart No. 9 --
A No, sir.
Q -- that you made the tracing of?
A No, sir.
Q Is it your practice at all to plot positions?
A No, sir, I don't fool with that, not unless -- the
only time I would plot on any chart is when I was on watch
as third mate.
Q Did you reproduce every line that was on --
A Just as it's right there (indicating).
Q On No. 9.
What were your instructions when you made this tracing?
A To trace those course lines as they were shown on the
chart as I laid that paper right over the top of it, as you
can see, with the lines of longitude and latitude all lined
up that way and just traced it up.
Q All right, Mr. Hilgemann, there were some other lines
on that chart which you didn't reproduce on the tracing?
A No, they told me these right here (indicating), starting
right here (indicating).
Q All right. Somebody had to decide to trace one line
and not trace another. Who told you to do that, was it
Mr. Murphy?
A. No, I did -- he told me -- didn't tell me not to trace
any lines.
I asked the first mate how we came down and he said
right down here (indicating), and then these are the lines
I put.
Q. This one you are pointing to extends generally southwest
from the west end light, what you would say is a beam bearing?
A. Yes.
Q. What watch did you stand on the Anderson?
A. The eight to twelve.
Q. When were you relieved on the watch?
A. The evening watch?
Q. The evening watch, yes, sir.
A. About 1940.
Q. Were you in the wheelhouse at all times between the
time that you got on prior to the eight to twelve to the time
that you were relieved on the evening watch?
A. No, sir, no.
COMMANDER LOOSHORE: Thank you, Mr. Hilgemann.
MR. MURPHY: No questions.
MR. GREEN: Would it be permitted if
you were to ask the witness whether the original chart,
Exhibit 30, has been altered at all, added to or
subtracted from?

COMMANDER LOOSMORE: I think that is a good question.

CAPTAIN ZABINSKI: Go ahead -- you are who?

MR. GREEN: I represent Marine Engineers official association. I am on record as a party.

REAR ADMIRAL BARROW: Yes, go ahead.

By Commander Loosmore:

Q. Mr. Hilgemann, one further question: To the best of your knowledge, has Chart No. 9, Exhibit No. 30, has it been altered in any way from when you made the tracing?

A. No.

CAPTAIN ZABINSKI: Take your time.

By Commander Loosmore:

Q. Take a look at it.

A. I started up here, dropped in here to this point right here and I came on down (indicating).

COMMANDER LOOSMORE: Let the record show the witness is pointing to the chart and talking to himself.

(Laughter)

REAR ADMIRAL BARROW: Off the record.

(Discussion had off the record.)

REAR ADMIRAL BARROW: Back on the record.
By Commander Loosmore:

Q. The question is, to the best of your knowledge is Chart No. 9, Exhibit 30 that is before you right now, the same as what you made the tracing from?

A. Yes, it is the same to the best of my knowledge.

COMMANDER LOOSMORE: Okay.

CAPTAIN ZABINSKI: That was not the question. Were there any alterations? Wasn't that the question?

COMMANDER LOOSMORE: All right. I'll ask that question.

Q. Have there been any alterations?

A. Not that I can see.

REAR ADMIRAL BARROW: Thank you very much, Mr. Hilgemann. We appreciate your testimony and caution you not to discuss it with anyone but your counsel before the end of the investigation.

We'll adjourn at this time and start again tomorrow morning at ten o'clock.

(At 9:10 p.m. the hearing was adjourned to reconvene the following day, Friday, November 21, 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

Friday, November 21, 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
REAR ADMIRAL BARROW: Good morning, ladies and gentlemen. Let the record show that we reconvened at 10:39 a.m. My apologies for the delay.

Let the record also show that counsel for Oglebay-Norton is present. I don’t believe Mr. Schuchmann is here representing the master of the Fitzgerald.

Commander Loosmore, proceed.

CDR. LOOSMORE: The Board calls Dr. Lloyd Breslau to the stand.

---

LLOYD BRESLAU

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, address and occupation?

A Lloyd Breslau, 23 Bobwhite Trail, Gales Ferry, Connecticut, the Assistant Director for Physical Science and Technology at the Coast Guard Research and Development Center in Groton, Connecticut.

Q Dr. Breslau, do you hold a Coast Guard license or document?
A. No.

Q. How long have you been involved with the Coast Guard R & D Center?

A. The R & D Center, since its inception in 1972, and their Office of Research and Development since 1969.

Q. How long have you been involved with scientific efforts involving underwater search and sonar?

A. I would say search in particular since about '67; underwater acoustics since about '60.

Q. What academic degrees do you hold, sir?

A. I have got a Doctorate in Oceanography, a Master's in Geophysics, a Bachelor's in Geology and a Bachelor in Electrical Engineering.

Q. Were you involved in the reported sonar search for the remains of the Fitzgerald?

A. Yes.

Q. What was your involvement in it?

A. I was the team leader of the sonar search group for the R & D Center, and I ran -- most of the time I ran the machine, the side scan sonar.

Q. You used the past tense. Is your particular involvement in it completed?

A. Yes.

Q. How would you characterize the result?

A. Preliminarily; the results are preliminarily. I
would like to stress the fact that the sonar records are not of the highest quality.

The water was deeper than we are accustomed to dealing with, and we had to purchase a cable the night before and accepted delivery just before the ship left, using a steel cable instead of a rubber cable that we are used to using.

In essence, what it comes down to is that the records are not of the highest quality.

Q. Dr. Breslau, what type of equipment were you using in the search?

A. I was using a side scan sonar, a device which utilizes a towed fish with a sound transducer.

The fish is towed below the surface and after the vessel and projects sound to either side of the vessel, and objects on the sea floor will produce a return and a shadow, which will return to the vessel and produce an image on the record.

Q. Do you have with you information on the results of the search that went on?

A. Yes, I do. I have three sections of records which I will show you, and I can give you the generalities.

If you would like, I will give you the generalities that I have been able to deduce from the records.

Q. Give us the generalities and produce the records
as necessary.

A. The generalities are this: There appears to be two ship-like objects on the sea floor. One of these appear to be in the neighborhood of 300 feet each.

There appears to be something emanating from one of the vessels, perhaps a trickle of oil, something that appears in the water column above the vessel, or perhaps a shroud or something floating secured to the ship, which is floating up about 70 or 80 feet.

I notice I have a rough area in the proximity of the two objects, and this rough area could be as a result of natural ocean floor roughness or it could be the result of spilled cargo. There is no way I can say which one.

The wreckages are not of adequate quality to give a definite identification. I just have shapes, images.

I do believe that there is a strong possibility that this is the remains of the Fitzgerald. However, I would like to have clearly stated that this is not by any means definite identification.

Certainly, further undersea investigation will be necessary in my opinion, which could simply be a repeated sonar survey done under better conditions. It is possible to get better results with side scan sonar, and better results can be obtained.

Q. Dr. Breslau, why don't you produce the record and show
us visually what you have and explain what it means as well as you can and I would like you to go back and have you explain something about the navigation.

A. Okay.

The system works this way. There is a fish fetch trail in the water after the vessel.

Q. Show us on the board, Doctor.

A. I will put this up here (indicating).

This is a record representing a sonar return that has come from both sides of the vessel. Basically, the towed fish sends a pulse of sound to both sides of a vessel.

This pulsive sound hits the sea floors, rolls along the sea floor. If there was anything on the sea floor, it reflects a return and the return comes back to the vessel and it appears as an image.

Now, the center line here represents the path of the ship. On the right-hand side we have the return from the starboard. On the left-hand side we have the return from the port.

This scale is zero to 250 meters, both sides. This return here is the sea floor return. These objects here are lying on the sea floor.

This line here, which is coming from the sea floor return into the water column, is something that is above
the sea floor (indicating).

As I see it, it could be a trickle of oil emanating
or it could be a floating object, to the shroud, or the
shroud itself.

This is an object over here and this is another object.
This is a rough patch which can represent something natural
or can represent spilled cargo.

That's about all I can say from those records.

Q. You seem to have some other records. Once you found
that, was that the first one you found?

A. In fact, it wasn't. It was not.

This was the first. I put this up here because
when you cross these at different aspects, they look
slightly different.

Naturally, this one shows the projection into the
sea water, and the oil, which I interpret perhaps as being
oil, is showed a little bit better than this one.

This one shows it with the wreckages and they are
relatively similar. This was the first one. That was
the first.

MR. MURPHY: Mr. Chairman, for the
purposes of the record, can we have this one and
that one identified, so the record can disclose
what he is referring to?

THE WITNESS: The first one I
mentioned here is identified by time: 1728, and this was on Sunday, the 16th, November 16th. That is the first one I showed.

The one I am showing now is identified by time by 1516. That was on Saturday, November 15th. That will nail it down pretty well.

I've got one more that I will introduce.

CDR. LOOSMORE: Mr. Chairman, I understand there are photographic reproductions of the pertinent parts of these records. Perhaps we can mark the photographic reproductions for identification and then deal interchangeably with the record and the reproduction.

REAR ADMIRAL BARROW: I think when he finishes with the third one, in each of these cases, it is my understanding that he has photographed, or had photographed the pertinent sections of the tracings, and I think probably what we would want to do once we have interrogated the witness, is to identify the photographs and ask him specific questions relating to where he took those and whether or not those represent all the pertinent details of the particular tracings.

I don't believe we want to utilize these particular tracings at this particular time as exhibits
because they are needed for some further work
that we have going on.

MR. MURPHY:    Well, we would assume
that they would be preserved as part of the record
of this hearing eventually.

CDR. LOOSMORE: The tracings or the
photographic --

MR. MURPHY:    I will reserve that
request until later.

CDR. LOOSMORE: Could I suggest that
we have identification numbers now and use them?

REAR ADMIRAL BARROW: Yes.

CDR. LOOSMORE: Excuse me just a
second.

I believe we were up to 42. 41 was the sketch.

MR. MURPHY:    I believe the sketch
was that of the wheelsman witness, sir.

REAR ADMIRAL BARROW: They will be marked
42, 43 and 44 for identification.

CAPT. ZABINSKI: Make them 42-A, B and
C for identification.

REAR ADMIRAL BARROW: All right. They will
be marked 42-A, B and C for identification.

(Exhibits 42-A, B and C,
marked for identification an
made part of the record.)
CDR. LOOSMORE: The three traces have been marked 42-A, B and C for identification.

All right.

THE WITNESS: If I may, I would like to make a correction.

This was a second pass. This was the first one (indicating).

Q The second pass was the trace we have now marked -- A 42-C, and of the three I am showing, 42-C came last. 42-B came second and 42-A came first.

I have given you the correct times on two of these, and I will now give you the correct time on this: the last one, 42-A, the time is 1313 on Saturday, November 15.

That was the first observation.

This second record was the first observation in that particular aspect, where I could see the oil coming off the oar or the shroud.

This is at a different scale. 42-A is at a 500 meter scale, and B and C are at 250 meter scales.

MR. MURPHY: Just for the purposes of the record, 42-A was taken at 1313 on Saturday, November 15; is that correct?

THE WITNESS: Yes.

MR. MURPHY: Now the other two, would you identify them by time and date as to
which one is B and which one is C?

THE WITNESS: Yes; 42-B was taken
at 1515 on November 16 and 42-C was taken at 1728
on November 16, Sunday.

MR. MURPHY: Thank you, sir.

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

(Discussion off the record.)

REAR ADMIRAL BARROW: Back on the record.

THE WITNESS: The scale marks are
25 meters each on all the records.

By Cdr. Loosmore:

Q. Dr. Breslau, will you explain how -- you have talked
about a fish. Would you explain if there was a ship
involved in this, and what the ship was doing and how the
ship knew it was coming back to the same place?

A. Okay. We used a Mini-Ranger system, which is a pulse
radar electronic navigation system which works this way:

There are two electronic transponders set on shore
positions that are known. At the vessel you have a receiver
and a transmitter.

You transmit an electromagnetic pulse and it is picked
up by transponders that re-transmit a pulse back to you,
and by measuring the arrival time between sending it
out and receiving it, you get a measure of distance. And
all of this translates out into a reading of distance from those shore transponders.

On navigation, the device is capable of three meters, but in any case, in our use I would say that the accuracy of any position was to 100 meters because we did not read the last two digits.

The automatic printer was broken.

CDR. LOOSMORE: That's all I have, sir.

REAR ADMIRAL BARROW: Capt. Wilson?

EXAMINATION

By Capt. Wilson:

Q. Doctor, you said that the accuracy of your position was within 100 meters.

What impact would that make on the display?

A. None, none whatsoever. Virtually none.

I want to qualify that slightly. One access of the record is made by ship's speed. The other is made by travel time acoustically through the water.

Now, the access that is made by a ship's speed would be influenced by the navigation somewhat.

To the extent that there was an inaccuracy in ship's speed, to that extent, it is an inaccuracy in one access of the record.

Q. I just want to make sure I understand you.

If I understand you right, this is all a relative
motion, all relative to where you are?

A. The scan is all relative to wherever you are. However, one access of the scan is made by time. As the paper comes out of the machines, it is a function of time as the ship passes a target.

One dimension of a target depends on the speed that the vessel is making. To know the speed of a vessel, you have to have your navigation. You can circle -- there are many ways to know.

You can ask it to steam at a certain speed and you can look at your position. That's another way. The speed of a ship is definitely part of the one scale.

However, you would still have these objects. They may appear slightly different one way or another depending on their speed.

One access might be slightly increased or decreased. It influences it that way.

Q. Other than the object that you discussed in the water column, is there any other indication of the height of the two pieces or two objects off the sea floor?

Is there anything there that gives you any idea?

A. One can take a shadow and get an indication, but I really don't think the quality of this record is such that I would like to do it.

One can do it with better quality records.
CAPT. WILSON: That's all I have.

REAR ADMIRAL BARROW: Capt. Zabinski?

EXAMINATION

By Capt. Zabinski:

Q Doctor, looking at this tracing which you have, this exhibit is 42-C. Looking at C I see some white marks up there.

Are those the outlines of the ship? Would it be that easy to interpret?

A These marks here?

Q Yes.

A No, it is difficult to interpret, in my opinion. Those white markings are acoustic shadows or scour marks or impact marks.

The very hard to see dark markings are highlights giving you a return.

Q It would be the dark —

REAR ADMIRAL BARROW: It would be the dark spots adjacent to the light marks which you are pointing to now?

THE WITNESS: Yes. There is a dark line along here which is hard to see, but it can be seen, and in back of it is an acoustic shadow very similar to a light beam shadow.

Q Have you fully evaluated the tracings?
A. I have gone over these records, and I think after considering it as best I can, what I would come up with is again there are two objects. There is an acoustically rough area, which can be debris or natural ocean floor.

The size and the range of the two objects, the sum total is close to what might be expected for the Fitzgerald.

There is a very strong possibility. I wouldn't go any further than saying a strong possibility. It is definitely not -- I want to be very clear that from these records it is definitely not a positive identification.

Q. Do you intend to do some further refinement on studying these tracings and so forth?

A. No. I believe I have gotten all I can out of it. I believe that now I understand that there is going to be further work, but not by me.

I would let somebody else speak about that, but I think this record has told me all it can tell me.

CAPT. ZABINSKI: That's all I have.

EXAMINATION

By Rear Admiral Barrow:

Q. Dr. Breslau, you have testified using your measurement capability that each of these two pieces were on the order of 300 feet each?

A. Yes.
Q. Of course, you know, as a matter of having looked into this, that the vessel itself was something in excess of 700 feet?
A. Yes.

Q. Is there any explanation that you have with regard to that?
A. Yes, this is sort of where you see something and it's there, but it could also be there if you don't see it.

For example, let me elaborate. This is a tonal record. I have to see tones. If there is a strong acoustic return on the record, this is a tonal record. I have to see something above the background.

Now, it is similar to looking at a lighted object in bright light. If the bottom is rough for one reason or another, it might not be able to see it because the return from the object would blend in with the return from the ocean floor.

So it is quite likely there is more than I can see and I will stress these are poor records. There is no two ways about it.

Better records might be able to show you more.

But that's really about all I can say.

For example, right here my records stop and maybe --

Q. The witness is pointing to one of the light marks on 42-C.
A. Yes. The record stops about 10 meters before the --
I can see about 10 meters before the first return from
the sea floor, and I do suspect -- I suspect, I don't know
-- I suspect that it ties right into that return.

But the main bang from the sea floor, which is always
the strongest, is coming in so strong that it is obscuring
anything that happens to be there.

I don't view the discrepancies in the sum total sizes
as anything significant.

Considering the whole matter, and it is certainly a
lot of judgment in here and I could measure certain things
and it is an interpretive record; it is an interpretive
record. I don't call it a definite identification.

I call it strong possibility.

Q. Thank you, Doctor.

You, of course, are aware of the last reported position
of the Fitzgerald and also the magnetic detection findings?

A. Yes, I am.

Q. Can you relate the specific tracings that you have
here to that position?

A. Well, these were all taken in proximity to the
sightings by the MAD aircraft, magnetic anomaly detection
aircraft.

We went to a site previously given by the aircraft.
While we were on station, the aircraft flew out and located
the magnetic anomaly and dropped a smoke bomb. We ran
over this. These are all in proximities, and I have no
doubt that the two things are related in my own mind.

There also was very slight surface expression of
oil in the vicinity, which could quite possibly -- could
quite possibly be that material that we see emanating
from the vessel, if indeed it is material emanating from
the vessel.

Perhaps it is simply a shroud floating in the water
hanging from the object. I did not mean to say vessel
because that is supposition on my part.

The record says object to me.

Q. Have you photographed the pertinent sections of each
of these tracings?

A. Yes, I have them here.

Q. Are there any other sonar targets on the three
tracings that you have indicated here within the area
that you investigated, which you would have reason to be-
lieve could in sum total anywhere within the length of
the Fitzgerald?

A. No.

Q. Do you have photographs of each of these tracings,
which each produce two pieces, which summed would make
it out to about 600 feet?

A. Five to six, I would say, five to six.
I would say this, that there is a little bigger and
some a little shorter.

Again, there is some uncertainty in the speed of the
vessel due to navigation and a little bit of this, and
it does get cranked into the analysis. But one thing to
me is apparent, that there are two objects.

REAR ADMIRAL BARROW: Counselor, do you have
a question?

MR. MURPHY: Yes, thank you, sir.

May we ask that the photographs to which you
referred be identified and correlated with the ex-
hibits?

REAR ADMIRAL BARROW: I think probably what
I would like to do is tentatively mark them with
the same numbers.

My intention with regard to these specific ex-
hibits marked, the tracings themselves, is not to
append them to the record as exhibits, but to substitute
for them the particular photographs which we have.

The tracings will be available, but they are
sort of in great volume and I, at this particular
stage in our investigation, don't think it will be useful
to append the entire tracings to the record.

MR. MURPHY: Well, then may we, sir,
identify and correlate each of the photographs to
the tentatively identified exhibits?

REAR ADMIRAL BARROW: Yes, sir.

Recorder, will you do that?

CDR. LOOSMORE: Yes, sir.

REAR ADMIRAL BARROW: Off the record.

(Recess had.)

REAR ADMIRAL BARROW: Back on the record at 11:14.

Counselor?

MR. MURPHY: Yes, sir. Thank you, sir.

EXAMINATION

By Mr. Murphy:

Q. You have produced some photographs which are apparently from my understanding reproductions of the documents which you have described.

A. Direct photographs.

Q. Yes. Now, are there any impressions or targets which show up, first, on your scanning documents, which do not or have not been produced on the photographs?

A. They are of a wreckage which has targets which are similar but poor quality.

Q. No, sir. The exhibits which have been identified, specifically. I am speaking specifically of these three: A, B and C.
A. Yes.

Q. I just want to ask you whether these photographs correctly, in your opinion, depict everything that appears on those exhibits.

A. Absolutely.

Q. Now, conversely, is there anything that shows up on the photographs which are not apparent on the exhibits?

A. No.

Q. So that as far as you are concerned, the photographs do correctly depict what is on the exhibits?

A. Absolutely.

Q. The Chairman, Admiral Barrow, asked you if there were any other targets on 42-C, I believe it is. Are there any other targets which appear to be vessels or parts of vessels or which could be parts of vessels, and I believe your response was in the negative.

Am I correct?

A. Yes.

Q. Are there any other targets of any kind that appear on that exhibit that you can describe other than the bottom of the sea or the floor?

A. No. There is a little roughness here. This, I believe to be the bottom of the sea. I see, however, no large targets.

REAR ADMIRAL BARROW: Are you asking the
question about the entire tracing?

MR. MURPHY: Only that which appears

at the moment.

By Mr. Murphy:

Q. For instance, there is a mark here, a little mark, and

my question was related as to whether or not that would con-
stitute a target (indicating).

A. That light mark is natural sea floor. It is smooth

sea floor.

It is light because if a sound hits it and without

sending anything back, but if you see dark, that means

that it is starting to be a little rough and something is

interrupting the sonic beams and sending a sound back;

so when you see dark, it means something is coming back.

This could be sea floor roughness. It could be

debris on the bottom. When you see a big thing like

this, that means there is a large object. They are bouncing

that sound back to you.

Q. Would you just outline for me with your fingers,

just by pointing out, the two sections which you believe

to be targets which could be parts of a vessel?

A. Yes, that one and that one (pointing).

Q. When you point to "that one" and "that one," are

you referring to the entire circumference or the perimeter

of that whitish area?
There, on this one, I am referring to the object which I could only see one side of, and it is probably a shadow related to that. That shadow is related to the sound bouncing off of the object.

Q. From that portion of the object that you could see, in your judgment that would be in the neighborhood of 300 feet in length?

A. Yes.

One was a little above and one is a little below, maybe 50 feet.

Q. And there is some possibility that there could be some additional length there that is not apparent?

A. Yes, and let me point this out to you:

From here to here (pointing) --

REAR ADMIRAL BARROW: I think we are going to have to identify that a little better for the record.

THE WITNESS: Okay. On the object which is close to the streamer into the water, this object here, the one closer to the sea floor return, it is quite possible that this continues right to the first arrival on the sea floor.

However, it is possible that the main arrival from the sea floor just overrides the shadow. There is so much energy there that you can't see
that trace. There may be a highlight on top of a highlight.

The analogy is light on top of light. It is quite possible. It is possible.

Q. Thank you, sir.

Now, with respect to the other target, the first target seems to extend on this exhibit in a generally southwest-northeast direction, if the exhibit is considered -- as the exhibit appears, if we consider the top to be north and the bottom to be south, and the right side and the west side to be east and west.

A. For conversational purposes.

Q. So the record will show what we are referring to, the first target which we have been referring to is that which extends in a general southwest-northeast direction?

A. Yes.

Q. And the second target?

A. This target?

Q. Using the same reference points, it extends in a general northwest-southeast direction?

A. Yes.

Q. What are the outlines, as you can describe them?

A. I see one along this edge and I see one along this edge.

I am not interpreting here, but I may actually be
looking into an open ocean. I may be getting two open parallels.

I believe I am getting one strong highlight.

On this one, the first one referred to the northwest-southeast orientation one, I see a very strong highlight on a lead edge of the shadow.

On the other one, I believe I see two outlines.

Q. You mentioned two outlines and you pointed to one with respect to that target which appears to be on the upper or northerly side?

A. Yes.

Q. Would you describe how you would interpret the approximate length of that particular portion of the target?

A. That one looks to me between -- this I believe would be between 250 and 300 feet.

Q. With respect to the second portion, which would appear below that, or the southern one, how would you make the same description?

A. Less because that is somewhat -- that section of it is sort of lost in the bottom return.

Q. All right, sir. Is it also correct that those targets could be longer or of greater length as in the previous one and also be blended in or concealed in the bottom of the floor?

A. It is possible; they could be longer.
Q  All right, sir. Is there any way you could tell
from the targets you observed as to approximately how far
apart those targets are in view of the fact you can't
completely be sure as to where they terminate and where
they begin?
A  Not with much accuracy. In the neighborhood, I would
say it would be 100 to 300 yards, and that is in the
neighborhood of.

This is not the kind of record to ask too demanding
questions of because the answers are simply not in this
record.

Q  I understand, sir, and I appreciate your basis.

I am just trying to see if we can determine what
your opinions are with respect to, in fact, what is shown.

Now, would you point out for me the area which
you previously described as the one which could be a
reflection from the sea bottom or possibly the cargo from
the vessel?
A  All of this dark area here that I am circling, this
dark area here, which is in proximity, is an acoustically
rough area.

Now, that is a fact. What causes the acoustically
rough area is an interpretation. It could be cargo.

Notice here in proximity there is none or less.

Q  Now you are referring to below that?
A. Yes. There is definitely patches of roughness in
the sea floor. I don't mean to say that is uniquely cargo.
I am saying there is some acoustic roughness which may
or may not be there. It may be natural and it may be
cargo.
Q. You have just made a comment "all of this area here,"
and there is no way the record can reflect that.
Would you describe that a little more in detail with
respect to the approximate size and location with relation
to the two objects that you have described?
A. Yes. It looks like about one minute of time before
the first object came into view, which is there, about
one inch on this record.
Q. One inch below the lower of the two objects?
A. Yes, and the furthest point, if I take it here is
about a half inch above the upper object. I also note
this: I make this observation, that one object extends
out of the acoustically rough area; another is contained
within.
Q. With respect to the east-west direction of that
acoustic area, the westerly direction of it extends right
to the edge of the document; does it not?
A. Yes, sir.
Q. And how far does the easterly edge of that acoustical
area extend?
A. I don't know. It covers the port side; the record
on the starboard is of insufficient quality to say anything
on that side concerning it.

It extends to the line of the vessel. I don't know
how far it extends.

On the port side it terminates with the end of the
record. Moving toward the vessel, it extends to the sea
floor return, and the other side of the record is not of
very good quality.

Q. Because you have referred to the port side, may we
note for the record that the document is identified as
42-C?

It does have marked on it on each edge the words
"port," "starboard," and that was the word to which you
were referring?

A. Yes.

REAR ADMIRAL BARROW: I would like to make
one comment: Dr. Breslau has interchangeably used
the words "vessel" and "object," and I think he
has already testified that, of course, we are dealing
with objects.

MR. MURPHY: I didn't intend to
mislead him.

THE WITNESS: I know the investigation
is about a vessel, and I see objects on my record.
It is easy for me to interchange them, but I see ship-like objects on the record.

By Mr. Murphy:

Q. Now, you had mentioned that you were referred to a station by the aircraft with the MAD equipment?
A. Yes.

Q. Do you know or have any knowledge as to what that station was on the water, with reference to a chart or a map?
A. Yes.

Q. Could you tell us what your information was in that regard?
A. I believe it is plotted on one of the charts in this room. I don't have it in my head.

I have seen charts; I have one.

Probably there is one on that table, but I don't contain it in my head.

MR. MURPHY: Mr. Chairman, will that information be produced on that document?

CAPT. ZABINSKI: I have no idea.

REAR ADMIRAL BARROW: I don't know either.

I think the information that he is working from could be made available.

MR. MURPHY: May we add that, please, so we will have a reference on the surface
with respect to where the station was to which
he referred?

REAR ADMIRAL BARROW: I think probably the
best arrangement would be to locate that on one
of the exhibits which we have already in existence,
rather than to produce and get another document.

By Mr. Murphy:

Q. Would you be able to do that, sir, if you were shown
a navigation chart of the area?

Do you have enough knowledge to be able to locate
the position on the chart?

A. Not in my head; not without referring to my own chart.

However, the MAD site is on charts, and if I look
at it, I will recognize it if you show it to me, but
I don't carry a latitude and longitude in my head.

MR. MURPHY: May we just, sir,
produce one of the charts of the area that is an
exhibit and ask the witness to give us his best
knowledge on that, based on the information which
he acquired in making this search, making his
examination?

REAR ADMIRAL BARROW: Off the record just
a moment.

(Discussion off the record.)

REAR ADMIRAL BARROW: Back on the record,
pleas.

Dr. Breslau, the question has been raised here
as to the specific location of the magnetic detecting
sighting in relation to your particular endeavor
here.

Would you furnish for the record at a later time
that specific location which you were utilizing?

THE WITNESS: Yes, I will.

By Mr. Murphy:

Q. Now, would you mind telling us how the information as
to the location was submitted to you? Did you determine
that yourself?

A. No; the captain of the port in the Soo got the
information from the Navy, and he instructed -- he gave
that information on a chart to the captain of the Coast
Guard on the Coast Guard Cutter Woodrush.

Then the vessel went out to the site and I was informed
that we were there, and we conducted our search.

Subsequently the aircraft flew over and dropped a
smoke bomb.

Q. And you have that information on a record which you
can produce here?

A. I have that on a chart.

Q. All right. Now, would you mind telling us the locations
of the shore transponders which you described, if you know?
The same chart; I can tell you verbally. I can do it better if I look at one of those charts.

Q. Well, if that information is contained on what you intend to produce subsequently, then I won't belabor the point. That is fine.

The name of the vessel was the Woodrush, the Coast Guard cutter?

A. Yes.

Q. And you boarded this vessel and rode it out with your equipment at the Soo?

A. Yes; I boarded it, and we sailed Friday night, the 14th.

Q. Did you operate this equipment yourself or did you work with a team?

A. I operated that equipment myself, I would say 75 to 80 per cent of the time.

The other part of the time a colleague of mine from the R and D Center operated it.

Q. So there were two of you from the R and D Center on the project?

A. There were two sonar trained people from the R and D Center that went on the boat, and there was another person on the bridge with the navigators.

Q. Would you mind identifying them?

A. Nolan Salassi operated the side scan sonar with me.
He is from the Coast Guard R and D Center.

There was also Ensign Chip -- I am afraid Chip is not his first name and I don't know his first name -- his last name is Mullen, M-u-l-l-e-n, who was with us.

He is an ensign, and he worked with the navigators on the bridge.

Q. Now, when the Woodrush was making the runs with your equipment, was there a specific speed and direction designated?

A. Well, this is the real world aboard ships. You ask them to make a speed. Now, they try to make a speed.

They turn the prop to turn the speed, which the combination of the water and the prop gives them.

Q. Would you tell us what you asked them to do?

A. I was asking them to go at two or three knots and I would look at my fish. The fish is a tow transducer. I like to keep it near the bottom.

When it starts rising near the surface, I ask them to slow down a little bit.

There was a variable speed; I would say between probably two to four knots. Probably what really happened, and to know what really happened one does this by getting navigation fixes and seeing the distance you actually went over periods of time.

Q. All right. How many different directional runs did
you make?
A. Many, in the neighborhood of 20.
Q. With respect to the three exhibits produced here, can you tell us what direction those runs were being made when those photographs or responses were received?
A. I can but I can't do it now.
Q. You would be able to produce that information with the additional information?
A. Yes, because we took fixes about every three minutes, and I could go into the tables and find out.

What I do is I keep time on these records. My time is exactly synchronized to the bridge time, and they keep the navigation on the bridge.

Then we can correlate this using time.
Q. In what depth of water did you locate those targets?
A. 530, 535, that type.
Q. Feet?
A. 530 to 540, I guess I would feel safe in saying.
Q. You mentioned you like to keep your fish above bottom. Would you tell us, as you observed, at what distance were you attempting by the speed of the vessel to maintain the fish above the bottom?
A. Okay. I think I have to say this: The best way to get the depth of water is not with this. It is to get it from the ship's echo sounder which was running all the
time.

I can get the depth of water from this. I have to sum up two values:

This fish will ping up as well as down. So I have two returns on this record. This line here is a sea surface return.

On this record, I have a measure of a distance that the fish is below the sea surface. I also have a measure of the distance that the fish is above the sea floor.

The sum total of these two is the depth. However, this type of record with this small scale is nowhere near as accurate as the echo sounding record; so I get my depth information from the echo sounding record.

Here I just generally try to keep the fish perhaps 50 to 150 -- 50 to 100 meters off the bottom.

It depends on the weather conditions.

I like the ship to go as slow as it can go and still be able to steer.

Q That is your best judgment as to the approximate average depth of the fish off the bottom?

A I can tell you the exact depth off the bottom. It is contained right within the record. One can take the record and read it and know just where the fish was.

It is this line here, and you can measure it
(indicating).

Q. But you don't have the ability or information present at this time to do it?

A. I will do it by my own judgment. I will give you gross information right now if you want.

Q. Yes, please. I thank you.

A. Okay. The fish was about -- at this time on record 42-C, the fish was about 62.5 meters below the sea surface.

The fish was also, with reference to the sea floor, about a little short of 100 meters below the sea floor.

Q. Above the sea floor?

A. All right. Now, by eye that means 100 plus 62.5 times 3.3, which should equal 530, if anybody can do that.

That's the extent of the accuracy that I can do by eye.

Q. By making a quick examination of the other two documents, would that be approximately the same?

A. I will look.

On Exhibit 42-B -- on 42-B the fish was --

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

(Discussion off the record.)

REAR ADMIRAL BARROW: Back on the record.

A. 142 feet above -- 112 meters above the sea surface is the height for the fish on record 42-B.

Q. Above the sea surface or the sea bottom?

A. I'm sorry; the sea bottom. The fish is 112 meters
above the sea bottom.

Now, 65 meters is the height of the fish above the sea -- lake bottom, on record 42-A.

Q. Thank you, sir. Again, very briefly, so we will understand, would you tell us the size, length and shape of this fish just so we will understand what it looks like?

A. Yes. The diameter of the fish is about four or five inches. The length of the fish is about four feet.

Q. You have indicated the results of your examination that you have described, the manner within which they may not be too definite.

Would you tell us what other possible means of pursuing this are known to you?

A. Certainly. One, you can do a side scan sonar survey over again in a better fashion than we did it. That's the first thing you can do.

Second, you can do underwater photography, hanging a camera on a cable and just lowering it.

There are cameras which will take hundreds of shots and just shoot randomly, hoping that you will get a few pictures.

For positive identification, there is nothing quite as satisfying in my opinion as a photograph.

Now, third, you could with a bottom grab device,
such as geologists use, you can go out there and pick up some material in the proximity of the objects.

You might find debris and you might find cargo. It is a very easy thing to do. Then there are underwater, as we go up in complexity, there are underwater television devices and then there are underwater submersibles.

Those are all the avenues open to you.

Q. Just at this stage would you recommend a further sonar examination or would you recommend -- would you feel that a further sonar examination would disclose anything useful?

A. I would recommend a further or additional sonar investigation to be performed, and I would expect that the records would be of higher quality than these and I would expect that the additional sonar side scan sonar survey would produce information which is more definitive.

Based on the results of that, I would then make a decision as to what to do further.

Q. Is the equipment necessary for the further sonar examination, is that still available in the vicinity of the Soo?

A. In fact, I understand it is to be performed as soon as the weather breaks.

Q. Fine.

REAR ADMIRAL BARROW: Let's go off the record a second.
(Discussion off the record.)

REAR ADMIRAL BARROW: Back on the record.

MR. MURPHY: Thank you, Doctor, and we appreciate very much your assistance.

REAR ADMIRAL BARROW: Dr. Breslau, can you tell me if the Mini-Ranger readings at the object locations, if they can be converted directly to geographic positions?

THE WITNESS: Yes, they can.

One has to swing some arcs. It doesn't read out. The device reads out distances to the transponders.

However, they can directly be converted to geographic positions inasmuch as the transponders are put at fixed and known locations.

REAR ADMIRAL BARROW: Can you label the vertical axis of the trace as to direction of heading in degrees true? Can you do that now?

THE WITNESS: I can't do it now, but I can do it subsequently.

REAR ADMIRAL BARROW: Can you do it for us subsequently?

MR. COLUCCIELLO: Can you make that conversion to geographic positions? He says he has the mini-scan readings but we still don't have the positions, but he has an exact way to determine
to determine the location of those objects.

REAR ADMIRAL BARROW: We told them to provide this.

THE WITNESS: I am going to provide a chart with the MAD site on it and that is where this was taken.

MR. COLUCCIIELLO: I didn't mean the MAD site; I meant with his readings from the Mini-Ranger. He said he could convert those Mini-Ranger readings directly to geographic positions.

THE WITNESS: Yes; I have to explain something, as I said earlier and I will say it again. I can definitely give Mini-Ranger positions and I will be very glad to do so.

However, as I mentioned earlier, the last two digits on the Mini-Ranger were not read.

Consequently, the last two significant digits were lost and the Mini-Ranger lens ranges are only good to 100 meters. There can only be 100-meter accuracy in those.

MR. COLUCCIIELLO: That may be negligible, but it is probably better than what you can get from the MAD gear.

THE WITNESS: There is no problem. We will have the position.
MR. COLUCCIHELLO: That's all what we
were asking for.

REAR ADMIRAL BARROW: Fine. Would you
furnish that for us?

THE WITNESS: Certainly.

REAR ADMIRAL BARROW: Any further questions?

MR. MURPHY: No.

REAR ADMIRAL BARROW: Thank you very much,

Dr. Breslau.

We will recess at this time and reconvene at
1300.

(Whereupon, at 11:55 a.m. a luncheon recess
was had to reconvene at 1:00 p.m.)

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AFTERNOON SESSION

1:25 p.m.

REAR ADMIRAL BARROW: Good afternoon, ladies and gentlemen.

Let the record show we reconvened at 1325.

I have one piece of business remaining from a previous session, and that is the disposition of Exhibits 42-A, B and C for identification.

42-A, B and C were tracings which represent sonar tracings made on the 15th and 16th of November.

The essential portions of those tracings which we have considered contain photographs which have also been marked Exhibits 42-A, B and C.

I will direct that those photographs be admitted into evidence as 42-A, B and C.

The tracings will be available for use separate from the Board of Investigation.

Cdr. Loosmore, call your next witness.

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WILLIAM R. PAUL

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

EXAMINATION

By Cdr. Loosmore:

Q Lt. Paul, would you please state your name, rank,
duty station and serial number?


Q. Lt. Paul, how long have you been stationed at the Marine Safety Office?

A. In Toledo, approximately 14 months.

Q. What other Marine Inspection assignments have you had prior to Toledo?

A. San Francisco for approximately four years.

Q. What formal training or schooling have you had in this kind of work?

A. I attended the Marine Inspection School in Yorktown, Virginia.

Q. When?

A. In 1970.

Q. How long have you been in the service altogether?

A. Approximately 18 1/2 years.

Q. What are your duties at Toledo?

A. Well, we run the whole realm of Marine Inspection from licensing to inspection and investigating, basically.

Q. Would you say any one of those duties is primary?

A. I would say probably inspection is primary.

REAR ADMIRAL BARROW: I think you are going to have to speak a little slower and with a little more volume, please.
THE WITNESS: 

Yes, sir.

By Cdr. Loosmore:

Q. Lt. Paul, this investigation is concerned with the loss of the Fitzgerald, and in connection with your duties as a marine inspector and the Coast Guard Inspection Offices in Toledo, have you ever had occasion to inspect the Edmund Fitzgerald?

A. Yes, sir; I have been on board the Fitzgerald.

Q. Do you recall the last time that you were on board the Fitzgerald?

A. The last date that I had been on the Fitzgerald for board inspection was on October 31, 1975.

Q. What was the purpose of that inspection?

A. This is the annual spar deck inspection.

Q. The annual spar deck inspection?

Could you tell us what that involved?

A. Basically inspection of the spar deck in the vicinity and in the location of the area of the hatches, and everything associated with it.

Q. What was the result of this inspection?

A. As a result of this inspection, I issued a requirement to the Fitzgerald for four items.

Q. What were those four items?

A. To the best of my recollection, there was a fracture, a fracture in No. 16 port in the hatch end girder, a
small one, a gouge, an indentation on each; and on No. 15, and I am not positive of the exact hatch.

Q. You kept a record of those?

A. Yes, sir.

Q. Do you have a record with you?

A. I believe so.

No. 13 hatch, there was a notch in the deck plating. It is a very small notch.

No. 15 hatch, there was a small gouge in the deck plating. There again it was adjacent to the hatch itself.

In No. 16 hatch, there was a fracture, as I said before, in the hatch end girder, and in No. 21 there was a small fracture, the hatch end girder connection after-combing on the starboard side.

That was all.

Q. You said you issued a requirement, and what form was that requirement issued?

A. This was issued on a standard Coast Guard Form CG835.

Q. Does that form -- do you have a copy of that form with you?

A. Yes, sir, I do.

Q. Mr. Paul, there are two other pages attached to the form. Can you tell me what these pages are?

A. The first page, I believe, which you have in your hand,
as I recall, was a special form on which we list the basic information for the vessel, the name, the class, home port, when and where built, owner's address, and so on and so forth.

Do you want me to go on?

Q. No.

How about the next page?

A. The next page is the spar deck examination form.

It is a local form from our office.

Q. Is this second page also a local form from the Inspection Office?

A. Yes, sir; it is. It is a local form.

CDR. LOOMSORE: I would like to request that this be marked Exhibit No. 43-A, B and C for identification.

REAR ADMIRAL BARROW: Mark them so.

(Exhibits 43-A, B and C marked for identification and made a part of the record.)

MR. MURPHY: May we see them, please?

CDR. LOOMSORE: Yes.

(Pause.)

REAR ADMIRAL BARROW: May we see them, please?

CDR. LOOMSORE: I'm sorry. I thought
I had showed them to you.

(Pause.)

By Cdr. Loosmore:

Q. I will hand you Exhibits 43-A, B and C which were marked for identification.

I would like to discuss each one of the requirements in order.

I have here a fracture, and I am referring to Exhibit No. 26 which depicts the deck edge and hatch openings.

Does this photograph contain some of the detail to show where some or all of those requirements are?

A. That would show where -- let's see. One is 15, and we have 16 and another one in No. 16, which is back in the aft corner.

Q. Would that show here?

A. No, it wouldn't.

Q. Could you then take this particular exhibit, and I will hold it up and would you read the requirement and explain as best as you can where it would be located on this photograph?

A. No. 15 hatch -- do you want me to read the whole thing?

Q. Yes. Go ahead.

A. "Grind out notch and deck plate adjacent to hatch and girder, port side."

To the best of my recollection it is somewhere in this
vicinity here, at the edge of the plating, and this applies
to the next one as well, No. 15.

It was in this vicinity, right at the edge, on
the edge of the deck plating.

CAPT. ZABINSKI: Admiral, I don't
think that's enough for the record to describe
what the witness is pointing to.

REAR ADmiral BARROW: Right; I don't think so.

By Cdr. Loosmore:

Q I have Exhibit 6-F in front of me, which is a midship
section of the ship.

Is there sufficient detail on that drawing to show
the location?

A Well, it would have to be --

Q Yes or no?

A Yes, sir. However, the angle is wrong the way we are
looking at it.

REAR ADmiral BARROW: Can you draw a sketch
of this?

THE WITNESS: I think so.

REAR ADmiral BARROW: I think probably the
best way to show the location of these is by making
a sketch of the particular areas involved.

If you need additional time to do that, I
think we can take the time to do that and present it
to the Board.

However, I don't believe that the indication on the photograph is going to be sufficient.

CDR. LOOSMORE: May we have a few moments to prepare a sketch?

CAPT. ZABINSKI: What do we want the witness to prepare?

By Cdr. Loosmore:

Q. Can you prepare a sketch to show the location of all four requirements?

A. I think in less than 10 minutes I can do that.

REAR ADMIRAL BARROW: I think that's the best way to approach this thing, to prepare a sketch showing the areas on the fractures.

Off the record.

(REcess had.)

REAR ADMIRAL BARROW: Let the record show that we reconvened at 1340.

Cdr. Loosmore?

By Cdr. Loosmore:

Q. Mr. Paul, we were discussing the details of each of the four of these requirements.

Could you, with the aid of whatever sketches you have prepared, plus the photograph which I have shown you already, describe in as much detail as possible where
each of these deficiencies in the hull structure existed
and the extent of it?
A  Sir, I will try.
I have a sketch here of No. 15 hatch port. The
angles possibly are the same as in the photograph that
we have looked at a few moments ago.
Here is, approximately, I would estimate a one-inch
gouge. The edge of the plate --
REAR ADMIRAL BARROW:  Would you identify
the particular pieces that you have got there be-
fore you get into where the deficiencies are noted?
A  This is a hatch end, Admiral, the combing on either
side, the hatch end girder and the deck plating right
here (indicating).
The gouge was found in the edge of the plating approxi-
mately in this position, a very minor  gouge, I would say.
MR. MURPHY:    I'm sorry. Did
you say a fairly minor gouge; was that your wording,
sir? I didn't hear it.

THE WITNESS:    Yes, sir.
CAPT. ZABINSKI:  Let's identify that.
CDR. LOOSMORE:  I request that this
Sketch No. 44-A be marked for identification.
MR. MURPHY:    Which hatch?
CDR. LOOSMORE:  No. 15 hatch.
CAPT. ZABINSKI: What requirement is that that you are referring to there on your 835?

THE WITNESS: H-2. I should have started with the first one.

REAR ADMIRAL BARROW: I think you asked for identification on this as 44-A.

CDR. LOOSMORE: Yes, sir. And the second is 44-B.

REAR ADMIRAL BARROW: And this is the hull requirement No. 2, and it refers to the vicinity of No. 15 hatch; is that correct?

THE WITNESS: Yes, sir.

REAR ADMIRAL BARROW: I think that one of the additional things you might do to the sketch would be to identify in printing the particular components we are looking at.

CAPT. ZABINSKI: Forward and aft. Can you locate forward and aft?

THE WITNESS: They are all identified as port to starboard.

REAR ADMIRAL BARROW: All right. We'll mark for identification 44-B.

By Cdr. Loosmore:

Q Go ahead.

A Our next sketch is a No. 13 hatch port with a notch
apparently made by a sharp object. It is near the same -- it was near the same vicinity.

Once again, this is in the deck plating adjacent to the starboard deck girder.

CAPT. ZABINSKI: What requirement
does that depict?

THE WITNESS: This is requirement H-1.

Q. This sketch is entitled "Edmund Fitzgerald, 13 Hatch Port."

A. Yes.

CDR. LOOSMORE: I request this be marked as 44-A for identification.

REAR ADMIRAL BARROW: Marked as so.

(Exhibit 44-A was marked for identification and made part of the record.)

THE WITNESS: The next sketch is of Hatch 16 port. This had a crack and an indentation in it. The crack is approximately -- I estimated it to be eight inches, the indentation approximately three or four inches. This is in the face of the hatch end girder approximately the same distance after the forward combing as the other two items.

Q. What requirement is this?
This is requirement H-3.

All right.

CDR. LOOSMORE: I request to mark this sketch No. 44-C for identification, Edmund Fitzgerald No. 16 hatch port.

REAR ADMIRAL BARROW: Mark it so.

(The Exhibits 44-B and C marked for identification and made part of the record.)

THE WITNESS: The next sketch is a Hatch No. 21 starboard, showing the aftercombing of the hatch with a possible one-inch crack where the hatch combing joins to the hatch end girder.

CDR. LOOSMORE: I request to mark this sketch No. 44-D for identification. It is entitled "Edmund Fitzgerald No. 21 Hatch, Starboard."

REAR ADMIRAL BARROW: Mark it so.

(Exhibit 44-D marked for identification and made a part of the record.)

By Cdr. Loosmore:

Mr. Paul, on photograph which is Exhibit No. 26, there is really no way to tell whether we are looking at the starboard side when we are looking to starboard or to port.

In other words, there is no way to tell on this
photograph which is forward or aft; is that correct?

A  Right.

Q  Could you indicate on this photograph which I have
    entitled on the sketch as No. 44-D the aftercombing?

A  If this were No. 21 hatch, the aftercombing would be
    right here (indicating).

Q  It would be right where?

A  (Witness indicates.)

Q  The after port at the farthest to the right part
    of the picture?

A  Yes, sir.

Q  All right. In that case, if you viewed the part
    which you just described as aft, then would the top of the
    photograph be port or starboard?

A  It would be starboard.

Q  Then on the photograph, as best as you can tell,
    where would this other unmarked structural piece be?

A  Right there (indicating).

Q  Where the circle is at the mark in the upper right-
    hand corner?

A  Yes.

Q  What is that piece called, if you know?

A  I call it the hatch end girder.

Q  The hatch end girder? Would you write that on this
    sketch?
Q. Is that the hatch end girder or the hatch side girder? You called it the hatch end girder.

A. It is the edge of the hatch; that's what I call it.

Q. What would you call it, again, please?

A. Hatch end girder; that is fine.

Q. Hatch end girder? All right.

Now, then, this sketch which has been marked 44-D for identification has a notation "Crack" in this same hatch that we are looking at on Exhibit No. 26.

Where would this crack be located?

A. The crack would be in the corner.

MR. MURPHY: I would object,

Mr. Chairman. This photograph has been previously used and previously marked for a different purpose by a different witness, and it has already been identified.

This witness is not showing the hatch with which we are involved in his testimony.

I object to the use of this piece of evidence, this exhibit, for that purpose because we are talking about an entirely different situation, if I understand it, and there are inferences which can be raised by this, which are in no way connected with this testimony.
REAR ADMIRAL BARROW: I think that what we were attempting to use this for was to show a typical hatch, even before on the initial testimony, where he used this specific exhibit.

Is that not what we were trying to do with it?

CDR. LOOSMORE: Yes, sir.

MR. MURPHY: May I confer with the Chairman for a moment, please?

REAR ADMIRAL BARROW: Yes.

Off the record.

(Discussion off the record.)

REAR ADMIRAL BARROW: On the record.

The particular part of the testimony which this witness has made with regard to the photograph, -- which is exhibit what?

CDR. LOOSMORE: 26.

REAR ADMIRAL BARROW: -- will be stricken from the record.

I think we should have the witness refer to the sketches he has made in order to clarify the existence of the particular deficiencies that he has noted.

CDR. LOOSMORE: If we may have a moment, sir, I will ask the witness to prepare a supplemental sketch to the one he has there, which I think will
clear it up a little bit.

REAR ADMIRAL BARROW: Off the record.

(Discussion off the record.)

REAR ADMIRAL BARROW: Back on the record.

By Cdr. Loosmore:

Q. Mr. Paul, we were talking about the fourth deficiency which was found in this hull, which is included on the CG-835, which you wrote.

Have you prepared an additional sketch which shows what that is?

A. I have a sketch of 21 Hatch starboard showing the location of a crack in the weld, the aft corner of No. 21 hatch, approximately a one-inch crack where the after-combing is attached to the side girder.

CDR. LOOSMORE: Sir, I would request this be marked, this sketch be marked No. 44-E for identification.

CAPT. ZABINSKI: What requirement is that?

Q. What requirement is that?

A. H-4.

REAR ADMIRAL BARROW: H-4 I believe we had marked as 44-D.

CDR. LOOSMORE: Yes, sir. This is an additional requirement of the crack, which was
listed in --

REAR ADMIRAL BARROW: Still No. 21 hatch?

CDR. LOOSMORE: Yes; it is entitled "Edmund Fitzgerald, No. 21 Hatch Starboard."

REAR ADMIRAL BARROW: Mark that 44-E. (Exhibit 44-E marked for identification and made part of the record.)

MR. MURPHY: May I see that?

REAR ADMIRAL BARROW: Yes.

(Pause.)

MR. MURPHY: No objection.

By Cdr. Loosmore:

Q. Mr. Paul, how did you find these deficiencies which are depicted in these sketches which are Exhibits 44-A through E and which are listed on Exhibit 43? What was the process of finding these?

A. In the process of a routine spar deck inspection. We were in the company of American Bureau of Shipping.

Q. And who was that?

A. Wil Jeanquart; was in attendance and a new man from Toledo of which I don't recall his last name.

Q. Another ABS man?

A. Another ABS man. And Mr. Dick Felix from Columbia was also in attendance.
Q. What was the physical process of inspecting that you did?
A. Just by visual observation, these items were spotted. We inspect each individual hatch.
Q. Did you climb out, or how did you go about it?
A. There is the process of climbing out and sometimes using a mirror or flashlight and everything we have at hand to aid in the inspection.
Q. What time of day was it?
A. During the broad daylight; I don't recall exactly the time.
Q. Were these the four listed there, were they the only deficiencies you found in the course of that spar deck inspection?
A. To the best of my knowledge that's the only deficiencies which we found.
Q. All right. Once you had found these four, what did you do?
A. After we found these deficiencies, we discussed them. Afterwards I think the consensus was that there was nothing of a serious enough nature to hold the vessel or anything requiring repairs.
A. After this, I personally called my office and advised them of what we had. I advised them of what deficiencies, and advised them of these four deficiencies.
Q. You said you called your office. What was the purpose of that call?

A. Well, I wanted to advise them of what deficiencies there were and as far as time element on requiring repairs.

Q. Who did you talk to in the office?

A. I talked to Cdr. Lawrence.

Q. Who is he?

A. He is the executive officer. He is also the senior inspector material.

Q. Did you ask him for instructions?

A. I advised him what we had and I advised him of what our results were, and he asked me about a couple of things and I answered him to the best of my ability and that's it.

Q. Did you advise him that you were going to write up an 835?

A. I don't remember my exact words, but I probably said it would be required. I am sure I said something of this nature in the normal process of inspection.

Q. Now, is there anything else included in that 835 on that particular form?

A. There is a time element on the bottom of that form. There is a time element involved in this requirement.

Q. What is that, please?

A. It says, "Above items to be completed prior to the 1976 operating season."
Q. Was the vessel due to sail at that time right then?
A. I believe they were planning on leaving in the near future. I don't know exactly. I would say within two or three hours. That is my guess. I don't know exactly.
Q. But was it your intention or your instructions from Cdr. Lawrence or whoever you talked to in the office, that these repairs will be made before the vessel sailed?
A. No, sir; I was to write the requirement and include in the requirement that they be accomplished prior to the 1976 operating season.
Q. When did you expect that they would be repaired?
A. As soon as the ship laid up, some time thereafter, before they fit out in the spring, possibly before.
Q. Do you have any particular instructions on that spar deck inspection?
A. I know there is a district instruction that we have in the office. In fact, it was read to us probably within the last two weeks. This is an instruction which has been issued. I don't know exactly when, but I think it was reissued.
Q. What does that instruction include?
A. Well, I don't remember the details, Commander.
Q. Generally?
A. Just tells you a few things. I can't be very specific about exactly what it says.
Q. All right.

CDR. LOOSMORE: I believe that's it, sir.

REAR ADMIRAL BARROW: Anything from the Board?

Capt. Wilson?

EXAMINATION

By Capt. Wilson:

Q. If I understand you correctly, the reference to the end girder is on the end of the hatch, toward the side of the vessel; is that correct?

A. Yes, sir.

Q. Is this end girder a continuous girder?

A. Yes, sir; to the best of my knowledge, it is.

Q. It is from end to end?

When you examine the girder and plating in that area, how close can you actually get to it?

A. Well, if you climb out on the ledge, you can get very close, holding onto the combing and sort of hanging over the side and using a mirror or flashlight or whatever, to get a look at whatever you want to see on it.

Q. You mentioned using a mirror. Which face do you have to use a mirror on; which part of the structure is it necessary to use a mirror in order to get an observation?

A. Oh, the lower parts of the girder, it is pretty hard to see. The lower parts of the girder would be used with the mirror.
This would be attempting to look underneath the girder, areas like this, where you can't normally get your head down there.

Q. Then if I understand you correctly, you can see the top face by direct observation, the side face by direct observation, but it necessitates the use of a mirror for the lower face or the underside of the girder; is that correct?

A. Yes, sir, but the top you can see. The flange would be under the plating itself.

Q. So then, to observe the flange, the plating connection, the underside of the flange, you use a mirror for that?

A. I would say in most cases, you could see.

Q. By direct observation?

A. Not -- you are talking about under the back side of the flange or the girder?

Q. The lower side of the girder, yes, the lower side of the upper side of the flange.

A. I would say it would be possible. It is difficult.

Q. But this area you used a mirror in?

A. This would be an area where we would have to use a mirror.

Q. The plate-to-girder connection, is that welded, rivetted or what?
A It is riveted in this particular vessel.
Q So the place is riveted to the plate girder connection?
A Yes.

CAPT. ZABINSKI: What plate is riveted?
CAPT. WILSON: I will go back.

Q What is this connection between the girder? It is --
A It is connected.

Q Now, during the process of this examination you also examined the rivetted connections as best you could?
A Yes, sir.

Q Do you see this type of defect; is it a frequent defect, or is it an unusual defect?
A Which particular defect are you referring to?

Q We'll take them one at a time.
The notch as shown in 44-A is what we will start with.
A I would say this particular defect -- now, I would have to qualify this. In my experience, it is not uncommon. Due to the fact the ship utilizes offloading equipment, the rigs go into the holds, in and out, in and out, and I would guess that they were derived from this, mechanical damage, from the offloading and unloading operations.

Q Would you say this is a fairly common defect to find?
A Yes, sir.

Q Is it fairly common to find many of these at a spar deck inspection? Otherwise, do you feel that it would be
common if you found one of these in every hatch, for instance?

A  Not in my experience; I have never seen that many.

Q  So there is a scattered few? Would that be correct?

A  Yes, sir; that is right.

Q  Now, on 44-B which is indicated as a gouge, do you have any idea what may have caused this?

A  I would say probably the same as the one in No. 13, some mechanical damage from equipment going in and out of the hatch.

Q  Would this be a rather common thing to find, not an unusual thing?

A  Yes, sir; I think so.

Q  44-C, which is indicated as an indentation and crack, do you have any idea what causes that?

A  I would say once again that this is mechanical damage from equipment entering the hatch and leaving the hatch.

Q  Did the crack, as indicated here, did it start or end at either one of the faces or was it --

A  No, sir; I would say it was generally in the middle.

Q  In the middle of the girder?

A  That's correct.

Q  And then on 44-E we have No. 21 hatch starboard. You have indicated a vertical crack and you said that was in the girder?
A. No, sir; that's in the welding between the girder and the combing. To the best of my knowledge, that's the way it was.

Q. And this is then between the --

A. I know it was not in the girder and not in the combing.

Q. I am just trying to understand what you said.

It was in the weld connection between the continuous girder and the combing?

A. Yes, sir.

CAPT. WILSON: That's all I have.

REAR ADMIRAL BARROW: Capt. Zabinski?

EXAMINATION

CAPT. ZABINSKI: Do you have Exhibits 43-A, B and C there?

CDR. LOOSMORE: Yes.

By Capt. Zabinski:

Q. Mr. Paul, what inspections are required for a vessel like the Fitzgerald by the regulations?

A. We were required to do an annual inspection for certification. We are required to do drydock inspections. On the Great Lakes we are required to do spar deck inspections.

Q. Is this required by the regulations or is this just a local area inspection?

A. To the best of my knowledge, the spar deck inspection
is not a regulation but localized to the Great Lakes area.

Q. Do you know when this started?

A. I believe it started after the sinking of the vessel in 1966 or '68, between that period.

Q. It would have been the Morrell?

A. Yes, sir. I think that is correct.

Q. Were there any other inspections required of the Fitzgerald beside the drydocking and the annual inspection and the spar deck inspection, to your knowledge?

A. Do you mean specific parts of the inspection?

Q. Coast Guard inspections; I'm sorry.

A. I think I covered them all, Captain.

Q. All right. You have here an Exhibit 43-B, the form entitled "Special Examination."

What does that mean?

A. This would be an examination, for instance, if a ship had a casualty or grounded. It would be some period where you are required to go into the vessel, other than a regular scheduled inspection.

Q. And you used this form to record that visit; is that correct?

A. Yes, sir.

Q. Do you make out an inspection book?

We have had drydock inspection books. Would you make that out during this inspection?
A. Not for a special visit.

Q. So this would be the only record of that inspection; is that correct?

A. Yes, sir, unless it happened to coincide with an annual inspection for certification.

Then it may be entered.

Q. Did this inspection on 31 October 1975 coincide with either a drydock or an annual inspection, to your knowledge?

A. No, sir.

Q. In your report of special examination it indicates, “On board vessel, afloat in company of,” and it says so and so, “for an annual spar deck inspection.”

From the remarks here, was this spar deck inspection carried out on an annual basis?

A. Yes, sir.

Q. Was that the requirement by local regulation or instruction?

A. Yes, sir.

Q. Was the vessel loading or discharging, could you tell?

A. It was discharging.

Q. Do you know what it had on board at that time?

A. Taconite is the material.

Q. Were there any repairs in progress at that time?

A. There were no repairs in progress, to the best of my knowledge. A repair facility representative was on
board at the time.

Q. Why was he along with you on this inspection; is that customary?

A. I would have to assume that the company representative asked him to be. I really don't know; I had nothing to do with it.

Q. Is it normal for a repair representative from a repair facility to come along with you?

A. Well, it doesn't happen every time we do an inspection; it is not abnormal.

Q. Would you describe for us what you did from the time you went aboard to the completion of this inspection? How do you conduct it?

A. Well, I leave the office and attempt to arrive at the vessel at the specified time, and generally the company representative is on board and I might meet him and have a cup of coffee first, and you meet the ABS inspector and you go together and you start your inspection.

You start on one hatch and you go up one side of the vessel, get through that, and of course, as you go along you might find some item and you might discuss it.

You record what you find. Then you go to the other side of the vessel doing the same thing.

When this is completed, you have some items which you
found, some deficiencies. You discuss how serious it
might be or what you should do about it.

"Should you require them immediately? Can you wait
until the end of the season?" or whatever.

That is basically it, sir.

Q  I would like for you, as best you can, to recollect
the visit that you had on board the Fitzgerald on the
31st of October, if you can.

Do you recall how many hatches the Fitzgerald had?

A  Yes, sir; it has 21 hatches.

Q  And you went on one side, started aft going forward?

A  Starting on the aft, on the starboard side.

Q  And you inspection is to look at the top of the hatch
or just what is that procedure?

A  We look on top of the hatch, the hatch combings,
the deck, the hatch crane railings, everything in the
whole vicinity.

Q  It is called a spar deck inspection?

A  Yes.

Q  Do you just -- just what structural members do you
look at during the spar deck inspection?

This is what I am trying to find out.

A  Generally you confine your inspection with regard to
the hatchings, to the combings, to the corners, the girders;
any weld connections, rivets.
Q. Do you look at the gunwale connections?
A. Yes, sir, and you attempt with the use of a mirror
to see anything where it is pretty hard, where you can't
physically get to.
Q. Now, you walk along the deck and look in each hatch
and if you see some condition you want to examine more
closely, you go in and examine that area; is that about
the way it works?
A. Yes, sir.
Q. How about the underside of the deck combings and
so forth; do you examine those?
A. There are some parts of the underside of the deck
that you can't see in this particular inspection.
Q. Why not?
A. Well, there is no access to it, I guess, unless
you had a crane with a bucket, but this is not routine
to use a crane and a bucket.
Q. Is there any inspection made of the underside of the
spar deck?
A. During the layup inspection, you would go through
the cargo holds.
Q. I am referring now during this spar deck inspection.
A. Not normally; no, sir.
Q. If there is some area in question you have to see
underneath, you would follow the procedures that you
1 described for the Commander or Capt. Wilson; is that
2 correct?
3 A. Yes, sir; if some item was, you know, questionable.
4 There is no limit to how far you can go.
5 Q. Okay. Let's take one item. This was Hatch 13.
6 Do you recall if the company representative, the
7 American Bureau representatives that were there, and
8 also this repairman, if they stopped and examined this
9 area with you?
10 A. To the best of my knowledge, all parties involved saw
11 each of these items, and specifically this first item.
12 Q. You are indicating now they saw all four items
13 that you have indicated on your Form 835 which is Exhibit
14 43-A?
15 A. Yes, sir.
16 Q. Do you recall if you had any detailed discussions
17 about any of these items?
18 A. They were discussed; yes, sir.
19 Q. Were you in agreement about the nature of the
20 deficiencies noted?
21 A. Yes, sir.
22 Q. Did you agree that there was in No. 24 hatch, that
23 there was a fracture in the hatch end girder connection?
24 A. Yes, sir; I saw it.
25 Q. And the others that accompanied you saw this defect?
A      Yes, sir.
Q      Or decided?
A      Yes, sir.
Q      Were there any items that you personally saw, which the others did not, that the others did not see?
A      No, sir, I don't believe so.
Q      Do you think that there were any deficiencies observed by them -- when I say deficiencies I mean items of a similar nature that you have here, that you did not see?
A      None that I know of.
Q      I am talking about the Oglebay-Norton representative who was along; did he express any concern about any of these items, particularly affecting the seaworthiness of the vessel?
A      I am certain he recorded them and he was aware of them and I think I stated earlier that I saw him on deck with the repair representative looking, I believe, at these items.
         I don't know if they looked at each one individually, but I know they were.
Q      Did the American Bureau representative -- you indicated there were two, is that right, two representatives?
A      Yes, sir.
Q      Did either one of those express any concern about
any one of these four items affecting the seaworthiness of the vessel?
A  No, sir; as far as affecting the seaworthiness of the vessel, I don't believe so. There were items which would be recorded and repairs taken care of.
Q  Do you feel that any of these four items, that any of these four items affected the seaworthiness of the vessel, of the Fitzgerald?
A  No, sir.
Q  Why did you record them?
A  Well, it is the normal thing to do in the process for inspection. We don't overlook anything — well, a minor scratch, but anything that would affect the vessel whatsoever.
Q  Is it fair to say that you recorded these and after talking with your office, indicated the date of completion, to insure that they were completed at a subsequent time?
A  Would you rephrase that, Captain?
Q  I say, is it a fair statement to say that these were recorded, and further, a time was designated for the completion of these repairs at the discretion of your office, and that was to insure that the repairs were effectively completed at some future date?
A  Yes, sir.
Q  Did you have occasion, outside of this spar deck
inspection, to visit any other part of the Fitzgerald?

You had a cup of coffee, so you went in the mess
deck, I guess.

A I went to the bridge to record the inspection on
the bridge record card.

Q Did you meet the master?

A I didn't personally talk with the master in this case.

Q Did you meet any of the deck ship officers that
you can recollect?

A Not the deck ship officers; I did talk briefly to
the chief engineer, who I personally know.

Q What was the nature of your conversation with the
chief?

A A very brief conversation, just "Hello" and that was
about it.

Q Did you talk to any of the other officers, any
officers on board?

A No, sir; I don't believe I did.

Q Did you talk to any of the crew; did you talk to any
of the crew?

A Not more than just "Hello, how are you?" or something
like that.

Q Where else did you go in the vessel, do you recall,
besides the bridge?

You said you had a cup of coffee. Where was that that
you had this cup of coffee?

A  In the galley cabin. I can't remember specifically.

To the best of my knowledge, I went to the galley and

to the bridge.

Those were the only areas that I visited on this par-
ticular day.

Q  Did any of the crew express to you, while you were

on board, any concern about the condition of the Fitzgerald?

A  No, sir.

Tk17DARpz

Q  I have here an exhibit marked for identification 43-C

under remarks or unusual conditions, "General condition

satisfactory."

Do you base this conclusion, on what observations?

A  I would have to base it on my past experience on

these particular types of vessels, the age.

Q  How old was the Fitzgerald?

A  It was built in 1958.

Q  When would you have made this entry "General Condition

Satisfactory"?  The same day of the inspection?

A  Yes, sir.

CAPT. ZABINSKI:  That's all I have.

No, I do have one other thing.

Q  Mr. Paul, you indicated that as far as attending

Marine Inspection School you were in in 1970; is that

correct?
A. Yes.

Q. What was your previous experience in the Coast Guard? You indicated you have been in for 18 1/2 years?

A. Immediately prior to this, Captain, I was at Loran Station in Libya and also Loran Station in Italy.

Prior to this I was the operations officer aboard the CGC Modoc.

Q. Where was that?

A. Coos Bay, Oregon. Prior to that I attended OCS in Yorktown, Virginia.

Do you want me to go further back?

Q. Yes.

A. Prior to this I was assigned to the CGC Taney in San Francisco.

Prior to this I attended RCA School of Advanced Electronics in New York City.

Prior to that I was an instructor at a Navy Fleet Sonar School in Key West, Florida.

Prior to that I was a sonar technician aboard two ocean weather cutters, the Ingham and the Madrona.

Prior to that I was sonar technician aboard the CGC --

Q. What kind of technician?

A. Sonar.

Prior to that I was assigned to the CGC 83303 patrol boat.
Prior to that I had attended the Navy Sonar School in Key West, Florida, and prior to that I attended boot camp in 1957.

Q. How old are you, Mr. Paul?

A. 37.

Q. Do you have a specialty?

A. A hull instructor.

CAPT. ZABINSKI: That's all I have.

EXAMINATION

By Rear Admiral Barrow:

Q. Mr. Paul, how many spar deck examinations have you carried out while you have been assigned in the Great Lakes Region?

A. To the best of my knowledge, Admiral, approximately 10 to 15 inspections. Like I say, that is to the best of my recollection.

Q. Most of those have been within the last few years?

A. The last 14 months.

Q. Would you say that the results you found in this particular case on the Fitzgerald are fairly typical of what you find on the Great Lakes or on other boats or not?

A. I would say they are probably typical for a non-salty unloading vessel where you have the offloading equipment entering the cargo holds.
Q. Do you find those worse or better?
A. It depends on the age of the vessel, of course, and probably the -- you would get much more wear and tear in this area of these deficiencies in this type of vessel than you would in the salty unloading vessel.
Q. I have two exhibits, 44-A and 44-B; 44-A being the No. 13 hatch on the port side in which you characterize the deficiency as being a notch, and 44-B and in approximately the same location, maybe a little forward of that, No. 15 hatch on the port side, in which you characterized that particular one as a gouge.
Would you differentiate between those two for me?
A. I would say the notch was made by a sharp edge as opposed to the gouge -- I mean a side blow or scraping type of a motion.
Q. Could you give me any indication in your judgment as to the cause of those two particular ones?
A. If I was going to say what caused it I would say the offloading equipment or probably the tractors that they used or the Caterpillars that they use in the holds to move cargo.
Q. Something that struck the piece of steel here?
A. Yes, sir.
Q. On Exhibit 44-C, that defect is actually in the hatch girder itself?
A. That's the crack? Yes, sir, that is in the girder.

Q. It is annotated "Indentation and crack."

Would you describe that for me again, please?

A. In the vicinity of the crack, the girder is set in approximately three to four inches.

It would have taken a pretty strong blow to have done this.

Q. In that connection, the girder itself is what kind of a shape; the girder is what kind of a shape?

A. It is flat.

Q. It is essentially a channel, is it?

A. Yes, sir.

Q. And what are the dimensions or --

A. I would say 16 or 14 inches.

Q. 14 to 16 inches deep; is that right?

A. That's my estimation; yes, sir.

Q. This indentation and crack is approximately eight inches?

A. Eight to 10 inches in this vicinity; yes, sir.

Q. The girder itself is riveted to the deck plating?

A. Yes, sir.

Q. Were there any cases -- can you see the rivets from the top of the deck in that position?

A. The top of the rivets.
Q. Were there any indications of any loosening of rivets or anything of this sort at that particular point?
A. There is no evidence of any disturbance in that area; no, sir.

REAR ADMIRAL BARROW: I have nothing further.

Counselor?

EXAMINATION

By Mr. Murphy:

Q. Mr. Paul, you have referred to offloading equipment and so forth, and loading equipment.
Isn't it true that what you are talking about are the rigs that load or unload the vessels; that this is all in your opinion damage of that nature from having the --
A. Probably would have been caused by this; yes.

Q. In any event, they are all from external causes?
A. Yes, sir; it is from mechanical damage.

Q. Mechanical damage meaning something striking?
A. As opposed to stress.

Q. As opposed to stress. Thank you, sir.

Now, you have and the other gentlemen have referred to the word "deficiency."
Isn't it also true that that word is used by the Coast Guard to categorize any damage or something that requires repair ultimately?

Is that fair terminology of the word deficiency?
A. I believe so.

Q. All right, sir. In this instance, these deficiencies, I think you have testified, were all minor deficiencies; is that a correct statement?

A. Yes, sir.

Q. In other words, there was one, I think, you requested about, which was referred to as a gouge? Could that actually have been described as a dent?

A. No, sir.

Q. Not in your opinion?

A. I would say not.

Q. All right, sir. You also were questioned with respect to the -- you would not call it a dent, would you? I think your actual testimony was a very minor gouge.

That was your description?

A. I believe that's what I said.

Q. Now, you also referred to what has been referred to as 44-C and that is this one which involves a crack; and you have described that in a number of ways.

Would you feel that this was adequate description of that, No. 16 hatch, port side, longitudinal, underdeck riveted channel, lightly distorted outboard, approximately one and a half inch and cracked approximately six inches in web at mid-length by contact with unloading board.

Would you also say that was a proper, adequate
description?
A. It doesn't fit my description exactly.
Q. Would you agree with that as being a proper description?
A. I would say it is close, but it is not exactly what I said.
Q. But that could have been so described by someone else?
A. Someone else might have described it that way; yes, sir.
Q. Now, at one stage I believe you indicated that your requirement was that these be repaired at a date in the future.

Is it fair to state that the Coast Guard requirement was that some repair be made as to these items by April 1 of 1976; is that correct?
A. By the next time the vessel got under way, 1976, which may have been April; yes, sir.
Q. Are you aware that that was the description or the order that was issued, the request and requirement issued by the Coast Guard, by your office?
A. I am aware of what was issued; yes, sir.
Q. And are you aware that the requirement stated that the deficiencies be corrected by April 1, 1976?
A. Yes, sir. I don't believe it stated April specifically. It stated the next operating season.
Q. Would you tell me, please, who Cdr. Gafford is?
A. My commanding officer.

Q. And he is the man to whom you reported the deficiencies by telephone?

A. I reported directly to Cdr. Lawrence, who is executive officer.

Q. And Cdr. Lawrence is responsible to Cdr. Gifford; is that correct?

A. Yes.

Q. Are you aware that Cdr. Gifford issued a letter to Oglebay-Norton dated November 4, 1975 in which he stated that the above requirements are to be completed prior to April 1, 1976?

A. I am aware of a letter; I don't remember the details.

Q. I am a little bit confused by the fact that I believe you had referred to a hatch end girder as a hatch end girder, and I believe a side girder.

Are they one and the same or are they two different ones?

A. I believe I referred to the hatch girder consistently myself.

Q. You didn't mean to refer then to a side girder; is that correct?

A. No, sir.

Q. The hatch end girder to which you referred in these sketches, would you just point it out for us?
A. Yes, sir; this piece right here (indicating).

Q. The edge of the --

CDR. LOOSMORE: The witness is pointing to Exhibit 44-C.

By Mr. Murphy:

Q. Let's say that in 44-C the indentation and crack is shown to be in the end girder; is that correct?

A. Yes, sir.

REAR ADMIRAL BARROW: I think it might be well to identify by an arrow and actually have the witness draw in what he is indicating as the end girder on each of these.

MR. MURPHY: That will be fine, thank you.

(Witness drawing.)

REAR ADMIRAL BARROW: Mr. Paul, you indicated that on each one of the exhibits?

THE WITNESS: Yes, sir.

REAR ADMIRAL BARROW: Off the record momentarily.

(Pause.)

REAR ADMIRAL BARROW: Back on the record.

By Mr. Murphy:

Q. What is an 835? I believe you were questioned about that.
Would you tell us what that is, sir?

A    It is a standard form that comes in a booklet with an original and two, with carbon within the paper. It is self-carboning.

We use it to issue to the company, to the master, the requirements.

Q    And this is the form which is used by the Coast Guard to write up requirements, is that correct?

A    Yes, sir.

Q    Would you just refer to Exhibit 43-A and would you just point out to me in Exhibit 43-A which of those is the 835?

A    This piece of paper is the Form 835.

Q    A copy of that is sent to the company or what is done with that?

A    I keep a copy of the original, and a copy is kept with the master or his representative, and I keep a copy. One is submitted with my requirements and reports, and one I keep in my book.

Q    Were any of these items brought to your attention by either the ABS man or Mr. Feltz, or did you in each instance discover them yourself and bring them to their attention, or did you all discover them together?

A    To the best of my knowledge, we were aware of them, more or less at the same time.
One man -- I mean two men or three men can't look at
the same thing at the same time, so I don't remember
specifically which was which.

Q. May we assume from your testimony, and it is a fact
that there was a repair facility aboard, that in your
opinion or in the opinion of those with whom you were
working, that if there was a need to make a repair,
they could have easily been made at that time?

A. I don't know of any reason except for operational
reasons.

Q. Was that consideration entered into in any way?

A. I don't believe so; no, sir.

Q. The purpose of your being there was to determine
whether or not that inspection disclosed any requirements
which should be dealt with at that time?

A. It is an annual inspection. I am not sure if that is
a fair statement or not.

Q. Had there been any requirements which, in your opinion,
should have been dealt with at the time, you would have
required that they be dealt with?

A. If we had considered anything that was affecting the
seaworthiness of the vessel, we would have made sure
the vessel did not leave port and required repairs.

Q. You, of course, have the power to do so?

A. I would not personally; I would have referred the matter
to the CO.

Q. Your CO through you would have the power to do that?

A. Yes, sir.

MR. MURPHY: Okay, thank you.

REAR ADMIRAL BARROW: Off the record momentarily.

(Discussion off the record.)

REAR ADMIRAL BARROW: Counsel?

MR. MURPHY: Yes, I have another question or two.

REAR ADMIRAL BARROW: Back on the record.

By Mr. Murphy:

Q. Mr. Paul, I believe you responded that in the examination you made of the deck it included the entire deck area, and I think you mentioned the hatches, the combings, the covers, the rails, the deck platings, et cetera, am I correct in that?

A. Yes. We look at everything.

Q. Fine. So that with the exception of the items which have been noted here and discussed, the entire deck of the vessel was found to be in good condition including the hatch covers and the clamps and the combings and so forth?

A. I don't recall any discrepancies.

I don't recall any discrepancies in this area; no, sir.
Q. Or you don't recall any of the word that you used as "deficiencies"? Is that correct?
A. I'm sorry?
Q. Well, you have used the word deficiency and now you said discrepancies; they are synonymous?
A. Yes, sir.
Q. Just one more thought, sir: I assume, it is a routine when you make this examination that you call your office and report your findings?
A. Not in all cases, depending on what I find.
Q. If it's uncommon?
A. If there are repairs, I would not normally take it upon myself to determine when they should be done; I would refer them to my office.
Q. Is that the reason that you called in this case?
A. Yes, sir.

MR. MURPHY: Thank you.

I have no further questions.

REAR ADMIRAL BARROW: Mr. Paul, during the spar deck examination that is done annually, do you carry out any inspection of the ballast vent system, the ballast vents at that time?

THE WITNESS: I have not made it a practice myself to do any extensive examination of the vents. I am sure I looked.
By Rear Admiral Barrow:

Q. The vents?

A. Yes, sir. I did not do anything other than look at these vents.

Q. Part of your report system is not to include these? You do not have these as part of your reporting system in a spar deck examination?

You don't recall anything particular about those during the spar deck examination?

A. No, sir, I don't recall anything particular.

I am sure I looked at them.

Q. You don't examine machinery during this part of the inspection?

A. I would not normally; no, sir.

Q. Have you any knowledge regarding any deficiencies to the automatic propulsion system?

A. No, sir; I have not.

REAR ADMIRAL BARROW: Do you have any questions?

CAPT. WILSON: Yes, sir; a couple short ones.

EXAMINATION

By Capt. Wilson:

Q. Mr. Paul, you said in the course of the spar deck examination it might be necessary to climb out to the
"ledge" was the word you used.

Did you in this case of this October 31st inspection do that?

A. I believe I did, at least two or three times.

Q. Did you do it for each one of the discrepancies that you found?

A. Well, let's see.

Q. If you recall.

A. I believe so; yes, sir.

Q. You also testified that there was a repair facility representative along on this inspection?

A. I don't believe I said he was along with the inspection party.

I saw him on board after the inspection was over with.

Q. Do you know who he was?

A. He was a representative of Merce.

Q. From?

A. Merce, the boiler --

Q. How do you spell that?

A. M-e-r-s-k.

Q. Where is that organization located?

A. It's located in Toledo.

Q. And you said their repair facility; do you know anything about this outfit at all?

A. Well, I haven't had too many dealings with them
but I think --

Q. Do you know what kind of repairs they do?
A. I have witnessed at least once, I think it was on a Sylvania -- a Canadian vessel the Hotchalaaga. They had to rig the rudder amidships.

Q. What I am getting at, this Merce Boiler did repairs?
A. As far as I know, they do.

Q. Did you have any conversation with whoever it was, that Merce Boiler representative who was aboard?
A. I don't believe I did.

CAPT. WILSON: Could I look at your 835?

May I see that, please?

REAR ADMIRAL BARROW: Off the record just a minute, please.

(Discussion off the record.)

REAR ADMIRAL BARROW: Back on the record.

By Cdr. Loosmore:

Q. Mr. Paul, did you discuss the discrepancies that are on that 835 with the representatives, either the ship or the company that operated it?
A. Yes, sir; Mr. Feltz was with the inspection party.

Q. Mr. Feltz was with the inspection party?

You said you gave one of those to the ship.

A. I think I handed it to Mr. Feltz directly.

Q. Is there any record that you did that?
There is a signature on the face.

Q. There is a signature on the face of the form?

A. Yes.

Q. Whose signature is that?

A. Richard Feltz, or R. Feltz.

Q. Did you see him sign it?

A. Yes, sir.

CDR. LOOSMORE: That's what I have.

REAR ADMIRAL BARROW: Capt. Wilson?

CAPT. WILSON: No, sir.

CAPT. ZABINSKI: Is it customary that one of the ship's crew members or officers or captain or engineer or company representative sign to acknowledge receipt of these 835's?

THE WITNESS: In this area, Captain, it has been my experience, it is customary for the company representatives to sign these.

CAPT. ZABINSKI: And that is the procedure that you were following here?

THE WITNESS: Yes, sir.

CAPT. ZABINSKI: That's all I have.

Admiral.

REAR ADMIRAL BARROW: The interested parties have a question?

(No response.)
REAR ADMIRAL BARROW: Do you plan to call this witness again for further questioning?

CDR. LOOSMORE: May I have a moment?

REAR ADMIRAL BARROW: Off the record.

(Discussion off the record.)

REAR ADMIRAL BARROW: Back on the record.

By Capt. Zabinski:

Q. Mr. Paul, in reference to counsel's question about hatches and so forth, is the inspection of hatches, let's take hatch combings, a part of the spar deck inspection?

A. Yes, sir; we look at them. Any deficiencies would be noted.

Q. How about hatch clamps?

A. They would be observed. I would say I personally pay more attention to the hatch itself.

Of course, everything attached to it is observed.

Q. You check the hatch cover?

A. Yes, sir.

Q. I realize in this case they were not on because the vessel was in the process of discharging cargo; is that correct?

A. Yes, sir.

Q. Did you examine the hatch covers as they lay on the side or between hatches?

A. I am sure they were observed; yes, sir.
Q. Did you examine the gaskets, to your knowledge?
A. I don't recall specifically, no, sir.
Q. Did you examine the hatch combings for warpage or
damage or anything which would affect their effectiveness?
A. Yes, sir.
Q. To your knowledge, you don't recall anything?
A. To my knowledge, I don't recall anything requiring
repairs.
Q. If there were some deficiencies along this line,
would it also have been included on the 835?
A. Yes, sir.
Q. Did you make any operational tests to determine whether
the hatch cover clamps and the seals actually operated
properly under closed conditions?
A. No, sir.
Q. They were open, you indicated?
A. Yes, sir; they were open for inspection.
Q. You never saw them prior to leaving the vessel in a
closed condition?
A. No, sir.
Q. All right.
CAPT. ZABINSKI: That's all I have,
Admiral.
REAR ADMIRAL BARROW: Mr. Paul, we may have
need for you with regard to other material a little
later on.

I would like to ask you at this time with regard
to the spar deck examination itself. Our purpose
is to attempt as best we can to find out what
caused the loss of the Fitzgerald, and if there is
anything that you have at this time that you would
like to add to the record.

THE WITNESS: No, sir; I have nothing
else.

CAPT. ZABINSKI: Mr. Paul, on the same
line, as you know, the Fitzgerald was lost.

THE WITNESS: Yes, sir.

CAPT. ZABINSKI: Within days after this
inspection.

THE WITNESS: Yes, sir.

CAPT. ZABINSKI: Is there anything that
you observed on board that comes to mind now that
could have contributed to the loss of the Fitzgerald?

THE WITNESS: Nothing to my knowledge,
sir.

REAR ADMIRAL BARROW: Thank you very much,
Mr. Paul; 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.

THE WITNESS: Yes, sir.

(Witness excused.)

REAR ADMIRAL BARROW: Let's take about a five-minute break.

(Recess had.)

REAR ADMIRAL BARROW: May we be seated, please.

Let the record show we reconvened at 1540; counsel for parties in interest are the same as we started with this morning.

Commander Loosmore.

CDR. LOOSMORE: Yes, sir.

The Board calls Cdr. Gafford.

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HORTON E. GAFFORD

was called as a witness, 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. Horton Gafford, United States Coast Guard, 6688, MSO
Toledo.

Q. What are your duties at MSO Toledo?
A. I am the Commanding Officer there.

Q. How long have you been the Commanding Officer there?
A. Since February '74.

Q. How long have you been in the Coast Guard, Commander
Gafford?
A. 15 years.

Q. Generally what have been your duties in the Coast
Guard in those 15 years?
A. With the exception of two tours of sea duty, all
of my duty has been in Merchant Marine Safety.

Q. Where have you been stationed in Merchant Marine
Safety duty?
A. Philadelphia, Pennsylvania; Albany, New York;
Hampton Roads, Virginia; and Toledo.

Q. As Commanding Officer of the Marine Inspection
Office, are you responsible for the issuance of certificates of inspection?

A. Yes, I am.

Q. Did your office or did you issue a certificate of inspection for the Fitzgerald?

A. Yes.

Q. In the last year or so?

A. Yes.

Q. Do you know the date?

A. April the 9th, 1975, I believe.

Yes, that is correct, 9 April 1975.

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

A. Certificate of inspection, U. S. Coast Guard Form CG-841.

Q. Sir, I hand you a copy of Exhibit 2, which is in evidence, and would you tell me if you can recognize that?

A. Yes; this is a copy of this, a copy of the copy.

Q. Whose signature would have appeared on the bottom of that?

A. That is mine.

Q. Can you tell me or do you have any records with you which would indicate whether there were any outstanding discrepancies at the time that certificate was issued?

A. I have some record with me that I can check.

There is one outstanding CG-835 and this post, a
fire control plan in accordance with 46 CFR 97436.

Q. Can you tell us what that was that you referred to, sir?

A. This is a CG-835.

Q. I mean the whole package.

A. CG-835 is attached to the hull inspection book, CG-840-A.

Q. May I see that, please?

A. Sure.

(Document handed to counsel.)

CDR. LOOSMORE: I would request that this whole inspection book with an 835 attached and with two different Form CG-840-AA's attached be marked as 45-A, B, C and D for identification.

REAR ADMIRAL BARROW: A is what? 45-A is the basic 840-A and B is the Form 835?

CDR. LOOSMORE: Yes, sir.

REAR ADMIRAL BARROW: And C is the --

CDR. LOOSMORE: 840-AA.

REAR ADMIRAL BARROW: What is that?

CDR. LOOSMORE: Hull inspection book; list of equipment, sir.

REAR ADMIRAL BARROW: And D?

CDR. LOOSMORE: Is another hull inspec-

tion book list of equipment.
C and D, they are both dated 9 April '76, the date the certificate expired, 9 April '76.

CAPT. ZABINSKI: Are they duplicates or are they originals?

REAR ADMIRAL BARROW: C and D?

CDR. LOOSMORE: It appears that D is the --

REAR ADMIRAL BARROW: Machinery equipment list?

CDR. LOOSMORE: It appears that it is the previous one.

THE WITNESS: May I see it a minute?

(Handing to witness.)

THE WITNESS: This is the old one here, what you have marked. This is the old list of equipment.

This one is the new one that was issued with the current certificate of inspection.

REAR ADMIRAL BARROW: Now, shall we go back through this again?

CDR. LOOSMORE: Yes, sir.

45-A will be the basic hull inspection book Form CG-840-AA; B will be the 835; C, the new 840-AA, and D, the prior 840-AA.

REAR ADMIRAL BARROW: For the prior year?

CDR. LOOSMORE: Yes, sir. It is
typed on the face of it; the date the certificate expires is 23 April 75. That is crossed out in pen and written in ball point pen is 4/9/76, and the following line is "Zone preparing this list," and typed in is "Cleveland, Ohio."

It is crossed out in pen and written in ball point pen is "Toledo, Ohio."

REAR ADMIRAL BARROW: Mark them as indicated for identification.

(Exhibits 45-A, B, C and D marked for identification and made part of the record.)

By Cdr. Loosmore:

Q Cdr. Gafford, are you aware or do you have any record as to whether the deficiency was ever completed?

A No, it wasn't completed, not to my knowledge.

Let's see if there is a letter in here.

I do recall that we gave all the ships that were laid up in Toledo last year until this operating season to complete that; in other words, they had an entire season to get this completed at their convenience.

I don't see any indication of this in here but I recall --

Q What is it that you are referring to?
A. The "Post Fire Control Plan..."

Q. Is that a file of paper?

A. There is a letter that we sent to the owner of the Fitzgerald outlining the requirement that was outstanding "1. Post the fire control plan..."

Q. What is the date of that letter?

A. 14 April 1975.

Q. To what are you referring? Is that a file copy that you have there?

A. Yes.

Q. What is the whole file that you have?

A. That is the 1975 file on the Edmund Fitzgerald.

Q. Where did that file come from?

A. My office.

Q. And as far as you know there were no, that discrepancy was never completed?

A. No.

Q. All right, what is the content in that file there?

A. The content is just the normal paperwork that is required during the inspection of a vessel for certification.

REAR ADMIRAL BARROW: This is for the 1975 season?

THE WITNESS: Yes, sir.

REAR ADMIRAL BARROW: I think it would be
appropriate to mark the entire file for purposes of bringing it into the record.

CDR. LOOMIS: May I have that file, please?

THE WITNESS: Sure.

(Witness hands folder to Cdr. Loosmore.)

CDR. LOOMIS: This file consists of 21 pages, I can mark the pages A through V, I believe that is, if you'd like.

REAR ADMIRAL BARROW: Mark it for identification, each page individually, 46-A through --

CDR. LOOMIS: Yes, sir. I have marked the pages 46-A through 46-U consecutively.

(Exhibit 46A thru U was marked and received.)

REAR ADMIRAL BARROW: This is the 1975 file for the Fitzgerald including correspondence and certificate, is that correct?

CDR. LOOMIS: Yes, sir. Yes, sir, from the files of the Commander Marine Safety Office, Toledo, Ohio.

By Cdr. Loosmore:

Q Cdr. Gafford, is this the letter to which you were referring?

A Yes.

Q What is the date on this letter?
A 14 April 1975.
Q That has been marked Exhibit 46-D for identification.
   Would you explain what the notation, the penciled
notations are on the file?
A Yes. They were two outstanding requirements that the
   completion of the inspection for certification and the
notation here at B-2 was "Completed on July 18, 1975,
   completed satisfactory."
Q What was that requirement?
A "Prepare auxiliary boiler for lifting and setting
   of safety valves and conduct operational tests of the
automation safety devices."
Q All right, sir, may I see that file?
   (Witness hands file to Cdr. Loosmore.)
   Yes, there is an additional notation?
A I didn't get down that far, yes, sir.
Q Would you read and explain that notation, please?
A Well, they were to be completed by 9 May 75. I
   received a telephone conversation on the 16th of --
well, the telephone date isn't indicated but I received a
telephone call from Mr. Feltz of the Columbia asking for
an extension to 15 June '75. I granted it over the
telephone, made the note to the file and initialed it.
Q All right.
   CAPT. ZABINSKI: What item is this
you are referring to?

THE WITNESS: That is the entire two
items, Captain, of the "Posting Fire Control Plan"
and "Safety Valves and Automation Tests on the
Auxiliary Boiler."

By Cdr. Loosmore:

Q Is there anything else in that file that indicates
an extension of the requirement No. 1?

A No. 1? No, there isn't, but the extension for the
rest of '75 may not have involved this one vessel as far
as the conversation concerned, it could have been any
Columbia vessel, and we just -- I made a blanket policy
that we would give all of the vessels that had a fire
control plan outstanding, we'd let them have the rest of
the operating season to get it done.

This would allow the operating officer on board
to make a sketch and they would become more familiar.
I thought it was a good policy myself so I extended these
requirements that were outstanding on any vessel that
was inspected in Toledo, I gave them the rest of the
operating season to complete this one particular require-
ment.

Q Do you have any records to indicate whether there
were any hull deficiencies, structural deficiencies
which arose during the course of this inspection?
A. I don't think so.

Q. Do you know of any?

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

Q. Did you yourself inspect the vessel?

A. No, sir.

Q. Can you tell us who did?

A. Yes, sir.

Q. Who did?


Q. All right. Cdr. Gafford, I notice that there is a temporary certificate for inspection in this file that is marked 46-E, CG Form 64.

CAPT. ZABINSKI: 46-E?

CDR. LOOSMORE: "E," echo.

CAPT. ZABINSKI: What was the letter previously identified?

CDR. LOOSMORE: "D," Delta.

By Cdr. Loosmore:

Q. Was this temporary issued to this vessel?

A. Yes.

Q. If so, why?

A. Well, usually the last visit we make on the vessel prior to its sailing at the end of the fitout, we know what has to be completed in order for the certificate of inspection to be issued; so we make this, issue a
temporary certificate to the vessel, and then we get all our ducks in a row, so to speak, and make the permanent certificate or the regular form certificate and mail it along with a copy or two to the owners, depending on their wishes.

Q. Is there any difference in requirement between the temporary and the --

A. No, the temporary has the same effect, authority and effect as the completed form here.

Q. Cdr. Gafford, does that file that you have in front of you and which we have marked 46-A through U, does that contain all of the correspondence of your office concerning the Fitzgerald in the 1975 operating season?

A. Yes.

Q. May I see that file again, please?

A. Sure.

(Witness hands file to Cdr. Loosmore.)

Pertaining to the inspection for certification.

Q. That isn't what I meant. Would you have any other files, then, concerning --

let me put it the other way: We have had previous testimony that this vessel was inspected, a spar deck inspection, in April, the last entry --
We have a special inspection file. There would be some more correspondence in there.

Q All right. You have a record of the special inspection as well?

A Yes, I gave it to Lt. Paul I believe, and also the company we sent it to.

Q That is what I was getting at. Did you send a letter to the company concerning this discrepancy?

A Yes.

Q Do you have a copy of that letter in your file?

A Yes.

Q May I see that letter, please?

A Do you want me to take the letter out?

(Counsel hands document to Cdr. Loosmore.)

CDR. LOOSMORE: Sir, I would like to request that this letter be marked Exhibit No. 47 for identification. It is a letter from the "Marine Commanding Officer, Marine Safety Office, Toledo, Ohio, to Columbia Transportation Division, Oglebay-Norton Co., dated 4 November 1975, In Re: Edmund Fitzgerald."

REAR ADMIRAL BARROW: Subject?

CDR. LOOSMORE: There is no subject line, sir, but the letter begins by: "Gentlemen:

The annual spar deck examination of the --"
REAR ADMIRAL BARRON: That's enough to
identify it. Mark it 47 for identification.

(Exhibit 47 marked for
identification and made
part of the record.)

By Cdr. Loosmore:

Q Commander, can you identify this?
A Yes.

Q Can you tell me what that is?
A The identification?

Q No; can you tell me what that letter represents?
A That represents authorization for the Fitzgerald to
operate until these repairs are made prior to April 1976.

Q And that letter refers to a spar deck examination
or inspection which was made on "October 31, 1975"?
A That is correct.

Q About which there has been testimony.
A Were you aware that this spar deck examination was
being conducted?
A Yes.

Q At the time that that was being conducted?
A Yes.

Q Were you aware that some deficiencies were found
when it was conducted before the vessel sailed?
A Yes.
Q. Were you aware that an 835 was being written?
A. Yes.
Q. Before it was written?
A. Yes.
Q. How were you aware of these things?
A. A telephone call from the inspector to the executive officer, outlining the items that he wanted to put on the 835, and what they consisted of, and he came in my office and consulted with me about it and it was authorized, and he so informed the inspector on the telephone.
Q. All right, sir. What kind of detail did that telephone call go into?
A. He described the situation just as it is stated in the letter.
Q. All right.

CDR. LOOSMORE: I think that's what I have, sir.

REAR ADMIRAL BARROW: Capt. Wilson?

EXAMINATION

By Capt. Wilson:
Q. Cdr. Gafford, it was mentioned that the vessel had been given a temporary certificate of inspection.
Is this done due to certain things remaining to be corrected or is there some other reason why a temporary is issued?
A. This is done for purely an administrative purpose.

Q. Have you -- well, that has been well covered.

CAPT. WILSON: I don't have anything, really.

REAR ADMIRAL BARROW: Capt. Zabinski?

EXAMINATION

By Capt. Zabinski:

Q. Cdr. Gafford, you indicated in response to the question that Lt. Paul conducted the last inspection on the Fitzgerald, is that correct?

A. Yes, sir.

Q. Did he do both the hull and the boiler inspections?

A. No, sir.

Q. Who is the boiler inspector that inspected that?

A. The CWO, J. E. Korrea.

Q. Do you have any inspection books covering that inspection?

A. Yes, sir.

CAPT. ZABINSKI: Can we mark those for identification, please, Admiral?

REAR ADMIRAL BARROW: Yes.

CDR. LOOSMORE: This was made up the same way as Exhibit 45 and consists of the boiler inspection book, Form 840-B, two pages of CG-835's, attached to the rear cover, and two copies of the
boiler inspection book, dated 9 April 76.

REAR ADMIRAL BARROW: The boiler inspection book?

CDR. LOOSMORE: Boiler inspection book, list of equipment, the one with date certificate expires, 9 April 76, and the other the date the certificate expires, 23 April 75, but that is crossed out and written in by hand, "9 April 76."

I believe they should be marked 48-A and for the book, CG-840-B, 48-B, and 48-C for the two pages of the Form CG-835; 48-D for the boiler inspection book list of equipment, dated 9 April 76, and 48-E for the boiler inspection list of equipment dated 23 April 75, crossed out and written in in pen "9 April 1976."

REAR ADMIRAL BARROW: Mark them as indicated for identification.

What you have here is the old list of equipment and the new list of equipment.

THE WITNESS: Yes, sir.

(Exhibits 48-A through E marked for identification and made part of the record.)

By Capt. Zabinski:
Q  Is this the original list of new equipment or is
this a copy of what is on board the ship?
A  It is a copy of what is on board the vessel.
Q  The original goes on the vessel; is that the way it
works, Commander?
A  Yes.
Q  Is that true also for the hull equipment list?
A  Yes, sir.
Q  So the ship actually has a record exactly the same
as this one?
A  Yes, sir.
Q  For the equipment list only?
A  Yes, sir.
Q  Can I see those boiler lists, please?
(Handing.)
Q  Cdr. Gafford, are you aware of the details, the
actual inspection details of the inspection which occurred
aboard the Edmund Fitzgerald on the 8th of April, 1975?
A  Usually this is something administrative. Yes,
I am, unless a unique problem comes up, and there is a possi-
bility that I won't know all of the details or I may.
I do make it a practice of reviewing each book.
Q  Well, let's go back.
We have an inspector and we have a hull inspector
and we have a boiler inspector go down aboard the vessel.
A. Yes.
Q. And spend some period of time until they complete the inspection requirements; is that correct?
A. Yes, sir.
Q. Or inspection items, I should say, as listed in these books, one for the hull and one for the boiler?
They complete these books and what happens; what is the normal procedure?
A. After they complete the books?
Q. Yes, sir.
A. They complete them and send them to the SIM. He reviews them, roughs out the new certificate, passes it through me, and I will review them and okay them or go back and talk to him about any changes that I think should be made, and we discuss them if there are, and they are sent out to the secretary and she types them out, and they are proofread, signed and sealed and whatever is required, and mailed.
Q. And you proofread those books, is that correct?
A. Yes.
Q. How do you know that you proofread either this hull or boiler book?
A. Well --
Q. Did you look at it?
A. If I can look at it, my initials should be on it.
Q. Would you please look at both the hull and boiler inspection books, please, Commander?

(Handing to witness.)

A. Well, I see that I have initialed some entries in the boiler book, not all of them. The same thing on the hull book.

Of course, they are on different days. There is a possibility I could have been some place and not reviewed that day's entry.

Q. Well, are you talking now about the diary entries in the back of the book?

A. Yes, the diary entries.

Q. And you indicate that you did not sign all of them or initial all of them; is that what you are telling us?

A. Yes.

Q. And that initial means what?

A. That means that I have reviewed them and approved of them.

Q. If you didn't approve of them, you would have sent it back for some reinvestigation or whatever was necessary?

A. That is right.

Q. Could you review the entries there in the remarks section and see if you -- well, see if you approved or initialed the last entry.

A. On both books?
Q  On both books, yes, sir.
A  No, not the last entries in both books.
Q  Did you do it in one and not the other?
A  No, sir, both of them. The last entry from the
books do not have any initials on them.
Q  There is a page in the inspection book in which the
inspector certified that in his opinion the vessel is
seaworthy; is that correct?
A  Yes, sir.
Q  Give us that page number, please.
A  Page 48 in the CG-840-A and page 40 in the CG-840-B.
Q  You examined that in the normal processing of the
file?
A  Yes.
Q  Did you make an initial on that page or any entry
on that page?
A  No, sir. I usually just make it the last entry in the
diary.
Q  Well, if we have the inspection books here, the
last entry has not been initialed by you and yet a
certificate was issued.
A  Correct.
Q  Is this an unusual situation or what?
A  No, it is not unusual. I could have just looked at
the books and not initialed it.
Q. You initial some and you don't initial others; is that your testimony?
A. Yes, I do.
Q. You have no standard procedure?
A. Well, standard procedure to the extent that I may just neglect to have initialed the page or forgotten to or what have you.
Q. Well, did you approve of a certificate of inspection to be issued for the Edmund Fitzgerald?
A. Yes, sir.
Q. Based on these inspection reports?
A. Yes, sir.
Q. Okay. Is it your testimony that you may have seen the last entry and not initialed them?
Is that correct?
A. Yes, sir.
Q. If you would read both entries in both books and tell me if you recollect reading those entries prior to the issuance of the certificate of inspection?
A. No, I can't recall reading that.
Q. Has anybody initialed that last entry?
A. Yes, sir.
Q. Who was that?
A. It is Cdr. Lawrence, the SIM. That is the hull book. I can't recall reading the last entry in the boiler book
either. It also has Cdr. Lawrence's initials in there.

Q. Are there occasions when, in your absence or otherwise, that a certificate would be issued; a certificate would be issued?

A. Yes. It could be made up and laying in my basket for, say, a day before I sign it.

We had 40 ships in Toledo last year, around 40, and some of these things, it is not uncommon to have six or seven of these a day.

Q. But I am talking now about the issuance of a certificate.

In other words, you have not initialed these inspection books?

A. Right. Some of the entries, yes.

Q. So it is your responsibility to issue the certificate of inspection based upon the inspection reports; is that correct?

A. Yes, sir.

Q. Now, is there occasions when you haven't seen an inspection book or do not see an inspection book and yet a certificate of inspection is issued?

A. Yes.

Q. When so? When is that?

A. If I don't see it and the executive officer has gone through the books, and he makes the certificate, and it is on
my desk, I review the certificate and sign it and seal it.

Q  Did you sign the certificate personally?
A  Yes, sir.

Q  Cdr. Gafford --
A  Yes?

Q  -- would you review the books at the time you sign
the certificate or some time before?
A  Maybe some time before, usually some time before.

Q  Do you sometimes review the books at the time
that you sign the certificate of inspection?
A  Sometimes, sometimes.

Q  Do you think you could have seen the inspection
books, the final entries, I am talking about the final
inspector's entries and not initialed them?

     Is that a possibility?
A  I am sure this is what happened; that is what I believe.

Q  Are there any requirements, outstanding requirements
for the boiler book 835?
A  I don't believe so, sir.

Q  Were they completed by the time the certificate
was issued?
A  They were all completed except one prior to the time
of issuance of the certificate and that was the safety
valves and automation tests on the auxiliary boiler.
Q. I'd like for you to look at the entries now, the hull book on the Edmund Fitzgerald, read them carefully and the remarks, sir, those that you have not previously initialed.

        (Brief pause.)

A. No, sir, there aren't.

Q. That you had not previously initialed?

A. The last entry in the hull book.

Q. Read it carefully, please.

A. (Witness complies.)

Q. Is there any item in that entry, the last entry, that if the book came to you now or prior to the time that you issued the certificate that would have prevented you or would have caused a delay in the issuance of the certificate to the Edmund Fitzgerald?

A. No, sir.

Q. Would you refer to the remarks in the boiler book and read it carefully?

A. (Witness complies.)

Q. Cdr. Gafford, is there anything in that entry which, if you had read that prior to the issuance of the certificate, the last certificate on the Edmund Fitzgerald, is there anything in that entry that would have prevented or delayed the issuance of the certificate of inspection to the Edmund Fitzgerald?
Q. Do both the hull and boiler inspections indicate that the vessel was seaworthy in all respects at the completion of the inspection?

A. Yes, the block is: "In my opinion, the vessel is fit for service and route specified," both books.

Q. Therefore, there is no information that you have seen now which was made but would not have been called to your attention at the time of the issuance of the certificate?

A. No, sir.

Q. No information in reviewing the books which would have precluded or prevented or delayed the certificate of inspection being issued to the Edmund Fitzgerald?

A. No, sir.

Q. Cdr. Gafford, we have had testimony from Mr. Paul earlier in the afternoon about spar deck inspections.

I asked Mr. Paul if spar deck inspections were required by the regulations; his response to that was that it was not one required by the regulations but a special type of examination done on Great Lakes vessels. Is that correct?

A. Yes, sir.

Q. Can you give me the background on this spar deck inspection?
Lt. Paul indicated that it was, came about as a result of the Morrell disaster several years ago.

A. This is my understanding also.

Q. What can you tell us about the spar deck inspection?

A. I don't know of any written history of spar deck inspections.

All I know about it is it was word of mouth and I know that it is an inspection we do up here.

Q. Do you do it on every vessel, every lake vessel?

A. Every ore carrier.

Q. Every ore carrier?

A. Yes, sir.

Q. Every year?

A. Every year.

Q. Every vessel that comes into your port or for an annual inspection or what in vessels do you do a spar deck inspection?

A. When a vessel comes into our port on an annual inspection and it hasn't a current spar deck inspection from some other port, we do one.

Q. How do you know she has had a spar deck inspection?

A. It's on the bridge record card.

Q. It's on the bridge record card?

A. Or if it isn't, we will tell the port captain:

"Do you want to do a spar deck inspection?"
He says: "Hell, I just had it done in Cleveland last month."

You get on the horn and call Cleveland and Cleveland says that's it.

Q. You verify?
A. Sure.

Q. There is no piece of paper that is given to the vessel to indicate that the spar deck inspection was completed?
A. Not to my knowledge.

I know we indicate it on the bridge record card.

Q. Good.

Is there an instruction on conducting spar deck inspections?
A. I think we have a local instruction for Toledo.

I'd have to go through the instructions and check it for you.

Q. Do you have those with you?
A. I don't think so.

Q. When you returned to the office, could you provide the Board with a copy, please, of your instructions that you have on spar deck inspections? Please?
A. Yes, sir.

Q. Do you recall what the circumstances, what the nature of that instruction might be?
A. Not offhand.
The spar deck inspection, Captain, is incorporated in the instruction that discusses all inspections.

Q  Is that instruction still in effect as far as you know?

A  Yes, sir.

Yes, sir.

Q  It's something that you issued at the Toledo office?

A  No, I think it was issued by one of my predecessors.

Q  There in the Toledo office?

A  Yes, and kept current.

Q  Is it working out real well in keeping this in effect?

A  We haven't had any problems with it.

Q  Have you been aboard the Edmund Fitzgerald during this operating season, Cdr. Gafford?

A  No, sir.

Q  Do you recall ever being aboard the Fitzgerald?

A  No, sir; not to my recollection.

Q  I notice -- this is Exhibit for identification 46-T -- is the old inspection certificate and when I say "old," I mean the previous year's certificate of inspection.

I notice that many things are lined out and changed in red ink.

Could you describe those changes for me, please?

A  Yes, sir. This is done to aid the clerk in typing the
new certificate.

Q. And what do the red marks mean?
A. It indicates the entries that should go on the new certificate.

Q. In other words, you use the old certificate and just mark out the entries which require changes?
A. Yes, sir.

Q. Would you refer to this certificate of inspection and let me know if there were any changes in any life-saving equipment --
A. All right, sir.

Q. -- aboard the Edmund Fitzgerald from the last operating season:

Lifeboats, life rafts, life preservers?
A. No, there were none.

Q. There were none?
A. No, sir.

Q. How accurate is this list of equipment on the hull inspection book?
A. Usually it's copied from the preceding equipment list unless a change is indicated by the inspector.

Q. During the normal course of inspection does he check to see if the equipment has been changed?
A. Yes, sir.
Q. It is important to this Board, Commander, because I notice here under "Life Saving Equipment" we have "Lifeboat No. 1" giving the details for No. 1 boat, who manufactured it, size, et cetera, and your testimony is that this should be the equipment that was on board?
A. Yes, sir.
Q. You also have serial numbers of davits and they would be verified?
A. Yes, sir.
Q. Two inflatable life rafts, and so forth, we have No. 1 and No. 2. Is there any way of indicating which one of these was located where on the vessel from this equipment list?
A. I couldn't say.
Q. You could not say; in other words, on the lifeboats if it's marked No. 1 it's normally on the starboard side?
A. Yes, sir.
Q. And No. 2 --
A. On the port side.
Q. But that doesn't necessarily follow with the inflatable life raft, is that correct?
A. Not that I can recall, no, sir.
Q. Under "Life Preserves Required," we have a notation alongside "49-persons." What does that mean? 49?
A. Oh, that is "49."
Q: One for each person?
A: Right, for each person.
Q: And the "25-50 per cent"?
A: That would be 50 per cent over and above the required life jackets.
Q: Is that a requirement of the regulations?
A: Yes, sir.
Q: And you have four-boats?
A: Two in each boat.
Q: I see.
A: 3-BW.
Q: That is bow watch.
Q: Where would they normally be?
A: Probably two in the pilothouse and in the deck lookout, wherever it would be necessary.
Q: 2-FR?
A: Engine room.
Q: For 83 total?
A: Yes, sir.
Q: Would that mean a total of 83 life preservers aboard the Fitzgerald; is that correct?
A: Yes.
Q: According to this list?
A: Yes, sir.
Q: We have here under "Navigational Equipment,"
"Radar, Sperry Mark 3."

This is on page 12 of the equipment list.

Would that be the radar equipment on board?

A. It should be; yes, sir.

Q. Would this indicate there was one or two radars on the Fitzgerald?

A. It would indicate to me there was one on there.

Q. I want to refer back to page 5.

We are now under "Boats, Davits, and Winches."

We have here "Disengaging apparatus."

A. Yes.

Q. And we have type is mechanical and the name is MASECO.

What type of disengaging apparatus would that be?

A. Well, it would be the type which will simultaneously release both falls.

Q. Do you know the name?

A. Well, I don't know. To me this indicates Marine Appliance Safety Equipment Company.

Q. Is that the type of releasing gear that was on the boat?

A. It's comparable to Rockmer.

Q. Comparable to Rockmer.

Now, I'm going now, Commander --I'm coming over here and maybe it can simplify matters -- on page 2 of the
hull inspection book we have the entries under "Life Rafts" and this is Item 3 and it says "Date serviced: 2-75" and "CLEVE" which I assume means "Cleveland"?

A. Yes.

Q. Now, this would indicate that some outside agency did the servicing of the life raft, is that correct?

A. Yes. It would have a metal tag with the servicing facility's name and the inspector's initials and the date serviced on the life raft.

Q. On the life raft itself?

A. Yes.

Q. Now, is -- does the company provide the inspector with a report of the servicing or how does that work?

A. Yes, they supply a report to the servicing facility but in this case we wouldn't get one.

Q. Why not?

A. Because they were done in Cleveland 2-75 and -- we normally get one if it's done during the layup period. It's not required as long as this tag is on it.

Q. Does that mean that the life rafts were witnessed at some other point of servicing the life rafts?

A. Yes.

Q. In this case, in Cleveland, Ohio?

A. Yes.

Q. In February of '75?
A. Yes, sir.

Q. And you accept this tag that you referred to as an indication that the servicing is up to date?

A. Yes, sir.

Q. And this would apply to both rafts on the same date, is that correct?

A. Yes, sir.

Q. What would this entry, No. 6, one boat so and so, be and the date after it?

A. I guess No. 1 boat was tested.

Q. The inspection book indicates on page 6, Item 18, that a total of how many life preservers were passed?

A. 89.

Q. How many were rejected?

A. Six.

Q. Now, on the inspection books I notice by each one of the items in this inspection book it is divided into various sections; there appear to be initials in there?

A. Yes, sir.

Q. Whose initials would that be?

A. The inspector's.

Q. And that indicates what?

A. That he has corrected and found it to be satisfactory.

Q. If you didn't find it to be satisfactory on that item, what would be the procedure?
A. He'd note it in the diary and write an 835.
Q. Would he make any special entry in this book or would he not sign it?
A. He could either note it on the adjacent page or note it in his diary.
Q. Now, we have here on page 19, 10/17/74 Spar deck completed in Cleveland, Ohio 2/19/75.
A. You have to continue reading, 2/19/75...
Q. Well, is that entry No. 14, can you read that for me?
A. Yes, sir.
"10/17/74, spar deck completed in Cleveland, Ohio."
Q. The 19th?
A. This is another entry. He should have gone to another line.
Q. It was due for spar deck inspection in --
A. In October.
Q. -- October of 1975?
A. Yes.
Q. And one was done about that time?
A. Yes, sir.
Q. Could you tell if Mr. Paul was the only inspector on this inspection or was there another inspector that might have assisted him?
A. There was another inspector that assisted him.
Q. Okay. Who was that inspector?
A. Ensign Gordon.
Q. What did he do, can you tell me?
A. Well, he doesn't indicate here.

He's not past his first tour.

We have been sending him out with an experienced inspector.

Q. He is a first-tour man?
A. Yes, sir.
Q. Now, if he examined any of the items in here, his initial JG probably would appear; is that correct?
A. Yes.

Q. Anyone else; any other inspectors?
A. Yes, sir; Lt. Walter.
Q. What did Mr. Walter do?
A. He inspected the life jackets and ring buoy lights, ring buoys, fire axes, very pistol.

Q. But as a normal procedure for inspecting life jackets, the inspector looks at them, finds out they are satisfac-
tory?
A. A visual inspection.
Q. And stamps them?
A. Stamps them.
Q. Now, what stamp could we expect to find on any life preservers recovered from the Fitzgerald?
A. One of the stamps should be the name of the port,
which would be Toledo, Ohio; the date --
Q. What date?
A. The date should be 12 March 75 and the word "Passed" and the inspector's initials.
Q. In this case what initials should be there?
A. CJW.
Q. And the last inspector was Mr. Paul, is that correct?
A. Yes, sir.
Q. Okay.
Cdr. Gafford, are there any other records in the Toledo office pertaining to any business that may have been conducted aboard the Edmund Fitzgerald during the 1975 season?
A. A search of the files in that office didn't reveal any and to my personal knowledge, there are none.
Q. The files were searched before you left?
A. Yes.
Q. If there were inspections at any other port, would you know about these?
A. Not always, unless it had something to do with an outstanding requirement or something of that type that was written in Toledo, unless, of course, the certificate of inspection had been amended or something of this type, and I would get a copy of that.
Q. I see. Unless there is some action taken to correct
the certificate which you issued, you may or may not be
notified or may not be aware of some examinations or
inspections; is that correct?
A  Yes, sir.

EXAMINATION

By Rear Admiral Barrow:

Q  Commander, let me give you back this exhibit for iden-
tification, 48-A, and I want to direct a few questions to
you. That is the boiler inspection book, and I was
wondering if you would refer to that exhibit for identifica-
tion and tell me if there were any remarks in the pages
there dealing with the main propulsion equipment or the
boilers?

As I understand it, you normally check off the item
and issue it along the side where the inspector does,
and then make some specific comments with regard to the
items, if appropriate, along the side.

What is indicated regarding the boilers and the main
propulsion machinery?

A  There is one for the boilers, "New studs installed,
B-70, all boiler attachments, BLAS automation tested
and found to be satisfactory for both main boilers."

Q  Each of those items is checked off at the appropriate
block as satisfactory?

A  Yes, sir.
Q. I see. Would you look at the bilge and ballast system and tell me whether or not there are comments there?
A. Yes, sir. They are checked off in the block, initialed, "Examined, examined," for the bilge and ballast system.

Q. Is there an entry there on page 19 on the emergency power system, emergency power system lighting?
A. Yes, sir.

Q. Would you state whether or not there are any entries on that page?
A. Yes, sir; they are all checked off and there is a note, "Tested emergency lighting system satisfactory."

Q. Would you refer back over to the back of the book under the remarks section and tell me whether or not the inspection, the boiler inspection and machinery inspection, was accomplished by one inspector or several?
A. More than one, sir.

Q. Would you select the entry there that deals with the inspection of the automated propulsion control system and tell me what is stated in that entry?

This would be under the remarks section.

A. Okay. Yes, sir. It indicates here that satisfactory test was made of the automated equipment, including the safety warning alarms and trips.

Q. And who signed that?
A J. E. Korrea.

Q And he is also the one who signed the inspection book, certifying the machinery book?

A Yes, sir.

Q Is there an entry in there relating to the lifeboat embarkation or lifeboat embarkation illumination?

A Yes, sir.

Q Would you read that?

A "Noted that lifeboat emergency illumination is fed from the lighting panel."

REAR ADMIRAL BARROW: Counselor?

MR. MURPHY: May I examine the hull inspection book, please?

CAPT. ZABINSKI: You sure can.

(Handing to counsel.)

REAR ADMIRAL BARROW: Let's recess for about eight minutes while you take a look at those, if you would, Mr. Murphy.

MR. MURPHY: Thank you, sir.

(Recess had.)
REAR ADMIRAL BARROW: Reconvened at 1706.

Counselor?

MR. MURPHY: Thank you, sir.

EXAMINATION

By Mr. Murphy:

Q. Cdr. Gafford, just a question or two.

Referring to the hull inspection book which is exhibit 45-A, I would ask you to make reference to page No. 16 and tell us whether or not the document shows that there was an inspection of hull openings and deck openings?

A. Yes, and the blocks were initialed, which indicates they were inspected and found to be satisfactory.

Q. They were inspected and found to be satisfactory. Would you read the items, please, that are shown under those numbers?

A. Six or seven here?

Q. Six or seven, please.

A. "All openings and closures, side ports, air ports and dead covers, refuse chutes, other openings."

Q. And under No. 77?

A. "Deck openings and closures, closing devices, gaskets."

Q. Thank you.

Referring to page No. 18, Item No. 14, would you indicate what that is and what the significance of the marking there is, please?
A. Hull structure.

Q. What is the significance of that marking?

A. Decks, shell, bulkheads.

Q. The marking that is next to it?

A. That indicates that the inspector examined it and found it to be satisfactory and initialed the block.

Q. What are the items that were found to be satisfactory?

A. "Decks, shell, bulkheads, tank tops and strength members."

Q. And to the right in the Remarks column, I think you indicated earlier in response to an earlier question that there was a spar deck examination in 1974 and the next spar deck examination then was the one in 1975, which has been the subject of discussion here today, is that correct?

A. Yes, sir.

Q. And then immediately following that entry, there is an entry on 2/19/75.

Would you read that entry, please?

A. "Conducted inspection of all cargo holds, fore peak and after peak tanks, no requirements issued."

Q. And to you, in your practice and on the basis of your experience, no requirements issued means what, sir?

A. That they were inspected and found to be satisfactory.

Q. Thank you. Just one more question, Commander Gafford.
Referring to what has been marked for identification as Exhibit No. 47, which you have previously identified as the letter or a copy of the letter which you wrote to Oglebay-Norton Company with respect to the outstanding requirements found on the October 31, 1975 spar deck inspection -- that is that document, is it not?

A. Yes, sir.

Q. And are the items shown in that letter the items about which Lt. Paul testified earlier?

A. Yes, sir.

Q. Would you read the last paragraph, please?

A. "Please be advised that the above requirements are to be completed prior to 1 April 1976. It is requested that this office be notified when the above requirements have been completed and the identity of the Marine Inspection Office conducting the inspection."

Q. Those were referred to by you in the letter as requirements, were they not, sir?

A. Yes, sir.

MR. MURPHY: Thank you. I have no further questions.

REAR ADMIRAL BARROW: Cdr. Loosmore?

CDR. LOOSMORE: Just one second.

(Pause.)
EXAMINATION

By Cdr. Loosmore:

Q  Cdr. Gafford, I direct your attention to Exhibit 46-T, which is the marked up copy of the former certificate of inspection.
A  Yes, sir.
Q  Did you make any of those marks or any of the writing? Is any of the writing on that yours?
A  No.
Q  Did you see that before the new certificate was issued?
A  My initials aren't on it.
Q  All right.

CDR. LOOSMORE: That's all I have, sir.
REAR ADMIRAL BARROW: Capt. Wilson?

EXAMINATION

By Capt. Wilson:

Q  Cdr. Gafford, on the annual inspection, is that performed as a requirement of regulation that cargo vessels be inspected annually?
A  On the Great Lakes up here; yes.
This is -- I don't think this is a requirement as such. It is a Coast Guard policy. It is outlined in the Merchant Marine Safety Manual.

Q  That would cover all the vessels sailing the Great Lakes or all vessels in the Great Lakes certificate of
inspection?
A  To my experience, yes.
Q  On the annual inspection, the sounding pipes, is
that the function of the hull or the boiler inspector to
check the closures for the sounding tubes?
A  Sounding tubes for what?
Q  For the ballast tanks. I'm sorry.
A  The hull inspector -- I believe it is a dual thing
as outlined in the inspection books.
Q  How about the sounding gauges in the engine room?
A  I am not -- I can't comment one way or the other
on that because I don't know. Some ships are equipped
with them and some aren't. There is nothing here to
indicate.
Q  If they had separate gauges in the engine room,
would that normally be examined by the boiler man?
A  By the boiler man; yes, sir.
Q  Is it a practice as part of this inspection to hold
a fire and boat drill?
A  Yes.
Q  As part of this drill, are the boats lowered to the
water?
A  Yes, usually the offshore boat.
Q  The outboard boat or the one that is not near the
dock?
A. Yes.

Q. Is the crew or any part of the crew put into the boats?
A. Yes.

Q. How many?
A. Well, I don't know. I guess it varies. There are no set amounts. It depends on the inspector.
Q. Would there be anything in either of the inspection books to indicate it?
A. It doesn't indicate how many; it says the crews will be exercised at the oars.
Q. Does it indicate that the crew was exercised at the oars?
A. Yes.

Q. Some part of them?

Is there any other test made of the boats?
A. Yes. They are required to be weight tested every two years and of course a visual examination is made as a matter of course, and I think the suspected areas are observed, if there is further examination to be needed to go into that area.
Q. Can you tell if they were weight tested in this inspection?
A. Yes.

Q. They were weight tested at this inspection?

Both boats?
A No, "Port weight test due 4/76," so the starboard was weight tested.

Q Then that would include that the port boat had been done --

A Probably 1974.

Q -- at least in the previous inspection?

A This information would be on the bridge record card.

CAPT. WILSON: That's all I have,

Admiral.

REAR ADMIRAL BARROW: Capt. Zabinski?

EXAMINATION

By Capt. Zabinski:

Q Cdr. Gafford, what is the normal procedure for inspection. Is it something where the Coast Guard goes aboard and conducts an inspection on a certain date, or what are the procedures?

A Usually our initial contact for the inspection is with the company officials by a telephone call and setting up a time and place and date and we go down there and the first thing we do is get an application for inspection.

Q Was there an application for inspection filed in this case?

A I believe so. Yes, sir; it is dated 2/3/75.

Q 2/3/75?

A Yes, sir.
Q. Sent to whom?
A. To the Port of Toledo.
Q. To the Port of Toledo. And a date of inspection was conducted some couple of months later?
A. No. It started that date and continued up until 9 April 75.

Q. The inspection took a couple of months, then?
A. Well, you know, a period of time when they get -- the crew works down there, whoever was repairing the facilities, they get something ready and then they call for the office, make a date, go down and look at it.
Q. Commander, I'd like to refer your attention back to the letter that you sent to the company deferring the completion of those items until 1976.
A. Right.
Q. Now, the requirement was issued by the inspector with the concurrence of your office?
A. Yes, sir.
Q. It was -- the date that it was supposed to be completed was what?
A. 1 April 1976.
Q. 1 April 1976. Is that a blanket -- that was the original 835 gave until '76?
A. We put this 1 April on there strictly for administrative purposes.
Usually ships start tying up, some of them start laying up now, they will lay right on up until the lake freezes and around the 1st of April they start setting out for the next year's operations. So all that time between, let's say, the end of November-first part of December to April, they are laid up and rather than give a completion time of prior to the start of the '76 navigation season that can be delayed, I use 1 April just for administrative purposes.

Q. Did the company request a deferment of these items?
A. I presume they made a request to the inspector who accomplished the inspection to do it during the layup of the vessel, yes.

Q. That is to accomplish this during the layup of the vessel?
A. Yes.

REAR ADMIRAL BARROW: Cdr. Gafford, is there anything in the files that you brought here today which you have reviewed quite carefully again today, is there anything in the documents, inspection books, and so forth, that had it come to your attention on the day you signed the certificate, it would have prevented its issuance on the day it was issued?

THE WITNESS: No, sir.
REAR ADMIRAL BARROW: You considered it seaworthy based on all the records in your office?

THE WITNESS: Yes, sir.

CAPT. ZABINSKI: That's all I have.

MR. MURPHY: Mr. Chairman, I have one more question I would ask in hopes of saving time.

EXAMINATION

By Mr. Murphy:

Q. Cdr. Gafford, since there was an entry there indicating one radar set aboard, I am informed and would be prepared to produce witnesses to indicate that there have been two radar sets aboard the Fitzgerald since it came out. Would that be an error in the record?

A. This probably could, yes. I assume that he indicated -- I don't know whether she has any repeaters. I couldn't say from firsthand knowledge how many.

REAR ADMIRAL BARROW: We are going to be talking to the inspectors on this item anyway.

MR. MURPHY: All right.

Thank you. I have no further questions.

REAR ADMIRAL BARROW: Any additional questions?

CDR. LOOSMORE: No, sir.

REAR ADMIRAL BARROW: Thank you, Commander.

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

I think before I do let you go, you, of course, know the purposes of the investigation, to find out the cause of the sinking of the Fitzgerald.

Is there anything that you have to add other than what you have said which might assist us in our purposes here?

THE WITNESS: No, sir. I don't have anything to offer.

REAR ADMIRAL BARROW: You are excused.

(Witness excused.)

REAR ADMIRAL BARROW: Next witness?

CDR. LOOSMORE: Yes, sir. I think we'd like to recall Lt. Paul.

REAR ADMIRAL BARROW: I believe we have neglected one piece of very important work and that is to remove the "for identification purposes" on the exhibits which have been brought forth by this witness, and would you enumerate those, please, Cdr. Loosmore?

CDR. LOOSMORE: By Cdr. Gafford, sir?

REAR ADMIRAL BARROW: Yes.

CDR. LOOSMORE: Exhibits which were
introduced during Cdr. Gafford's testimony were 45-A, B, C, and D; 46-A through U; 47; and 48-A, B, C, D, and E, sir.

REAR ADMIRAL BARROW: Each of those exhibits are admitted into evidence and the words "for identification" are stricken.

(Exhibits 45-A, B, C and D, 46-A through U, 47, and 48-A, B, C, D and E were received in evidence and made a part of the record.)

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WILLIAM R. PAUL was recalled as a witness, and having been previously duly sworn, was examined and testified further as follows:

EXAMINATION

By Cdr. Loosmore:

Q Lt. Paul, let me remind you that you are still under oath.

Before we get into your testimony concerning the inspection certification, would you look at those Exhibits 44-A through 44-F and if those are the ones that were sketched this morning, would you please sign and
date each one of those?

A. The date?

Q. Today is the 21st of November.

A. (Witness complies.)

REAR ADMIRAL BARROW: The additional records that have been introduced for identification, according to my recollection, which have not been admitted into evidence are 43-A, B and C, 44-A, B, C, D and E; the first three of those are 835's plus spar deck inspections, the first three pieces, and the remainder of them are sketches.

Those are admitted into evidence.

(Exhibits 43-A, B, C;

44-A, B, C, D and E were received in evidence and made a part of the record.

By Cdr. Loosmore:

Q. Lt. Paul, I'd like to talk about your role in the inspection for certification for the Fitzgerald which took place during the layup of the '74-'75 layup, until April of 1975.

Cdr. Gafford has testified that your name is in the hull inspection book which is in evidence as Exhibit No. 45-A through so and so.

Would you identify your handwriting and signature
in the book and describe what role you played?

A. Sir, I signed the book on page 48 which states that in my opinion the vessel is fit for service and route specified.

Q. When is that done? At the beginning, the middle, or the end of the inspection?

A. At the end.

Q. All right.

A. There is an entry on page 32, 9 April 74, an entry on there stating "Inspection complete."

Q. Stating?

A. "Inspection complete," and signed.

Q. Where was the vessel when you did this inspection or was there more than one inspection?

A. On this particular vessel?

Q. That is listed in the book, is that on one day or more than one day?

REAR ADMIRAL BARROW: May I interrupt for just a moment?

I don't believe the witness has been warned he is still under oath.

CDR. LOOSMORE: Yes, sir, I did.

THE WITNESS: 9 April 75, one day;

yes, sir.

By Cdr. Loosmore:
Q. Does that book include information on more than one day's inspection?

A. There are prior pages.

Q. Were you involved in the one day's inspection or the period of the book?

A. To the best of my knowledge I was involved on the last entry contained, April 1975.

Q. All right. Where was that inspection conducted?

A. I'm not positive which -- unless I look at the entry here stating where.

   Okay, Toledo, Overseas Terminal, TOT.

Q. Where was that?

A. In the Port of Toledo, the Overseas Terminal.

Q. Did your inspection on the 9th of April involve any inspection of the life rafts?

A. I -- once again, to the best of my knowledge, my routine would be to check the serial numbers against the equipment list, check that it has a current tag indicating it has been inspected within the past year, to see if they were properly secured in the cradle; whatever type of arrangement, ready for service; that would be my extent of inspecting of life rafts.

Q. Do you recall how many?

A. I believe it indicates there were two life rafts.

Q. Do you recall or does that indicate where No. 1 was
located?

Q. No, I don't. Life rafts: Initial the book indicating they had been serviced 3-75 in Cleveland, the exact location is not indicated.

A. Did you initial the box?

A. Yes, sir.

Q. Did you find any discrepancies at all in the course of your inspection?

A. No; the raft is sealed up, I don't go any further to attempt to tear the seal. It is sealed intact, this is for the purpose of inspection.

Q. How about the vessel overall, were there any discrepancies?

A. Issued this requirement, I think it was covered earlier, concerning a fire control plan, but nothing else.

CDR. LOOSMORE: All right.

REAR ADMIRAL BARROW: Off the record.

(Discussion off the record.)

REAR ADMIRAL BARROW: Back on the record.

By Cdr. Loosmore:

Q. Lt. Paul, I am showing you Exhibit 46-T which has previously been admitted into evidence in this hearing.

Can you identify that?

A. It appears to be an old certificate of inspection with corrections made on it.
Q. Can you tell me, do you know or did you make the corrections on that?

A. I would say I did not.

Q. Do you recognize --

A. It's not my handwriting.

Q. Why?

A. No initials.

CDR. LOOSMORE: Thank you.

That is what I have, sir.

REAR ADmiral BARROW: Capt. Wilson.

EXAMINATION

By Capt. Wilson:

Q. Mr. Paul, on the hull inspection book on page 17, which is Exhibit 45-A --

A. Yes, sir?

Q. -- it indicates that the watertight doors were tested. Did you do that?

A. I was along with someone who did it.

Q. Fine. How were those doors tested?

A. These doors are on the ends of the tunnel, fore and aft. We went from the fore body to the after body of the vessel and checked the dogs.

Q. What is the process of the check or test?

A. We will make sure the dogs are operating, the gaskets are in good condition, and they close properly.
Q. What type of inspection do you make of the gaskets to insure they are in proper condition?
A. I insure they are no brittle, make sure they are actually there, make sure they are soft enough, apparently doing what they are supposed to do.
Q. Then that is a visual examination in lieu of some type of mechanical test?
A. Yes, sir.
Q. Or air test?
A. No air test; just close the door, make sure the dogs work, and that's it.
Q. Did you check the flares?
A. I don't believe so; I think that was done previously.

CAPT. ZABINSKI: You can refer to the book.

By Capt. Wilson:
Q. You can refer to the book if you like to see whether you did or not.
A. I have indicated on page 4 under "Navigation Lights and Signals," which includes signal flares: "Bridge flares." I probably checked for quantity and date.
Q. What is the check for the bridge flares?
A. To see that the date is good, that they are not over date for the three-year period, to see that the containers are proper and they are in plastic bags inside of a
container.

REAR ADMIRAL BARROW: Capt. Zabinski.

EXAMINATION

By Capt. Zabinski:

Q  Mr. Paul, I'd like you -- be seated. I will come over here with you. I hope I don't make you nervous here.

But I did want to run through a few items on the inspection book, this is Exhibit 45-A, the hull inspection book.

Now the entries here, according to Cdr. Gafford's testimony, any of these entries in here which bear the initial -- what is it, is it P as the first initial?

A  W. P. That is my initial, yes, sir.

Q  "W. P."

A  Yes, sir.

Q  With the items that were checked by you?

A  Yes, sir, that's right.

Q  And there are other inspectors that assisted in the inspection or conducted a part of the inspection before your final inspection and their initials are alongside of the entry that they checked; is that correct?

A  Yes, sir.

Q  Now, as the final inspector would you be responsible or what are the procedures for checking the completeness of the book that all the entries have been checked?

A  Well, I would be more than likely the last person
to go through the book and make sure it was completed.

Q. But what kind of flares are required on the Fitzgerald type vessel?

A. On the bridge, the pilothouse, they are required to have six anthill red -- I am sorry, parachute flares, six orange flares.

Q. The test on these is just a matter of checking the date?

A. Check to make sure they are physically there, the dates are not --

Q. The disengaging apparatus now on the lifeboats was examined and tested and so forth. What kind of releasing gear was on the boats?

A. I don't remember specifically the name, it's a type of release by a handle in the center of the boat and the boat davits are released at the same time.

Q. Both locks release simultaneously?

A. Yes, sir.

Q. Do you recall testing those, the releasing gear for the boats?

A. I believe it's indicated, Captain, that a weight test was conducted on No. 1 boat.

Q. At that time?

A. Yes, sir.

Q. What does a weight test consist of?
A Well, each boat has the capacity marked on the boat itself: 38 persons, 32, whatever, so --

Q Do you know what the capacities of the boats were?

A No, I don't know what the capacity was.

Q What was the capacity?

A I don't recall.

Q On the Fitzgerald type?

A I don't know what it was on this particular boat but you put 155 pounds per person generally in the boat, generally in the form of water because it's easy to handle, generally put the boat with it being suspended fairly close to the water, not in the water, make sure you have the proper amount of water, suspend it for a few minutes, lower the boat to the water, put the tension on and release, that is the way I test.

Q That is a test of the falls or the disengaging --

A The whole apparatus.

Q And this was done for the No. 1 boat?

A Yes, sir.

Q No. 2 boat that was not done, was there any reason for that?

A I assume it was done either before this, somebody checked, but not myself, another inspector checked it, the bridge record card if it's done the year before, we would not do it again.
Q. You made reference to the bridge record card.

A. That is a card on which every time an inspector goes on board he makes an entry what he did.

If he issues requirements of some sort, he should list those, at least how many.

Q. He held drills?

A. Fire and boat drills, yes, sir.

Q. How about special examinations?

A. Special examinations, yes.

Q. Is there a duplicate record anywhere of this bridge record that was on the Fitzgerald?

A. Not as far as I know, sir.

Q. These are entries made no matter where the vessel goes by the inspector who visits?

A. Yes.

Q. As you know or may not know, Mr. Paul, on the Fitzgerald the boats are now up at the Soo. They have been recovered, one boat intact and the other, the half boat has been recovered.

And the question of the condition of the boats is very important.

Can you give us any indication or idea of how you inspected the lifeboats, the hull structure, and what you did?
Are they fitted with air tanks and if so, how
did you test those?

A. Yes, sir, generally the initial inspection is done
in the fall layup to see if there are any repairs, to
see they are taken care of prior to fitting out in the
spring.

The final inspection prior to the vessel fitting up
and getting under way, it's examined again physically
to make sure the equipment is there, make sure something
else hasn't happened and if there are any other require-
ments, making sure they have been taken care of, I
might check the equipment again, spot-check it to make
sure that things are as indicated previously.

Then you have your weight test if it's indicated,
your boat drill.

Q. Did you hold a boat drill on the Fitzgerald?
A. Yes, sir.

Q. What date did you hold it?
A. I think it was on the 9th, the 9th of April, 1975.

Q. Which boat or boats did you launch, if any?
A. No. 1 boat.

Q. Is there an indication that the crew went to the boat
and --

A. I made an entry, the number of the crew exercising in
boat, eight.
Q. How many?
A. Eight.
Q. "Eight."
A. No. 2 boat being on dockside wasn't lowered to the water but swung out.
Q. Did you personally witness the launching of No. 1 boat?
A. Yes, sir.
Q. Did you have a chance -- who launched? Who was actually launching the boat?
Do you recall what ship's officer did this?
A. I don't recall if the second mate or the third mate, one of the two, because I think the chief was in charge of the operation, or first mate.
Q. During the course of the drill did you participate in any way? Were you an observer or how did that work out?
A. I sometimes participate, you know, talk to people, ask them questions and so forth.
Q. But in the actual --
A. Observing the boat drill and seeing if it's resting properly.
Q. Do you recall how long it may have taken to launch this boat?
A. Well, I -- generally they take it fairly loose as a rule, they aren't under way I don't think with any speed involved.
Q. Speed is not the objective; is that the idea?

A. No, sir.

Q. Did the method by which the crew launch swing out, launched the boat, does it show that they were familiar with their duties? Is that your recollection?

A. Yes, I recollect that; yes, sir. They have done more than one drill before. If they haven’t, it is not proper.

Q. If it is unsatisfactory, you hold it again?

A. Yes, sir.

Q. Is that what you are saying?

A. Yes, sir.

Q. That was unnecessary for the Fitzgerald?

A. I made no entry to that effect. I don’t think -- I don’t recall anything of that nature.

Q. If I understand the entry correctly then, the Fitzgerald had a crew of 29, and eight were exercised at oars at this particular drill?

A. Yes, sir.

Q. On the inflatable life rafts, there were two aboard and the procedure was that they were inspected in Cleveland and you satisfied yourself.

How about the stowage of those? Did they have a float-free arrangement or were they arranged with a hydrostatic release? Do you recall?
A. I don't recall specifically, but I know which is which. But I don't recall which type they had on this vessel, but I would make sure that the painter was attached to make sure they would operate automatically, if they were required to.

Q. Ring buoys; there were a lot of ring buoys on the Fitzgerald, is that right? How many ring buoys does she require?

A. 24 ring life buoys.

Q. 24 ring life buoys. How many of those would be fitted with lights, if any?

A. Let's see -- at least --

Q. Would there be an indication in your inspection book?

A. I think it is in the inspection book; yes, sir.

Q. Okay, here you are.

(Handing to witness.)

A. In the entry here it states that too -- this is my writing, but I think what I meant to say was a need for two more water lights and need lines and two ring buoys.

Q. Do you know if there was a requirement issued for this?

A. I believe this was on the work list. Since the vessel wasn't under way, a requirement wasn't really indicated and this would have been something I would be sure was completed prior to departure.
Q. How would you be sure?
A. Visually inspect it.
Q. You were only there for one day; is that your testimony?
A. Yes, sir, but it is part of my final inspection to walk around and see if the ring buoys were in place and they were proper.
Q. Well, were two more water lights provided or obtained to your satisfaction to satisfy this deficiency?
A. There were a proper number of ring buoys and water lights; yes, sir.
Q. They were on board?
A. Yes; they might have brought more than two.
Q. Is that what the entry under here, "OK, 4/9/75" covers?
A. Yes, sir.
Q. Do you know how many were with water lights, fitted with water lights?
A. I don't recall exactly how many, no, sir.
Q. How many are required by the regulations, if you recall?
A. I really am not positive.
Q. Can you estimate for us?
A. I would say up to six.
Q. Six?
Q. The reason I ask this, Mr. Paul, is because the indication that we have before the Board is that although several life rings were recovered, none containing or attached with lights attached seemed to have been re-
covered.
A. Yes.

Q. Now, I would like to direct your attention to these water lights. What type of water lights were they and how were they attached on the vessel, if you recall?
A. Well, we have a line attached to the ring buoy.

Q. Yes, sir.
A. They have a bracket on the bulkhead.
Q. What kind of bracket?
A. Metal.
Q. Describe it for us.
A. Generally three -- I don't know what you call it, three arms that hold the ring buoy in place and you have a bracket for the light itself.
Q. Can you describe the bracket for the light itself?
A. Generally a clip and a base. The light is inserted upside down. This is adjacent to the ring buoy.
Q. A line from the light to the ring buoy; is that correct?
A. Yes.
Q. Do you recall turning the lights upside down to activate them?
A. Yes, sir. This is part of my procedure. I can't specifically recall each one.
Q. This is sort of a sit-in arrangement, the water lights sit in a bracket in a base with a clamp around it. Is that sort of a spring clamp?
A. Yes, sir.
Q. Do you think that the buoyancy of a ring buoy would be sufficient to release that water light in your judgment?
A. I would say it is very likely that some might not. I really don't know.

That is my speculation. It all depends. Somebody could come along and put something on top of it, some crew member.
Q. It might become obstructed?
A. It could be obstructed; yes, sir, but generally they should release.
Q. I note by the entry here that you did not check the life preservers, is that correct?
A. No, sir, I did not.
Q. But you have an indication -- can you tell us where they were stowed or you said you didn't check the items specifically, did you?
A. Well, of course, during the fire and boat drill, I
observed there were life jackets, but I didn't examine them.

Q. What kind of jackets were the crew wearing; can you tell us the type?
A. There again, I wouldn't be 100 per cent sure. There are two or three different approved types in use right now and it could have been the Unicellior, I think, or they call them horse bars. They have an attachment up and down around the waist as opposed to the older style.

Q. You mean the jacket type?
A. The jacket type; yes, sir. They might have had a combination of both. I just don't recall, Captain.

Q. Do you recall where the stowage of the life jackets may have been within the interior of the houses of the crew or how they were disposed or stowed?
A. I can't recall specifically. Of course, each individual crew member should have one in his compartment, in his locker.

Q. Do you recall if this was the case in the Fitzgerald?
A. I don't recall specifically; no, sir.

Q. The general alarm system, could you describe the 'general alarm system on the Fitzgerald for us?
A. Oh, there is a control in the pilothouse, I believe, and there is one in the afterhouse, and this was something
else in the course of the fire and boat drill that is
checked to make sure they are operating and in all spaces,
you can hear the alarm bells ringing.

Q  Do you know where the batteries for this might be?
A  I don't remember specifically. Probably one deck
level above the spar deck and the afterhouse, probably
in the compartment with access from the weather deck,
I think.

Q  How about emergency lighting, do you recall what the
emergency lighting might have consisted of?
A  I am sure they had an emergency generator room.
I don't remember specifically where it was located on
this vessel.

Q  Under navigation equipment, electronic equipment, we
have a listing of radars. It indicates that there is
one, just one radar aboard the Fitzgerald.

Would that refresh your memory on that (handing
to witness)?

A  Yes, it indicates, "Sperry Mark 3, Radar."

Q  Is that your recollection?
A  I can't say one way or the other, Captain. I don't
know.

Q  Did you check the radars specifically? There is an
entry here in the equipment list.
A  I generally would check the entries to make sure
that the serial numbers are correct and the quantities.

Q. Did you check the serial numbers of the lifeboats?
A. Yes, they were normal.

Q. How about davits?
A. I normally did this; yes, sir.

Q. Inflatable life rafts?
A. Yes, sir.

Q. You normally do it. Do you recall doing it on the Fitzgerald?
A. I don't recall specifically, no.

Q. You have an indication that there might have been two radars on the Fitzgerald.

Do you have any comment on that?
A. No, sir; it very well could be.

Q. Hull openings and so forth, you indicated that you had checked those.

Side ports, were there side ports on the Fitzgerald?
A. Were there side ports? I don't believe so.

Q. Do you know if there were dead light covers?
A. I'm sorry, Captain?

Q. Were there side ports?
A. Side ports; yes, sir. I am sure there was. I was thinking of something else.

Q. There were side ports?
A. Yes.
Q  Did you check them?
A  I don't remember specifically.
Q  Do you check the log book of a vessel when going
on inspection to check the frequency with which they have
the fire and boat drills?
A  Not normally. On a fit-out inspection, maybe. I
have checked this in the past, but --
Q  You have checked this when?
A  In the past; yes, sir.
Q  When would you have checked it?
A  Probably on some other occasion, probably later in
the season when it was laid up, maybe.
Q  How often are fire and boat drills required on the
Great Lakes vessels?
A  I believe it is once a week, Captain.
Q  We have a ship with 29 people and a certificated
vessel in compliance with the regulations, according to
your testimony, except for one item, and it was fully
in compliance with the regulations. It is lost.
   We recover all life-saving equipment or at least
in some condition, and we save all the lifeboats and the
life rafts, many life jackets, and yet we don't save
one soul or don't recover any bodies and no one wearing
a life jacket.
   Given these facts, what is your opinion?
A. I don't really think I can come up with that, Captain. I really don't know. I don't think anything I could offer would add anything to this investigation. I have really no idea.

Q. Well --

A. I could speculate like anybody else, but I don't know.

Q. I think you have a lot to offer this investigation. I disagree, Mr. Paul.

You were the last inspector at the last Coast Guard annual inspection. You looked at these things and reported entries in your books, and you looked at it personally, subject to recollection, which I am not going to fault you for not remembering exact details because there were many, many items that you looked at.

But I feel that you do have something to offer this investigation and I would like you to think on it a minute and give me your best opinion of why no one was saved or no bodies were recovered.

A. Well, I would have to assume that all of the bodies, I mean all of the personnel involved, were inside the fore or the aft end.

I would have to also assume that the hatches were dogged.

Q. Trapped inside?

A. I would assume that whatever happened, happened in a
hurry and it was probably too rough to be outside. Even if they had an indication of an impending failure or something, it would be pretty hard to be outside on the weather deck.

That is my best idea of whatever happened.

Q. Whatever happened happened very suddenly?

A. The personnel were inside the cabins and the bridge and the after compartments.

CAPT. ZABINSKI: That's all I have,

Admiral.

EXAMINATION

By Rear Admiral Barrow:

Q. Again, what was the period of time during which you inspected the Fitzgerald?

A. 9 April. I will double-check this here.

Yes, 9 April 1975, sir.

Q. What crew was aboard at that time?

A. It should have been the entire crew.

Q. The entire crew?

A. Occasionally there might be, in a case like there might be somebody with a valid reason, and he may not be present, but generally full crews are required before we go ahead with the final inspection, fire and boat drill.

Q. In carrying out your inspections during the period of time you were aboard there, what crew members did you
work with for the most part?

A. Say for the most part, I worked with the first mate and the second mate, John H. McCarthy and Ralph Dietzen.

Q. During any of your inspection procedures and the carrying out of the individual tests on board, was there anyone that gave you any indication of problems with the ship?

A. I don't recall any, sir.

Q. Any of them who pointed out any problems or difficulties to you?

A. No, sir.

Q. You indicated that you did not personally inspect the inflatable life rafts?

A. No, sir; not the annual inflation testing, no, sir.

Q. Where was that done?

A. I believe it was done in Cleveland.

Q. Did you get copies of certificates for that?

A. I have not seen copies of those certificates. However, they are attached to the rafts themselves, a plate indicating the date, the inspector's initials and the location.

Q. Do you recall what radio telephone equipment the Fitzgerald had?

A. I am sure they had a VHF-FM, standard required frequencies.
Q  You inspected the emergency lighting system, I believe you stated a few moments ago, or it is contained in the inspection book itself?
A  I am not sure if that wasn't done by the boiler inspector. I don't remember specifically.
Q  Would you check?
A  There is an entry on page 12, the emergency lighting engineering book, initialed by myself.
Q  Do you recall any specific inspection you did on the emergency lighting system?
A  I don't recall any specifics, no.
Q  May I see the book just a minute?
(Handing.)
A  Generally for the fire and boat drill, the engineering inspector would be handling the emergency generator and I would be looking at the other aspects, the lights themselves.

REAR ADMIRAL BARROW:  I think for the record I asked the earlier witness to comment on this specific item.
Counselor?
MR. MURPHY:  No questions, Mr. Chairman.

REAR ADMIRAL BARROW:  Interested parties?
(No response.)
REAR ADMIRAL BARROW: Capt. Zabinski?
CAPT. ZABINSKI: That's all I have.
REAR ADMIRAL BARROW: Cdr. Loosmore?
CDR. LOOSMORE: Nothing.
REAR ADMIRAL BARROW: Thank you very much, Mr. Paul. We appreciate your testimony and you are cautioned again not to discuss your testimony with anyone other than counsel until the conclusion of the investigation.

THE WITNESS: Yes, sir.
REAR ADMIRAL BARROW: You are excused.
(Witness excused.)

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REAR ADMIRAL BARROW: Cdr. Loosmore?
CDR. LOOSMORE: Sir, we have one additional witness here. Would you like to call him now?

REAR ADMIRAL BARROW: Off the record.
(Discussion off the record.)

REAR ADMIRAL BARROW: On the record.
Let's take five minutes and we will schedule another witness.
(Recess had.)

REAR ADMIRAL BARROW: Let the record show we reconvened at 1818; the parties in interest,
counsel as before.

Continue, Cdr. Loosmore.

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WILFORD JEANQUART

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

EXAMINATION

By Cdr. Loosmore:

Q. Would you be seated, please.

Would you please state your name, address, and occupa-

A. Wilford Jeanquist, spell that J-e-a-n-q-u-a-r-t.

The address is 318 Whittmore, Toledo, Ohio.

I am a surveyor for the American Bureau of Shipping.

Q. Mr. Jeanquist, do you hold a Coast Guard license or
document?

A. No, I don't.

Q. How long have you been employed by the American
Bureau?

A. Since May of 1967.

Q. Since May of 1967 where have you been employed by
the Bureau?

A. I was employed with the Bureau while the office
was in Detroit, located in Detroit, and also now that it's
located in Toledo.
Q. Could you summarize your experience prior to 1967 as it pertains to Great Lakes shipping?

A. I was a general superintendent at the Christie Shipping Corporation prior to going to the Bureau for a period of about two years, and at the shipbuilding and ship repair facility.

Prior to that I was a hull superintendent probably from '59 on to the time I became general superintendent, also hull foreman in repowering and reboilering of these lake vessels.

Q. What is your present title with the American Bureau?

A. Surveyor.

Q. And as a surveyor in the Toledo office, what are your duties?

A. I tend various assignments that are handed out to me from my office.

Q. Assignments involving what?

A. Surveys of ships, examination of equipment, supervise new construction, and ship repair.

Q. Are you a specialist in any particular part of the ship such as the hull or the machinery or electronics?

A. I think my weakest point is the electronics. Outside of that I like to think that I cover it pretty thoroughly.

Q. Do your duties involve the inspection of the people and their qualifications or simply the materiel condition?
A. Could you repeat the question?
Q. Do your duties involve the inspection of the condition of the ship, its equipment?
A. Yes. Yes.
Q. Have you had any occasion to do any, you call them surveys, on the Fitzgerald in the last several years?
A. Yes.
Q. Could you tell me when the most recent of those inspections would be?
A. The 31st of October of this year.
Q. What was that occasion?
A. That was the commencement of the annual survey of hull.
Q. What did you accomplish on that date?
A. We made a weather deck or so-called spar deck survey of the vessel.
Q. Was anyone with you?
A. Yes, I had a new man that had just been recently hired into the Bureau which was one of the first jobs; he was learning this thing, learning to be a surveyor.
Q. Who else was involved?
A. Mr. Paul was involved in the survey, of the Coast Guard, U. S. Coast Guard, and Mr. Feltz was in attendance.
Q. Mr. Feltz?
A. Right.
Q. Who was he?

A. He's the owner's representative.

Q. What is the name of the new man that you talked about?

A. William Dagnar.

Q. Who is he employed by?

A. American Bureau of Shipping.

Q. Was there anyone else that was involved in this survey? Is there anyone from the ship, for example?

A. I cannot recall; I don't believe so.

Q. Was there anyone else at all?

A. Yes, there was other people around the area but I could not distinguish them between somebody that was possibly involved in the unloading of the vessel.

There seemed to be hats down there that belonged to the unloading facility.

Q. Can you describe the procedure of the survey that you conducted on the 31st of October, please?

A. The survey -- we inspect the deck, all deck erections, the deck area within the hatch combings, the gunwale connections, the sheer striker which you would look over the side, port and starboard, this is all included in our inspection together with a general look at the hatch covers, the hatch clamps, what I call erections on a ship.

Q. What did this inspection disclose?

A. Well, I found some irregularities located in the
way of the hatch opening, hatch openings on Hatch No. 13, No. 15 and No. 16 port side and also No. 21 starboard side aftercombing.

Q. What did you do about these?

A. We discussed it and decided that they were merely irregularities and could be dealt with before the completion of the annual survey of hull.

Q. You said "we discussed it," who did you discuss it with?

A. We have the owner's representative who was aboard as I indicated before, Mr. Paul, myself, and having this new surveyor.

Q. What was the basis of deciding that they could be delayed?

A. This was ordinary procedure. When the spar decks first started, it was an agreement that the Coast Guard, the Bureau, and the owners should agree as to the resolution of these things.

Q. Mr. Jeanquart, would you describe these irregularities? Do you have either a remembrance or record of them?

A. They were what I would consider minor indentations in the way of Hatch No. 13 and No. 15 port side, and the indentations were in the -- on the inboard edge of the spar deck striker plate and in the area of Hatch No. 16 the hatch end girder had a set in over an area not very
large. It was set in, in my judgment, an inch and a half
and the fracture was approximately six inches in length
and it was in the mid-section of the girder.

Q  All right, sir.

A  On Hatch 21 it was in, well, that touches on the transfer
hatch coming to the hatch end girder, a slight fracture,
fracture weld, which I estimated to be about half an inch
in length.

Q  All right, Mr. Jeanquart, I'd like to show you what
has been marked Exhibit No. 44-A which is entitled
"Edmund Fitzgerald No. 13 Hatch Port." I'd like you to
examine that and tell me whether or not that fairly depicts
what you have described for No. 13 and if not, why not?

A  I could not call it a "notch."

In essence a notch is something that is very sharp
and it had more of a radius than, say, it was a very sharp
notch.

In my description it wouldn't be called a notch.

Q  How deep was it?

A  An eighth, possibly three-sixteenths.

MR. MURPHY:  What exhibit was that, sir?

CDR. LOOSMORE:  That was 44-A.

MR. MURPHY:  Thank you.

By Cdr. Loosmore:

Q  Mr. Jeanquart, I now show you 44-B which is entitled
"Edmund Fitzgerald No. 15 Hatch Port." Would you say that would fairly --

A. Yes, "gouge."

Q. A gouge?

A. Right.

Q. All right, sir, was the location about right?

A. Approximately correct, yes.

Q. How deep would you say that one was?

A. About an eighth, one-eighth, probably three-sixteenths.

Q. How would you distinguish between a notch and a gouge?

A. A gouge -- I would call it a gouge if it had a radius which -- a notch would be something that is very pointed (indicating).

Q. All right. If you describe a notch as having some radius, would it necessarily have some length as well?

A. A notch having a radius?

Q. I mean a gouge.

A. Well, it would probably be over a wider area, yes.

Q. On Hatch No. 15, what area?

A. That again was not over a quarter inch in width to my recollection.

Q. Here is Exhibit 44-C which is Hatch No. 16.

Would you say that reasonably describes, depicts what you have described?

A. Well, I assume this is not drawn to scale.
Q. Yes, sir, I think we can assume.
A. This crack is shown very nearly to the top of the
striker plate which is not the way of my recollection.
    It's in the mid-section of the girder approximately
six inches in length so if you put a six-inch crack in
the mid-section of the girder, it doesn't come near the
spar deck striker plate.
Q. How deep was the girder to your recollection?
A. It was an 18-inch girder with approximately a four-
inch crack so it was 18 inches depth and the crack was
located in the mid-section of the girder.
Q. In the middle of the girder?
A. That's right.
Q. Now, Exhibit 44-E which is entitled "Edmund Fitzgerald
No. 21 Hatch Starboard," would you say that fairly depicts
what you have described?
A. Right.
Q. How big was that crack?
A. It was about a half inch long. You could hardly see it.
    It was spotted only because I use a magnifying mirror
on all of these spar deck inspections. I detect many,
many times these very insignificant minor defects.
Q. Mr. Jeanquart, you use the words "I found irregulari-
ties." Did you in fact personally find all four of these?
A. No, no; I should have said "we."
Q. Do you recall whether any particular individual found any one of these or whether they all just occurred to all of you?

A. We were making the spar deck in association, one with the other, inasmuch as we were teaching another man, we were all pretty close together.

Q. What did you do about these irregularities as far as in relationship between the ship and the American Bureau of Shipping was concerned?

A. I wrote a report on it.

Q. You wrote --

A. A report which the owners and my company have on file.

Q. Do you have a copy of that report with you?

A. No, I don't.

Q. Could we ask you to obtain a copy of that report and forward that to the Board, please?

A. I think the Bureau's procedure has been unless the owners release it, I as an individual cannot give you a copy.

REAR ADMIRAL BARKOW: Counselor, we have been furnished all of the ABS file on this matter. We don't have this.

MR. MURPHY: You do not?

All right, I will see that it's obtained.

CDR. LOOSMORE: Just for purposes of
completeness, counsel, would you provide us with

copies of forwarding letters or other correspondence

which relates to this particular report?

By Cdr. Loosmore:

Q. Mr. Jeanquart, you have referred to an agreement.

Who were the parties to this agreement?

A. I think this here started back in '67-'68 when this --

the spar decks were first initiated and this is what I was

told, that there had been an agreement between the Coast

Guard and the American Bureau of Shipping to jointly hold

together with an owner's representative.

Q. Told by whom, do you recall?

A. I don't recall right now. Evidently it must have

been from my supervisor.

Q. Fine.

Do you know whether there is a written version of this

agreement at all?

A. No, I don't.

Q. Have you ever seen an American Bureau instruction

or letter to surveyors or otherwise which talks about this?

A. No, I haven't.

Q. Have you any written instructions at all about

spar deck surveys?

A. No, other than what is written in our rules book,

ABS Rules.
Q. Is there a discussion of spar deck surveys, annual surveys?

A. That hatches shall be opened and examined, the weather deck is to be examined annually; yes.

Q. Specifically referred to is spar deck survey?

A. Weather deck or spar deck, I don't just recall the wording of it now.

Q. Do those rules also include instructions that they are to be held in connection with the Coast Guard?

A. No, no, they don't.

Q. What was the next earlier inspection that you were involved in with the Fitzgerald?

A. I believe I was on the vessel for the '74-'75 layup and fitout season, but I just can't recall what function I played on that.

I have covered so many vessels in this period of time I can't recall this unless I go back in records.

Q. Do you have any records?

A. Oh, yes.

Q. Do you have records with you?

A. No, I haven't.

MR. MURPHY: Would that record be included in what has been furnished previously, Mr. Chairman?

THE WITNESS: If you have the annual
survey of hull reports it would be.

REAR ADMIRAL BARROW: Off the record.

(Discussion off the record.)

By Cdr. Loosmore:

Q. Mr. Jeanquart, this is Exhibit 3-B which consists of
one, two, three, four, five -- which has been provided
this Board by the owner.

A. If I could see that, I can tell.

Q. This says Toledo, Ohio, 9 April 1975. Do you recognize that?

A. Yes, because I signed this report.

Q. Your signature is on the second page?

A. I was on the vessel at the fitout time which is the
last date, 9 April 1975.

Q. All right, sir.

Do you recognize the signatures on page 2 of this
exhibit?

A. My signature, yes.

He is Doug Lamb, the upper signature was a fellow that
wrote the report in conjunction with me. He is my leader.

Q. And on the last page of this report can you tell me
what that page immediately --

A. The load line survey conducted April 9, 1975, and
which I conducted the survey and endorsed the load line
and signed this report. That is Form LL90.
Q. In connection with the survey, the report of which is the first two pages, apparently, of this particular report, Toledo, Ohio, 9 April 1975 which you signed in connection with Mr. Lamb as you pointed out --
A. Right.
Q. -- were there any discrepancies or other irregularities which existed in the hull of the Fitzgerald at the conclusion of that survey?
Take a moment and examine it.
(Brief pause.)
A. No, there were not.
Q. There were no discrepancies?
A. There were no discrepancies.
Q. All right, sir.
Referring to the last two pages of this exhibit and I am sorry I don't recall the form number that you described this as. Would you tell me what that is?
A. That's the annual survey that is conducted on the vessel annually which must be satisfactorily completed before the load line certificate can be endorsed, and this is what this report is comprised of.
Q. All right, sir.
On this particular form there is a listing of items examined, 1 through 16, and I notice that Item 5 is entitled, in fact states "Ventilator...combing, support
deck, arrangement, closing...."

A  Right.

Q  What did you do in order to determine that that item
was, as it says on this form, satisfactory?
A  I examined all these closures through these
ventilators, closures to the air pipes, to determine that
they were satisfactory or not.
Q  Would a vent opening on a ballast tank be included in
"ventilators"?
A  No, it's an air pipe.
Q  Under air pipe it says "Closing arrangements"?
A  Right.
Q  What would you do in order to determine that that was
satisfactory?
A  Check them and see if they were free, if they could be
closed freely by hand, and if they are, if that exists,
they are satisfactory.
Q  Did you examine the condition of them otherwise,
sir?
A  The condition of them?
   Yes, they were in good shape.
Q  Even though it doesn't say anything on the form
you would have examined them?
A  Yes, sir.
Q  All right.
Do you recall the last time, if you ever did that, you examined the Fitzgerald on drydock?

A. I did not.

I never examined the Fitzgerald on drydock because she will not fit on drydock where I was resident surveyor.

Q. All right. I guess I didn't ask about the geographical area of your duties, what they involve, but could you tell us what they do?

A. Survey vessels on drydock.

Q. What geographical areas do your duties in Toledo involve?

A. Toledo, Detroit, all the way up to Sault Ste. Marie which includes Roger City.

Q. How far east in Lake Erie?

A. Up to -- not very far.

Q. Does it go to Cleveland?

A. Huron, probably.

Q. Would that include Cleveland?

A. No, no, no.

Q. Mr. Jeanquart, this is Exhibit 17-B. Could you identify that for me?

A. That's the load line that is issued to the Edmund Fitzgerald.

Q. By?

A. The American Bureau of Shipping.
Q. Yes, sir.
    Now, if you turn the page to Exhibit 17-C, would you
    turn and look at that page, please?
A. (Witness complies.)
Q. You will note that particular page says 17-C
    in the upper right-hand corner.
A. Okay.
Q. That page is entitled "Annual Inspections."
A. Right.
Q. Now, is there any relationship between this form which
    is the last two pages of Exhibit 3-B and Exhibit 17-C?
A. If I can see it and check the load line certificate
    numbers and see they correspond --
Q. Very good.
A. GL 29-667.
Q. GL 29-667?
A. Yes, there is a relation.
Q. There is a relationship?
A. Right.
Q. All right. According to this form and you have stated
    that is your signature, I believe?
A. That's right.
Q. You have endorsed the load line certificate on
    9 April 1975?
A. Correct.
Q. Would that sort of thing appear on that form?
A. Well, here it is, your endorsement space, room for endorsement.
Q. Did you in fact endorse the load line certificate?
A. Yes, I did.
It's aboard the vessel endorsed.
Q. It's aboard the vessel endorsed?
A. Right.
Q. What significance do the words "Duplicate" have there?
A. I don't know.
Q. On 17-B at the top is the word "Duplicate." Does that have any significance?
A. It should be a duplicate of the certificate that was issued.
Q. All right. When was that?
A. Let me see.
Q. When was that certificate issued?
A. It was issued at New York the 1st day of July 1974.
Q. 1st day of July 1974?
A. Right.
Q. So how many, if that were a true certificate, now, we know that's not the certificate that was on the ship, but if that were the true certificate, what would show on 17-C?
A. It would have my endorsement, my signature, and the place and the date.
Q. Attesting to what?
A. That I had conducted a load line survey as reported in the other form.
Q. All right, fine.
Oh, yes, one other thing.
Again still with Exhibit 17, I am now on page 17-D which is a Xerox copy of some hand calculations and 17-E which is also a Xerox copy of some hand calculations:
Mr. Jeanquart, can you recognize what either of those pages are all about?
A. No, I can't.
I don't believe they originated in my office.
Q. In your office?
A. Toledo office of the American Bureau of Shipping, the Toledo office.
Q. All right, sir.
Would you summarize what other contact you have had with the Edmund Fitzgerald in the last five years or so?
A. I can't recall really.
Like I say, I make so many surveys on many different ships that if I was going to try to recall what possible contact I must have had, I don't even recall that I was on her other than last spring and the 31st of October.

CDR. LOOSMORE: All right, thank you.
That's all I have, sir.

EXAMINATION

By Capt. Wilson:

Q. Mr. Jeanquart, you mentioned that in the beginning of your annual hull survey that you checked the plate within the hatch, the combings, and so on and so forth, and hatch clamps?

A. Right.

Q. How were these checked?

A. Just visually, if they are there and not bent over or distorted in any way.

We don't even make a report of them.

Q. You don't open and close?

A. No.

Q. Or close?

A. No.

Q. Their presence --

A. Right.

Q. You have been in Toledo for some time. I was just wondering as part of the puzzle and putting together what some of the people have said, what's the customary mooring arrangement at the taconite docks? Are the vessels more port side to or starboard side to?

A. My recollection is starboard side to.

At one of the docks, at least I attended -- now, the
other dock is port side to.

Q. So we have one of each?
A. Yeah.

I believe at the C & O docks it's port side to
that I have seen the vessels unload; in fact, we made a
spar deck survey and it was port side to.

Q. In the making of the spar deck survey, you examine
the rivet connections between the spar deck and the girder?
A. Only a visual inspection to detect any possibility
of any loose rivets. That's it.

Q. It's visual, you don't ring the rivets?
A. No.

Q. Is the underside of the girder examined?
A. If there seems to be an irregularity, I drop the mirror
and look at the flange, check the flange in that area, but
I do not check the flange throughout.

Q. You mentioned examining the sheer strike?
A. Right.

Q. At this time --
A. Right.

Q. From what you can see on the weather deck, how about
within the tunnel?
A. No, just from the exterior, what you can see on the
weather deck, that was all that was examined at this
time.
Q. Is there a visual examination from the dock side?
A. Above the deck, looking over the side.
Q. With that you can see the top of the sheer strake, would you get down to the L plate?
A. Well, you could pretty well see the full length of the sheer strake from above deck.
Q. Then at this time you would not examine the tank tops on the side tanks?
A. No.
Q. Is there any time during the annual survey in which you examine the tank tops and the side tanks?
A. The tank tops are examined when the whole examination -- the side tanks are not examined except on a five-year survey.
Q. So that the tank tops from above --
A. No, down through the hold, we go in the hold, walk in the hold, the engine tank tops, after peak, fore peak are examined and the tunnels.
Q. I'm sorry. I misstated that.
The tank tops from above you do not go into the double bottoms, for instance, do they?
A. No.
Q. That is the five-year survey?
A. Correct.
Q. And at the same time, when you walk the holds, you
examine the side tanks visually from the hold floor?
A. That is correct.
Q. From the tank top area?
A. Yes.
Q. How about the girders?
A. The girders from the bottom side, you light up through them and examine them in that respect.
Q. Yes. Now the American Bureau of Shipping is a classification society. There isn't anything that was turned up at either of these inspections that would, say, remove the vessel from class, was there?
A. No. Otherwise that statement would not have appeared on those reports that class was recommended.
Q. What are some of the types of things that would remove a vessel from class?
A. That is something that I don't think I can elaborate on. It would be out of my authority to remove a vessel from class.
Q. Could you make a recommendation that a vessel be removed from class, a vessel?
A. I could discuss this with my superiors and they in turn would have to discuss it with higher superiors, I am sure.
Q. On Exhibit 3-B, Item No. 12, under the continuous machinery survey --
MR. MURPHY: Pardon me, Captain.
Would you mind indicating what date is on that
document, so I can follow on my copy?

MR. WILSON: This is Exhibit 3-B,

MR. MURPHY: Of what year, sir?

CAPT. WILSON: 9 April 1975.

This is Toledo, Ohio.

MR. MURPHY: Yes.

By Capt. Wilson:

Q On page 2 of this document on continuous machinery
survey, you indicated, "Pumps opened, examined and found
satisfactory and closed in good order as follows:"
and then there is an A, B, C and D.

Under D, it says, "Four main ballast pumps, two
port and two starboard."

Q Is this an operating operation when you are completed
or purely a visual examination of the pumps?

A Just purely a visual examination of reassembly.

Q Then after the completion of this, you make no
operating tests?

A No.

Q Does this include checking any of the associated
piping with these pumps?

A Oh, yes, a general inspection of the piping is made
annually.

Q. Would that necessitate entering the ballast tanks or would that stop?
A. That would stop where they penetrate into the ballast tanks.

Q. So that would take it from the overboard connection to the boundary of the ballast tanks?
A. Right.

Q. And this is not a pressure test of the piping?
A. No, it is just a visual examination again.

CAPT. WILSON: That's all I have.
REAR ADMIRAL BARROW: Capt. Zabinski?

EXAMINATION

By Capt. Zabinski:

Q. Mr. Jeanquart, you indicated that you would notify your superiors. Who are your superiors?
A. My immediate supervisor is Mr. Doug Lamb.

Q. Where is he, sir?
A. Toledo.

Q. Toledo? I see.

Then, his superiors would be the ones in New York, the people in New York who issued the certificate?
A. No, here in Cleveland, the next one.

Q. Cleveland? I see.
This is because I notice like on the load line certificate it is signed in New York, the final form is signed in New York; is that correct?

A. They issue all load line certificates in New York. New York does this; yes.

Q. You have surveys for load lines; right?

A. Right.

Q. You have surveys for renewal of load line and an upgrade, update of load line, is that correct?

A. Right.

Q. How do those inspections differ?

A. For renewal of load line, this is actually a five-year survey, at which time -- sometimes vessels are gauged depending on their age or condition.

Q. Where are the rules for those? Where are the rules? Is there a special inspection procedure required for that?

A. Right.

Q. Where is that spelled out?

A. American Bureau of Shipping rules for classifying building and classifying ships containing these rules.

Q. Do you know what class or what rules the Fitzgerald last fell under?

A. She was built in 1958.

Q. Well, unless you have a special survey -- I am sure the tanks were all examined. This is a requirement.
Q. Was she gauged?
A. I don't know. I don't know.
Q. She may or may not be required, is that correct?
A. I don't think it was required on that vessel in the condition that she was in.
Q. What else transpires on the renewal of the certificates, load line certificates?
A. You check all closures, all overboard discharges, all vent pipes, closures, vent pipes and closures, the sounding pipes, and also that there is a heavy striking plate under each sounding pipe.

You make an under deck examination thoroughly. Generally it is a bucket suspended from a crane. That is what I use over in Toledo when I make an inspection.

In other words, the condition of the vessel must be ascertained and found satisfactory before a load line can be renewed.
Q. So you do actually get under the under side of the spar deck, is that right?
A. That is right.
Q. This is during the renewal, is that right?
A. Yes.
Q. Now, you make the surface spar deck examination annually?
A. Annually.
Q. Is that part of the load line requirement?

A. That is, because you cover the items that are
to be required for load line like all your closures on the
deck.

Q. You say you look over from the outside at the sheer
strake.

What are you looking for in that inspection?

A. Looking for stress lines, flaked off paint, or some-
thing of that nature in the way of a gunwale connection.

Q. That might indicate some stressing, is that correct?

A. Right.

Q. And you indicated that you don't look at the interior
of the sheer strake plate?

A. Not at the time that we make the spar deck survey.

However, it is conducted before the completion of annual
survey on hull.

Q. What sort of an examination is required for the
annual updating of the certificate of the load line
certificate?

A. Generally all the items that I have discussed, that
the peaks be examined, peak tanks.

Now I am talking about the tunnels, the cargo holds.
the engine room, the engine spaces, fuel bunkers, an
exterior examination of the fuel bunkers.

Q. You say examination; how detailed is this examination
normally?
A. You walk down through it and you take a look at it, and you're right next to it, through the tunnel. I would say it is very thorough in the areas that are covered.
Q. And you indicated that you have a visual examination, visual in some cases and this is just eyeballing it, or would you have a test in addition, or just how extensive is that visual examination?
A. What portion are you referring to?
Q. Well, in your testimony you have indicated visual examination.
A. Hatch covers?
Q. Hatch covers. What would you do?
A. Take a general look at it to see if it is intact and see that there is no excessive wastage and see if the nuts and bolts are tight.
Q. Would you have a test or anything?
A. No.
Q. After you are finished with your report, after you have finished with your inspection, you send a report to the Bureau; is that correct?
A. It goes into my office for typing. It is not my office, the Bureau's office in Toledo, when I say my office, and then it is issued to the owners,
yes.

Q  And then you have your hull surveys and they are different from the load line examinations, is that correct? I am talking about for renewal and for periodic endorsement.

A  Pretty much the same. If you review an annual survey of hull, you will find that the items covered in the LL-90 for load line are again repeated in the annual survey of hull report.

Q  Do you still make separate surveys or could one survey cover both?

A  Well, as much as we are making an annual survey of the hull, many of these items are covered at that time. Like when we make a spar deck survey, the items pertaining to load line are covered at that time.

Q  I am interested in the examination of the air pipes that come through.

These are the ones for the ballast. I have asked some people a few questions here about it. It is a screw-down, as I understand it.

They have described it as about eight inches in diameter and you screw it all the way down by hand and that closes the air pipe; is that correct?

A  It is larger than eight inches. It closes off an eight-inch pipe, so it is a mushroom vent, so it has to be
a lot larger than eight inches and screws down such as you have designated, and it does close off the air pipe.

Q. Now, are there any rules about whether this air pipe should be opened or closed under any conditions of operation according to the load line regulations?

A. No. There is to be closures recognized, but there is no indication as to when they are supposed to be closed or opened.

Q. That is left up to the discretion of the operating personnel. Would that be a fair statement?

A. That is correct.

Q. Now, the thing that I am particularly interested in, and you are very experienced in this line, and I have asked the witnesses if they unscrew the mushroom cover over the air pipe, and I have asked them about this, if they unscrew it all the way, what would happen, and I would like to ask you the same question.

What would your answer to that be?

A. Well, it would bedifficult to unscrew this all the way, as there are keepers on it to keep them from being unscrewed all the way.

Q. There would be a certain number of threads that would still be engaged even if the mushroom cover were all the way?

A. It would come back to the keeper, to the stop point;
yes.

Q. Now, as I go around some of the vessels, I see maintenance and the cleaning off of the threads and so forth to keep them lubricated so that they can be closed.

Is this mushroom vent taken off and just set aside while the maintenance is being performed? Is there some provision that the keeper can be bypassed or removed, or just what is that arrangement?

A. To get it off or to remove it, the keeper would have to be taken off.

Q. How can the keeper be removed?

A. Usually it is a set screw which would have to be backed off.

Q. Where would that be located? Where would that set screw be in relation to the mushroom?

A. Near the top of the threads.

Q. But how would you get at it?

A. I am not that familiar with it.

Q. You are not that familiar with it? Okay.

A. I have seen the details on it, but I can't recall right now what the details are on them.

Q. But it is very important for the Board, and is that your testimony, that you can screw them down and effect a closure of this eight-inch vent pipe without any difficulty at all?
A Right.

Q But as far as turning it counter-clockwise or un-
screwing it so that the vent is open, your testimony is
that the mushroom cap would still be retained by a certain
number of threads so it can't completely come off; is
that correct?

A I believe so.

Q Did you ever make an inspection of the hatch covers
or is there any required inspection, a Bureau inspection
of the hatch covers, with the hatch covers, dogs on,
gaskets in place, to insure watertightness; or what is
the procedure?

A In the spring of the year, before its load line is
endorsed, as you walk up through the vessel going to
the forward end, you eyeball all of these and you can tell
very readily if the covers are down tight because they
are dogged down at the time, and that is the examination
that is made.

Q Do you ever put a hose test on them or anything
of this sort?

A No; if there is any doubt as to the hatch covers,
one piece of the hatch cover being raised, you can take
a feeler gauge and check this out.

Q Is there any requirement under the rules for the gasket
material that is used in this hatch cover connection?
A. I am not sure if there is. I don't believe that you will find it in the ABS Rules, but there may be in the load line, Coast Guard load line rules.

There may be. It would take a review by me of that to find out.

Q. It reads generally that it must be watertight, is that correct?
A. Right.

Q. And that is how you insure that it is watertight, by eyeballing it, really?
A. Right.

Q. Those dogs that are on or the clamps, they are adjustable, according to the testimony of the witnesses here.
A. They are.

Q. So that if they become slack, they can be readjusted to be made tight; is that right?
A. That's right.

Q. There is some indication that the load line on the Fitzgerald was changed. I mean, the position of the load line markings was changed in about 1973 and repositioned, and I was wondering if you could tell us anything or the circumstances surrounding that repositioning.
A. I am not familiar with that particular vessel as to the changing on that one.
I don't know.

Q. How about other vessels? It seems from reading correspondence that this was a change in the Great Lakes load line rules.

Could you brief us on that, please, sir?

A. These vessels, if they meet their requirements that has been set forth in 1973, the change in the requirements, they are granted a reduction in freeboard.

Q. And was there any change or modification required to the vessel, or was this just a recalculation, so to speak?

A. Not to the vessel itself, no.

The handrails, closures, vent closures, things of that nature; yes.

Q. They had to be modified?

A. In some cases, if they didn't comply with the requirements, they were modified, yes, to meet the requirements.

Q. Do you know if the Fitzgerald required any modification?

A. I don't recall. It may have, but I have to check the records on it to find this out. I don't recall.

CAPT. ZABINSKI: Thank you very much.

EXAMINATION

By Rear Admiral Barrow:

Q. In the reassignment of the load line under the conditions that you have just stated, would that be
something that you as a surveyor looked at the rules and worked up the data for the reassignment on?
A. Not necessarily. These rules are stated in our rules book and they are also in our load line regulations.
Q. But I have an exhibit here which has been introduced in evidence, which is 3-P and it seems to indicate that this was something that the data was worked up on, I believe, by your office.
   (Handing to witness.)
A. Yes.
Q. Would that be a fair statement, then, that you did in fact work out the calculations in accordance with the rules?
A. No, I did not work out the calculations. Our technical department had worked out the calculations.
Q. In your office?
A. Not in our office. It was in the Cleveland office. Our technical offices are based here in Cleveland.
Q. I see. I thought this report was under your signature there.
A. Well, this is where the LL-11 was revised to include the alterations and sent back to the technical department.
Q. Then the calculations would have been worked out in the Cleveland office?
A. Yes, yes, our technical department.
Q. You have been inspecting the Fitzgerald, I think you said, for several years, perhaps back in 1973 or so.
A. Possibly. I don't recall.
Q. Do you recall any modifications that had been made within the time frame that you have been inspecting, involving the hatch combings?
A. No.

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

MR. MURPHY: Yes; just one or two, if you will, please.

EXAMINATION

By Mr. Murphy:

Q. Just as a matter of information, Mr. Jeanquart, would you mind telling me how thick the spar deck plate on the Fitzgerald was?
A. It is approximately 53 palm or heavier per square foot.
Q. What is the weight in thickness?
Would 1 3/8 inches be correct?
A. Approximately, yes.
Q. I am sure that everyone in this room knows what the American Bureau is, but for the purpose of this record, will you just describe what American Bureau of Shipping is, and what it does?
A. American Bureau of Shipping is an independent, non-profit classification society that has established a minimum set of rules to building a good vessel.

To maintain class, these vessels have to be surveyed annually and every five years as well, a special survey of hull, and then if the class includes machinery, hull machinery vital to the propulsion must be examined once at least every five years.

Q. This is an independent society completely unconnected with the owner of this vessel or any other vessel?

A. That is correct.

Q. And the responsibility of the society is to ascertain that the vessel meets the specifications and rules set down by the society?

A. Correct.

Q. Is this a worldwide society or does this just operate throughout the United States, or what is the scope of the operation?

A. It is a worldwide society.

Q. Applying to vessels operating worldwide, is that correct?

A. Correct.

MR. MURPHY: Now, I am going to have to be a little humorous, if I may, Capt. Zabinski.

CAPT. ZABINSKI: Not too.
MR. MURPHY: You are the only witness so far that hasn't been asked the question with respect to the condition of this vessel and whether you have any knowledge or any information which might be of significance with respect to this casualty.

REAR ADMIRAL BARROW: We haven't finished yet, counselor.

MR. MURPHY: All right.

CAPT. ZABINSKI: But go ahead.

By Mr. Murphy:

Q. But you participated in the spar deck survey of October 31st of 1974, as I understand from your testimony, and you did, in fact, concur in the recommendations that the items which were listed by the Coast Guard as requirements, that they could be deferred and that did not affect the seaworthiness of the vessel; is that correct?

A. That is correct.

Q. In your opinion, is it your opinion that those items were not in any way connected with the integrity or the seaworthiness of the vessel?

A. No, they were not.

Q. Is it your opinion that they were --

A. They were not.

MR. MURPHY: I will then defer to Capt. Zabinski, if that is the case.
I have no further questionse at this time.

REAR ADMIRAL BARROW: Cdr. Loosmore?

CDR. LOOSMORE: Yes, sir; I have just

one more question.

EXAMINATION

By Cdr. Loosmore:

Q. Capt. Wilson asked you a question concerning an
exhibit that he had in front of you which was a letter
that you had signed recommending that the vessel be retained
in class.

Is that substantially correct? Is that what the letter
said, or shall I find it?

A. That is substantially correct, yes.

Q. What sort of condition would be required so that
you would not recommend that the vessel retain its class?

I appreciate it is not up to you, but what would it take
to recommend that a vessel not be retained in class?

A. That is not so hard. If I felt that at any time that
the vessel was unseaworthy or any irregularity that would
impair the integrity of the vessel, I would not recommend
class.

Q. Could you give me some concrete examples of that,
for example?

For example, a discrepancy in the sheer stringer?

A. Right.
In the sheer stringer?

Q. Yes.

A. Well --

CAPT ZABINSKI: Let the witness give us his example.

THE WITNESS: Well, supposing that we had a crack in the shoe stringer through a rivet hole or something like that; I wouldn't recommend class. I would want a repair now.

CDR. LOOSMORE: Fine.

THE WITNESS: That is an example.

If we had a gunwale connection that had a bunch of loose rivets in it in a splice of some kind, I would say we would need to take care of that before I would recommend class.

CDR. LOOSMORE: Okay, thank you.

CAPT. WILSON: Let me try to get this straight in my own mind.

EXAMINATION

By Capt. Wilson:

Q. So on routine items that you pick up during the annual survey on load line survey or some other event, you make recommendations to the owners?

A. Yes.

Q. If it were something more serious than that,
then you would make a recommendation to your internal
structure that the vessel be removed from class?

Is that essentially correct? I mean, if they didn't
repair it, obviously.

A. Well, I would make this recommendation not in that
report, but to my superior.

Q. Separately, but that would be the routine?

A. I had never been faced with this condition. I have
never had any problems. Anything that I felt needed to
be taken care of were dealt with with the owner's repre-
sentative on the spot.

Q. Yes, sir; I appreciate that.

The only thing I was really trying to get to, and
I don't seem to be able to get through very well, but
if you give the owner a recommendation to do something --

A. Yes, sir.

Q. -- then that would be a minor item, if you just gave
him a recommendation that he does a certain thing.

If you had an item that was so serious that the vessel
should not remain in class, then you would give the
recommendation to the owner that he had to repair this
immediately and also inform your superiors, if it was not
repaired, that they should remove the vessel?

A. That is right.

Q. I had a terrible time getting that.
CAPT. WILSON: That's all the questions I have.

CAPT. ZABINSKI: As long as we have the expert here, I will ask him.

EXAMINATION

By Capt. Zabinski:

Q. Mr. Jeanquart, I was wondering if you would look at this Exhibit 17-A through F, and I am particularly interested in your comments or observations, or if you could help the Board, actually. I am asking for some help, which we don't often do, you know.

But I would like to ask you if you can shed some light for the Board on 17-D and E. Look at the whole thing and take your time.

A. What is your question relative to these two pages?

Q. Could you help us identify what it might be?

A. It appears to be calculations deriving at a freeboard assignment.

Q. Would you say that this is a new freeboard assignment, the 1973's?

A. It appears to be a new assignment.

Q. Do you have any seagoing experience, Mr. Jeanquart?

A. No, I have not.

Q. Mostly in the shipbuilding or ship repair field?

A. Right.
Q I realize this might be a little bit out of your field, but we have a ship, the Fitzgerald. You know her. You have been aboard.

We are going along, a storm, Lake Superior, and 29 people aboard.

We find lifeboats, life jackets, but no people either as survivors or as victims.

I am just wondering if you could venture an opinion to help the Board about what may have gone wrong given those circumstances.

A It is a very unfortunate incident.

Q I will agree there.

A And I have heard so much speculation on this subject already, and I don't think that your purpose would be helped whatever from further speculation from me, really.

Q Well, I am not asking for speculations. You are an American Bureau inspector. You work for an independent worldwide agency, as counselor indicated, with expertise in seaworthiness of ships.

Obviously you issue load lines and surveys, and based upon your recommendations, certainly you can venture more than a speculation.

A I don't know. I don't know.

Q You wouldn't even venture any observation that might help the Board?
I don't think I could offer any useful suggestion.

CAPT. ZABINSKI: Thank you. That's all I have, Admiral.

REAR ADMIRAL BARROW: Thank you very much, sir. We appreciate your testimony.

Before we let you go, I would like to ask you if there is anything, recognizing the purpose of this Marine Board of Investigation, which is to determine as best we can what the cause of the casualty was, is there anything that you can think of, in light of your substantial experience and your time on board this vessel, is there anything that you might add which would help us in this purpose?

THE WITNESS: She was a good ship and I don't think I could add anything to that.

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.

THE WITNESS: Thank you, gentlemen.

(Witness excused.)

REAR ADMIRAL BARROW: Adjourned at this time until 10:00 o'clock tomorrow morning.

(Adjournment at 7:40 p.m. to reconvene at 10:00 a.m., Saturday, November 22, 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

Saturday, November 22, 1975

The above-entitled matter came on for further hearing, pursuant to adjournment, at 10:11 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. McCreamy, 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, Englär, 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

On behalf of Marine Engineers Beneficial Association:

Gerald Lackey
Merritt Green II
APPEARANCES (Continued):

On behalf of United Steelworkers of America, Local 5000:

Samuel Gaines
James J. Courtney
REAR ADMIRAL BARROW: Let the record show
we have reconvened at 11 minutes past 10:00.
The parties in interest representing Oglebay-
Norton are present, but not counsel for Capt. McSorley.
Cdr. Loosmore?

CDR. LOOSMORE: Yes, sir.
The Board calls Capt. Robert O'Brien.

ROBERT O'BRIEN

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

EXAMINATION

By Cdr. Loosmore:

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

A. Robert O'Brien. I will give you the company address
because I am in the process of moving, and there is nobody
in the house down South.

   It is 1250 Port Terminal Drive, Duluth, Minnesota.
The Zip Code is 55802, and I am a registered pilot in
District 3.

Q. Captain, do you hold a Coast Guard license or document?

A. Yes, sir.
MR. CAMBRONNE: Cdr. Loosmore, before we go on, I would like to make a preliminary statement. I am Karl Cambronne of the law firm of Chestnut, Brooks & Burkard, Suite 850 Midland Bank Building, Minneapolis, Minnesota; attorney for the Upper Great Lakes Pilots.

I am here with Capt. O'Brien and Capt. Jacovetti.

I understand the Board would have liked to speak to Capt. Woodard. He is presently hunting, as I understand, in the Upper Peninsula of Michigan, and he will not be here.

The two gentlemen I am representing here I understand will be served with subpoenas to be present.

Because Capt. Woodard is not here, I understand that he has made a statement concerning the sinking of the Fitzgerald, and I understand that statement has been given to Oglebay-Norton.

The nature of that statement or when it was given, I have no information on.

CAPT. ZABINSKI: These other gentlemen, Mr. Jacovetti and Mr. O'Brien, have they made statements to Oglebay-Norton?

MR. CAMBRONNE: I don't believe so, but you can ask them.
MR. MURPHY: The answer is negative.

CAPT. ZABINSKI: Just Mr. Woodard?

REAR ADMIRAL BARROW: Just a matter for the record here; the purpose of the hearing is, of course, to determine as closely as possible, the best we can, the cause of the loss of the Fitzgerald.

Counselor for this witness is here for the purpose of assisting the witness as his counsel and may not participate in the proceedings itself.

Cdr. Loosmore?

By Cdr. Loosmore:

Q. Capt. O'Brien, will you describe your Coast Guard license, please?

A. I have a Master's license and First Class Pilot for all of the Great Lakes and the Niagara River, and a Master's license as far east as Anticosti Island.

My license number is 399842.

REAR ADMIRAL BARROW: Captain, we are attempting to get all of this down by the reporter here, so if you would speak slowly and distinctly and speak up so that we can all hear you.

THE WITNESS: Yes, sir.

By Cdr. Loosmore:

Q. What was the date of issue of that license, Captain?

A. I don't have it with me, but I could guess because it
runs out in 1978.

CAPT. ZABINSKI: What port was it issued, Captain?

THE WITNESS: Duluth.

CAPT. ZABINSKI: Duluth?

THE WITNESS: Duluth.

By Cdr. Loosmore:

Q. Capt. O'Brien, how long have you been a Great Lakes pilot?

A. 15 years.

Q. Capt. O'Brien, were you on board a ship in your role as pilot on the 10th of November of this year?

A. Yes, sir.

Q. What ship was that?

A. I was on a motor vessel, the Benfri, spelled B-e-n-f-r-i.

Q. Where was that vessel located?

A. I boarded it in the St. Mary's River. I Detoured around at 0200 in the morning of the 10th.

Q. Where was it bound, sir?

A. It was bound for Duluth.

Q. What time did you depart from Detroit, then?

A. Not Detroit; Detour. Detour, Michigan, is the entrance of the St. Mary's River, and it is spelled D-e-t-o-u-r.

Q. What time did you depart from Detour and could you describe it?
A. I went to Anchor because of the poor visibility and we wanted to wait until daylight, and along about daylight, I got up at around 6:30 in the morning, and the times that I am giving you are Central Standard Time because the ship had come from Chicago, and he had Central Standard Time and I left my watch the same way.

We finally held up and got under way and I was astern of the — I can't think of the name of the ship. It was the Avorfors, and I was astern of him.

No, I was astern of the William Clay Ford, and I followed him up the river.

Q. All right, sir. We are concerned here with the loss which occurred in Lake Superior. Could you tell us what time your vessel entered Lake Superior?

A. We entered Lake Superior at Gros Cap, G-r-o-s-C-a-p, and that is two names.

Q. Approximately?

A. It must have been around about 1530. No, it couldn't have been that. I forgot all my notes.

REAR ADMIRAL BARROW: I am sorry. If we could just have your testimony as you recall your testimony, and I think we will have another witness along a little later to testify as to what he has, but from your own experience and from your own knowledge as you can recall, if you have any notes
with you, you may utilize those notes; but we will get to the other witness a little bit later.

THE WITNESS: I don't know. I can't tell you. My mind is a complete blank as to the time I entered Whitefish Bay at the upper end of the St. Mary's River.

By Cdr. Loosmore:

Q. Was it morning or afternoon?
A. It was afternoon.

Q. What were the weather conditions like in Whitefish Bay and the vicinity?
A. The wind was very strong, and out of the west, maybe a little bit northwest, and we steered for Parisienne Island.

Then we altered our course at Parisienne Island for Whitefish Point and were steering about 328 degrees at the time.

I knew she was drifting, and I let her drift, because I didn't want to be too close to Whitefish Point.

We were quite wide when we got up there. Before we got there, we altered our course, and we were steering about 290 degrees for Copper Harbor.

We were abreast of Whitefish Point, I remember, this time at 1959, because shortly before that the captain of the ship said that we better go down and eat. So we
went down and had our supper.

We came back up and we were just coming up to it then.

Q. Was that 1759 Central Standard Time?
A. Yes, sir.

Q. As you rounded Whitefish or passed Whitefish, excuse me, what was the weather like, the wind and sea conditions as well, if you can remember?
A. Well, the wind was quite heavy, and when we were steering at 290, it seemed we were heading right into it.

The captain cut the revolutions down on the ship to 80 revs from a normal of about 107 or 108, and we were riding pretty good then, but we were taking quite a few seas over the bow.

Q. Could you describe the seaway, the waves? Can you estimate how large they were?
A. It was dark, and I would say they were in the neighborhood of 20 to 25 feet.

Q. And from what direction, sir?
A. From about 290 degrees.

Q. Did you at any time on that date have any communications with the Fitzgerald at all?
A. No, I didn't.

Q. Did you hear any communications? Did you overhear any communications?
A. I heard someone calling the Fitzgerald, but I didn't
pay any attention. I don't even know if he answered or not because I just figured it was somebody calling him and wanted to talk to him.

Q. Would you elaborate on "up there"? What do you mean by "up there"?

A. Above Whitefish, just past Whitefish Point, it was just a little after that 1759 that the mate pointed out that there was a ship downbound.

Of course, the ship ahead of us was that Swedish ship, the Avorfors, and he said, "There is a ship on the starboard side," and I saw the lights.

Then I didn't pay any more attention to it.

Q. Do you have any idea what ship that was?

A. No, I don't.

Q. What sort of a ship was the Benfri?

A. She is one of the largest ocean-going vessels that comes up here. She is 709 feet in overall length with a 75 foot beam. Her molded depth was 49 feet, and she had 15,000 horse power.

Q. Do you know what draft the Benfri was operating at?

A. The Benfri was at 196 aft and around between 12 and 13 feet forward.

Q. And how was this ship riding in these 20 to 25 foot seas that you were having?

A. We were riding good.
Q. Were you pitching?
A. Yes, we were.
Q. Could you estimate in degrees how much? I know it is a hard thing to do.
A. We weren't rolling at all; we were just pitching.
Q. Could you estimate how much you were pitching?
A. I really couldn't say, because it was so hard to see.
Q. When did you learn that the Fitzgerald had a problem, sir, if at all?
A. Well, I went to bed shortly after we came by Whitefish Point, because the captain said he was going to stay up there with the mate.

The chief officer was on watch, and he said he was going to stay around with the third officer for a while. So I went to bed, and I must have been in bed maybe a half hour or so. The captain came in and said that the Coast Guard wanted to talk to me.

So I got up and said, "I wonder what in the hell they want now."

I was not dreaming of anything going wrong. They asked me by name if this was who was speaking, and I said yes, and they said they wanted to know if I would assist in the search for the Fitzgerald.

I was kind of dumbfounded when I found that out. I said, "Well, I don't think the captain will want to turn
around in this sea."

Then this must have been a radio at Soo Control that I was talking to.

He said, "Just a minute, Captain," and I think it was Mr. Milwick or something, and the captain of the port talked to me. I told him the same thing.

I said, "Well, you can talk to the captain because he is right here," and he talked to him.

The captain refused to turn around, but we did alter the course roughly 30 degrees each way to see if we could see anything.

The captain and myself were both out on the wing to see if we could see anything; the lookout and the mate, the chief officer.

We looked, and we just couldn't see anything at all. We stayed in that area, but we were only making three miles an hour at the time.

Then we saw the one Coast Guard plane which came over, or the one plane that came over. I heard them talking to different ships, and then they dropped flares.

Q. Did you find anything at all?

A. No, nothing.

CDR. LOOSMORE: That's all I have, sir.

REAR ADMIRAL BARROW: Capt. Wilson?
EXAMINATION

By Capt. Wilson:

Q. Captain, you said you had seen one ship. That was above Whitefish.

You later saw other ships?

A. Just the lights of the ship that the ship's officer pointed out to me, and also that Swedish vessel that was ahead of us.

Q. Approximately, the vessel that the mate pointed out to you, approximately how far off was that?

A. I really don't know, but he was about, I would say, two to three points on the starboard bow.

Q. But you have no idea of distance?

A. No.

Q. Which of his lights were you able to see?

A. Just his aft cabin lights, not the running lights.

And I just assumed that he was downbound.

Q. How far away was the Swedish vessel from you, approximately?

A. I would say he was about seven or eight miles ahead of me, nautical miles.

Q. And you could pick up what lights from him?

A. He happened to have a lot of bright lights on his aft cabin I know, and I could also see his range light.

We were steering pretty close to what he was steering,
and we were almost, you might say, heading on him.

Q. Approximately how high is the bridge on the Benfri?

A. Well, assuming that 49 foot molded depth, and I think
she is about six stories, I would say in the neighborhood
of 50 to 55 feet above the deck.

Q. Do you have any estimate of the visibility at the
time?

A. I would say it was about 10 or 11 miles or so.

Q. The other vessel that you made out, the first one, you
said you saw her after-house lights.

Were they bright, or was it just at the limits?

A. I would say just what I would think would be normal.

I just more or less glanced at them and figured the position
she was heading.
Q. But, you could make out the lights as distinguished from just a glow that represented lights?
A. Yes, that's true. I could see the lights. There was no glow.

Q. Was it raining or snowing at the time?
A. It was raining at times there because a few times there, you couldn't see too far out of the windows and you could see out in the wings.

It was kind of hard to see out there. I even had to take my glasses off a couple of times.

Q. Was there much or any wind-driven spray?
A. Yes, there was quite a bit.

Q. Approximately how high off of the water was this?
A. Well, I wouldn't say because I don't know, but it didn't bother us up on the bridge windows because we were so high.
The water that was on the windows was mostly from the rain.

Q. Thank you.

CAPTAIN WILSON: That's all I have,

Admiral.

REAR ADMIRAL BARROW: Captain Zabinski?

EXAMINATION

By Captain Zabinski:

Q. Captain, you were approaching Whitefish Point, and you indicated that you were abeam of Whitefish Point, about 17, I think you indicated, somewhere 1800, wasn't it?
Q. Do you recall what the approximate bearing of Whitefish Point would have been at that time?
A. I think it was 23 degrees and we were about two and a quarter miles off, approximately.
Q. All right.
A. And that is nautical miles.
Q. How many miles, Captain? I'm sorry.
A. Two and a quarter miles.
Q. 23 degrees?
A. About, I think it was about 23 degrees.
Q. Were you north or south of Whitefish Point?
A. We were north. We were on a 290-degree course.
Q. When you say 23, are you talking about a true bearing?
A. The bearing from Whitefish to the ship.
Q. Is that normal here on the Lakes to have it from the land to the ship? Is that the way you normally get bearings, sir?
A. Everybody has their own way of doing it.
Q. Any bearings that you have given us would be from the land structure to you, is that correct?
A. Yes, sir, and that was -- we were a little bit wide because usually we were usually about a mile off of Whitefish.
Q. And why were you that much off? Was it because of the weather, Captain, or were you just giving it a wide berth?
A: I did that because I didn't want -- I wanted to make sure I was going to be well clear in case there was any undertow or anything like that that would bother us.

Q: Is undertow a problem in the Lakes?

A: Well, if it gets in too close, you get that kind of wash from the beach.

Q: What effect does that have on a vessel?

A: Well, it could cause her to do a lot of rolling.

Q: Would you experience any unusual sets during this period of undertow?

A: No, we were setting to the right all the time, approaching Whitefish Point, and then of course when we come around Whitefish Point on that 290-degree course, we didn't have too much of a problem then.

Q: But, you were pretty well headed right into it at that time.

A: That is right, sir. Yes, sir.

Q: Were you taking some green water or was it spray or what

A: A couple times we took green water over the bow.

Q: The Benfri was fairly light, wasn't it?

A: Well, 13 feet forward and this ship happened to have one of those -- what we call a bubble bow and that was out of the water a little bit.

Q: Was the Benfri difficult to maneuver under the weather conditions that existed at Whitefish?
Q. Why do you feel the Master was apprehensive in turning the vessel around?

A. Well, she has cranes on deck and her hatch comings are quite high. I would say her hatch comings were roughly in the neighborhood of maybe 7, 8, 9 feet off of the deck.

The reason I remember that so much is because I went to Duluth on this ship and they sent me, the pilot office sent me to Green Bay and I came back to Duluth on another ship and it caught the Benfri coming or going down the Lake and when I was on deck, I noticed how high her hatch comings were and I had been on this ship many times, but that was the first time I really paid much attention to it.

Q. Or took any notice of it?

A. Yes, and the Captain -- his cranes are quite high and he was afraid that she would roll over. That was his opinion.

Q. Do you recall what channel communications you may have been using between the ship and the Coast Guard at the Soo?

A. On Channel 12.

Q. In your statement about a call from the Coast Guard, you indicated that this may not be an unusual occurrence for the Coast Guard to call you.

A. No, this is very unusual.

Q. It is very unusual?

A. It is up in that particular area. If you are in the
river they call you a lot, but not up there.

Q. Captain Milrad wanted to speak to the captain of the vessel?

A. No, he was talking to me.

Q. I see.

A. Then, I suggested that he talk to the captain of the ship.

Q. Do you use May Day procedures here on the Lakes?

A. I have only heard the May Day once, outside of a few yachts that got in a little bit of trouble, but I only heard it once and that is when the Carl B. Bradley sank.

Q. What is your normal procedure? What would you, as a pilot bringing a vessel in, what would you feel would be the responsibility of a May Day broadcast?

A. Well, we would try to find out how close we were and trying to get all of the information we could and see if we could be of any assistance.

Q. Did you ask or did you feel that you could be of any assistance in this case?

A. No, I didn't think we could.

Q. Did you know what the position of the Fitzgerald may have been when she was lost?

A. The last position, and I marked it on the chart, was 14 miles west of Copper Mine Point and I marked it out on the chart as due west from Copper Mine Point, myself.
Q. How far was that position away from you when you received the call from Captain Millradt?
A. I don't recall.
Q. Do you recall any relation to passing Whitefish Point?
A. Was it an hour later or a couple of hours later?
Q. I would say within an hour.
Q. Within an hour?
A. I would say we were, at that time, if that position was correct, what they gave us on his last known position, we would have been maybe 5 or 6 miles from him.
Q. You indicated the vessel slowed down to about -- well, two or three knots, somewhere in that order.
A. Did the Captain reduce the rpm?
A. The Captain told us or told me that those are automatic and those are his standing orders in heavy seas or anything like that, that the engineers know to cut the ship down to about 80 revs.
Q. Is this because of the propellor?
A. Yes, that is true.
Q. Well, 80 revs would certainly have given more than three knots, Captain.
A. That is true.
Q. But, you were losing that much because of the force of
the wind, would you say?

A. Yes, that is right.

I am trying to recall now, but I think under 70 revs was our speed regulations in the river, and 70 revs is about halfspeed, and that is in the neighborhood of 10 knots on maneuvering speed, and the full maneuvering speed in the river was 14-1/2, unless you ask for full sea speed and you would get about in the neighborhood of 16 or 16-1/2.

Q. Do you recall what the wind conditions were at Copper Mine Point, Captain?

A. No, I don't.

Q. Could you estimate?

A. I would say that they were possibly the same as they were where we were.

Q. What was that?

A. And I thought maybe about 70, maybe 75.

Q. Steady or in gusts or would that be a gust?

A. It was pretty steady.

Q. Did you and the Captain discuss the weather conditions?

A. Yes, we did.

Q. What was the nature of your discussion?

A. Well, I had been with this Captain before and he was kind of kidding me about it and he said in all the years that he has been coming up here, he has never seen as much wind as this and I said, "Well, you've just been lucky," and when
I left the ship the other night at Port Huron, I told them,
"I am not coming back to your ship anymore because you bring
too much wind," more or less of a joke because we were,
I've known him for a few years.

Q. Is this an unusually strong wind condition or sea
condition for November, let's say?
A. I thought it was.
Q. Is this the worse you have ever seen?
A. No.
Q. Could you relate for us how this storm may have related
to the worst storm that you have ever seen on Lake Superior?
A. Well, I got caught off of Eagle Harbor on the 28th of
October and I was on a Liberian ship, I believe it was, the
Garden Saturn, and that particular occasion, why, the winds
were quite strong and they had cut the revolutions down too
much. I asked the Captain to cut her down ten or so revs as
she was throwing her wheel and they went and cut her down to
40. I was off of the bridge when that happened and it blew
around, the wind blew us right around, and we had a hell of
a time there for a while.
Q. How strong would you say the winds were at that time?
A. Well, for the condition of the ship and the ballast
and that, she was pretty light, and the winds must have been
around, in the neighborhood of 60, maybe 70, gusts up to 70.
Q. You indicated here that the winds were 75, so they were
stronger on that occasion than they were on the other occasion:
is that what you are indicating?

A Well, not stronger, but I had more faith in the Benfri,
because she was a newer ship, and she had a lot of power.

She was a well-built ship. I felt that we could take
almost anything.

Q You have been on the Lakes for many years, Captain. I
am trying now to get some relation between the storm on the
10th, the wind conditions, the sea conditions on the 10th and
others that you have experienced.

You indicated that this was not the worst storm that
you experienced, and I asked you to relate how it compared
to the worst storms you may have experienced?

A Well, it is kind of hard for me to remember, because I
have been in some bad storms with these saltwater ships.

I have been in some bad ones on lakers, too, but I
was always fortunate that I was not in winds that strong,
but for the condition of the ships, I would say I was in
worse shape on a laker.

Q When it blew you around?

A On the laker, yes, I blew around on the Laker, too,
a couple of times.

Q What is bad about blowing around that way, Captain?

A When you get in the trough of the sea, you really roll.

Q Outside of being uncomfortable because of rolling, what
is the problem?

A. Well, in the laker, the boat that I was on, you could
have lost the hatches, because I have never been fortunate to
be on these newer ships with one-piece hatches. I have always
been with those telescoping hatches.

Q. If you lost the hatches, you have had the course?
A. I suppose you would say that.
Q. You start flooding; is that your testimony?
A. Yes, sir.
Q. Have you ever experienced winds above 75 knots in
Lake Superior?
A. I don't think I have.
Q. So by wind conditions, if you indicate that the winds
were 75 knots on the 10th, these were the worst then that
you have experienced?
A. The strongest winds.
Q. The strongest winds you have experienced?
A. Yes.
Q. Do you know what the weather report was for that day
on Lake Superior?
A. Yes, I did have the weather report, but I just can't
remember what it was right now.
I know that there were strong winds and that we were
going to get quite a big sea out there.
Q. Were gale warnings or storm warnings posted out there?
A. Yes.
Q. which ones?
A. I think there were gale warnings posted.
Q. Is gale the highest condition, or what is the highest condition?
A. No, storm.
Q. Were storm warnings posted that day, would you say?
A. No, not that I know of.
Q. How about gale winds? What range of winds constitute gale warnings?
A. Anywhere from 40 to 50.
Q. You indicate here your estimate was 75?
A. That's true.
Q. Would you say the weather forecast was conservative or what?
A. Yes, it was much conservative.
Q. Do you think they were that much greater. You are indicating 45 to 50 as compared to 75?
A. That's true.
Q. Do you think the estimate of the forecast was 25 knots off?
A. It could have been.
Q. I am asking you for your opinion?
A. Yes.
Q. Was it gusty, or was it steady?
It was mostly steady, and we were getting gusts.

I ask you whether 75 knots indicated the steady condition or the gusting condition, and your testimony was that it was the steady condition?

I would say yes.

Did you have any apprehension about crossing or starting around Whitefish Point and going into Lake Superior with these wind conditions as they existed?

I did tell the Captain that I thought we should stop for a while.

He said, "No, we won't stop."

So as a pilot, all I could do is advise the Master. I said, "We're going to get some big seas out there."

He said, "We would have our most trouble hanging on with our anchor down than out there in the sea," and he was right. We were riding perfect out there outside of the pitching.

And shipping seas as you indicated?

Yes. There were not that many. It was mostly spray, but we did take a few seas like saltwater coming over the bow.

If you had anchored behind Whitefish Point, you would have gotten some lee?

Yes, but with anything aft, they seem to tail around so darn much, and I had talked to the William Clay Ford. He was telling me was swinging, I believe, 40 to 50 degrees
Was he anchored behind Whitefish Point?

Yes, sir.

Did you see him?

No. I saw the ships over there, but I couldn't identify them. I had talked to the Captain of the William Clay Ford.

Is that good, to hold ground behind Whitefish?

You have to be lucky to get the right spot.

Is it sand or gravel?

It is mostly in the area of sand and some clay there.

Your testimony is that quite a few ships were anchored in that area?

I believe there were four or five, but I'm not sure.

Would that be a good number?

For the amount of ships that happens to be -- when the wind came up, they all went in there, those ahead of me, the William Clay Ford and the Hildamar Jan was another one and the William R. Rosch. I think there were a couple more, and I can't recall who they were.

What was your intended track from Whitefish on, Captain?

I was figuring on steering 291 degrees and steering straight for Copper Harbor. Normally, you steer 280 degrees from Whitefish to Crisp Point, and then you steer 292 degrees from there to Copper Harbor, but I was going to come out on a
straight course instead of going in like that.

Q. Would you have still been there within the recommended tracks, or would that have been deviating somewhat?

A. We would have been a little north of the track.

Q. Is this normal procedure, Captain, when the weather turns bad?

A. That's true, yes.

Q. The pilots expect that? Would that be a fair statement?

A. Yes, sir.

Q. In other words, you adjust your track, depending on the wind condition?

A. The wind conditions, yes.

Q. You take advantage of the lee and stay further off, good seamanship maneuvering?

A. Yes.

Q. Captain, let's say you were coming out of Lake Superior up around Isle of Royale with a northeast wind blowing, fairly strong. What would your track line be under those conditions?

A. I would have stayed right on the downbound course on this type of ship.

Q. How about for a laker?

A. If I was on a laker, I would have been up between Isle of Royale and the mainland.

Q. Is this normal to try to stay close to the lee shore?

A. Well, with the ships that I was in when I worked for a
lake company, that's where we would have been if we could have been there. I mean, that's if we could have gotten up that high.

Q: These ocean ships like the Benfri, is she sturdier than the average laker would you say?

A: I would say, yes. Take for instance -- I brought her down the Lake, and he was loaded to 26 feet. We had grain, and she has eight hatches, well eight holds. Three of the holds were empty, and if I would have been in her, I would have come right down the course.

I would not have went up at all.

Q: Well, what makes the lake-type vessels different? Is it because they are less freeboard or just the handling characteristics or what?

A: I would say less freeboard and if you are loaded with iron ore, you have all that weight in the lower part of the ship, and you roll more.

Q: You would roll more?

A: Yes.

Q: Captain, I am going to direct some questions now to you, not about the particular voyage here, but just your experience as a pilot in Lake Superior.

I would like your comments on ships proceeding between Michipicoten Island and Caribou. What kind of a structure of water is that?
Can you describe the features for us, if you can?

A. Well, usually, you are coming down that way if you have the winds up out of the north or northeast.

Sometimes I have come down that way to Otter Head and steered the course between Michipicoten and Canadian Mainland, and I went around the east end of Michipicoten and steered for Whitefish from there.

You used to be able to get good protections from the wind there.

Q. I see. Well, I would like to direct your attention to shoals and so forth.

Are there any shoals or anything around Caribou Island that you recall?

A. Between Caribou and Michipicoten, I believe it is at Chummy Bank there are shoals in there.

I don't know if it would affect a ship loaded to, say, the one I was on, I mean, if we were downbound and loaded to 26 feet, I don't think it would bother us. I don't think we would drop that much.

Q. How about around Caribou Island itself? Are there any shoals there that you are aware of?

A. Do you mean on the -- if you are real close to the island?

Q. Yes.

A. We always try to give it a wide berth.
Q. How wide would you say? Would you say a couple of miles.
A. Five or six miles.
Q. How about two or three? What would be your opinion?
A. I wouldn't care to be that close.
Q. It shoals up pretty badly in there, does it?
A. I can't recall. I can't remember.
Q. But anyway, your recollection is now that if you were piloting a vessel you would try to stay five or six miles off?
A. I have always felt that you should not try to come too close to places like that.
Q. How about these storms that build up, and particularly the storm on the 10th? Evidently, it built up very suddenly, Captain, and is that unusual, or is that about the pattern of storms on Lake Superior?
A. Well, this I thought came up quite quickly to me.
Q. When you have a storm like this that comes up quite quickly, and you estimated winds around 75 knots, does the sea build up rapidly?
A. Yes, it does.
Q. And you indicated the sea height of 20 or 25 feet?
A. That's what I was kind of more or less guessing at, because it was dark, and you couldn't see.
Q. Is this an unusually high sea condition for Lake Superior in your judgment?
A. Well, 20 to 25 feet is quite high, I think.
Let's assume a 20-foot wave height and where you are near a shoal area, say, Chummy Bank or possibly off Caribou Island.

Is there any change in the waves or the sea condition because of this size wave coming close to a shoal area?

I think there would be a change.

Have you noticed it or have you seen what the effect might be?

Well, I also recall -- this is a long time ago, but when I was a wheelsman on a laker and I had been with this captain quite a few years, we were going to Fort William at that time, and we were on that course of Whitefish to Passage Island course.

I remember the old man saying to the mate that he wanted to make sure we had plenty of room off Caribou, because he said if we get a pretty good rolling there and, as it was, we did, we rolled like hell until we got by it.

That's why I feel you should try to keep as far away as you possibly can.

Sometimes it is hard to do, but normally I feel I can do it unless I am in a light ship or something and she sets too much on me.

Do you think that the sea condition somehow worsens around the shoal area; is that your testimony?

Yes, sir.
Q. But the only time you experienced it was several years ago, from what you indicate?

A. That's a long time ago.

Q. A long time ago?

A. Yes.

Q. Does the ship have a tendency to smell the shoal, Captain, when she is proceeding along loaded?

A. I suppose it would, depending on the weather.

I mean, if the weather was quite rough or something, maybe you wouldn't notice it so much, but whereas if it wasn't rough, if you got close to the shoals, you might notice it.

Q. You mentioned before an undertow. You were concerned about an undertow.

Would the phenomenon of an undertow be present around a shoal area?

A. I would say so, yes.

Q. I know very little about the Lakes, Captain, including Lake Superior.

When I have an expert in front of me, I always like to see how it works. What about November storms? People talk about November storms on the Lake.

Would you give me your impression or your experience along this line?

A. Well, it always seems like we always get one good blow in November that you always seem to worry about a little bit.
This depends on the type of ship that you are on, but we get on so darn many different ships, so darn many different types of ships. In the case of the Benfri, I was not a bit worried about it at all.

I knew it was a big sea, and the winds were strong; however, it didn't bother me.

Q. How about if you had been on a laker in the same conditions?

A. I would not have been there.

Q. Why not?

A. I would have been inside Whitefish.

Q. A laker wouldn't have handled as well or fared as well; is that your testimony?

A. I think so, and then, again, you must remember that on a laker with that much of a sea and your pilothouse up on the bow, you might break the windows in it, even.

Q. Were any ships proceeding on past you, Captain, when you were in this search area?

A. No, no one passed.

Q. Not very many people westbound? Would that be a fair statement?

A. Just the three salt-water ships that were there.

CAPTAIN ZABINSKI: That's all I have.
EXAMINATION

By Rear Admiral Barrow:

Q. Captain, you have talked about the seas as being something on the order of 20 to 25 feet and the winds 70 to 7.

Could you give me any estimate of what the distance would be between the crests of the sea to the best of your recollection?

A. No, I really couldn't, Admiral, because, like I say, it was dark. I just couldn't tell.

Q. But you have no impression of whether it was a short sea or a long sea?

A. They were usually short seas anyway.

Q. When you say usually short seas, what would you have in mind?

A. Well, the Captain and I talked about it afterwards, and he said, like when we were out in the Atlantic, he said that you would have big long seas, and here you have such short ones in comparison.

Q. Yes, but I am trying to get your idea of what a short sea would be based on your experience.

A. Well, I really don't know what we would say. You are trying to find out in feet?

Q. Feet.

A. And I just don't know how to answer you on that because I always referred to them as a short sea.
Q. You went down to eat at some time before 1800 and then came back, as I recall your testimony.

A. Yes, sir.

Q. How long were you off the bridge there?

A. I would say not more than 15 or 20 minutes, and I was going to wait until we got above Whitefish Point, but the Captain said, "No, let's go down and eat now. The Chief Mate will be up here," and he said, "We're all set."

Q. You testified that you had some discussions with the Coast Guard about the Fitzgerald and then subsequently the Captain of the ship had discussions with the Coast Guard about, perhaps some search assistance in looking for the Fitzgerald and that the Captain did not want to turn around.

A. That is true.

Q. My impression from your testimony here is that at this particular time the Fitzgerald was ahead of you as compared with being astern of you, is that right?

A. Well, at the time that the Coast Guard talked to me, I didn't have any idea where the Fitzgerald was. It was in that general area.

Q. Did you plot the position or what the position of the Fitzgerald was on the chart?

A. I just marked it down when I found out afterwards, and I did say 14 miles, nautical miles, no, that's wrong.
It was statute miles because whoever gave it to us said it was 14 miles from Copper Mine Point, and I assumed that anyone there would have given it to us in statute miles.

Q. I see. When the Captain called you from the Soo, did he give you the last report on any position?

A. Well, he said in that general area and he wanted to know if we would turn, and I am trying to recall if he said to turn from a position off of Crisp Point northerly.

Q. Well, subsequent to that conversation, the Benfri did actually deviate from their course. I think you indicated 30 degrees on each side of your basic course to do so.

A. Yes, sir, this was after I talked to the Coast Guard.

Q. Did you have any discussions with the Captain of the Benfri was far as what you would do in answer to the Coast Guard's request to do that?

A. He just said he wouldn't turn and then he did say that afterwards, after we were through talking to the Coast Guard, that he didn't see how we could do anything anyway, even if we did see men, because to pick them up, I don't know how in the world we would have been able to do it.

The worst part of it is that there are very, very few of the salt-water ships that we get that will have a searchlight, and some do have an Aldis lamp, but there are very, very few of them that have a searchlight.

Q. But, you did indicate that the ship deviated from her
course 30 degrees on either side.

Whose idea was this, Captain?

A  Mine.

Q  That was yours?

Did you talk to him about that possibility?

A  I said, "Let's swing about a little bit here and see if we could look a little bit," and he agreed to that.

Q  How many people were on the bridge at that time?

A  There was the man at the wheel and the Captain and the Chief Mate and the lookout and myself, and I don't recall whether the radio operator came on the bridge or not during that time.

He might have, but I don't know, it was so dark up there.

Q  Were any instructions given to any of these people as far as what to look for or anything?

A  No.

Q  Were all of them actually located within the wheelhouse?

A  I was out on the wing there for a while and so was the Captain. We were looking around, and she has a large bridge, and the wings extend out quite a ways toward the ship side, and we were out there looking around.

Q  You and the Captain?

A  Yes, sir.

Q  During that time was there any expression of concern that there might be a real difficulty on the part of the
Fitzgerald and that people should keep a sharp lookout or anything of this sort?

A. Well, I did -- I think later on I did say that we should try to see if we could see anything and we didn't see anything.

Q. For what period of time did you continue your deviations from the course?

A. I would say about maybe about 30 minutes, something like that.

Q. About 30 minutes?

A. Thirty or forty minutes.

Q. I am trying to pin down that specific time. You have indicated that you had gone below to rest for a few minutes and that when the Coast Guard called you, you came back to the bridge, and what time approximately would that have been?

A. I would say that would have been about possibly 45 minutes or an hour after we got above Whitefish, something like that.

Q. What time would that have been about? Approximately?

A. About 1900, something like that.

Q. About 1900? Is that Central Standard Time?

A. Central Standard Time, yes.

Q. Then you had some conversation with the Coast Guard yourself?
A. Yes.

Q. Perhaps 10 minutes?

A. I don't think it was that long.

Q. But shortly after 1900, you commenced your deviation to the right and left of your course?

A. Oh, no, before that, before I did that, it just so happens that I knew Captain McSorly. We were shipmates a long time ago and, you know, I thought, "Geez, I would like to turn myself," but the old man wouldn't let me, so I got to thinking and I said maybe we could go a little bit and see, so I did that and he agreed with me.

Q. Well, at what time did you start that, approximately?

A. I would say within 10 or 15 minutes after we got done talking to the Coast Guard.

Q. That would be around 1915, approximately?

A. Something like that. It is hard for me to remember all the times.

Q. And you continued that then for approximately 30 minutes.

Did you shift first to one side and then stay on that for a while and back to the other side?

A. I went to the left first and then to the right because I went out and I looked and I could see the Nanfri astern of me.

Q. So you would have continued this, then, until something before 2000?
A. Yes, I would have.

Q. And then you continued back to your basic course?

A. I went back to 290 degrees and we left it there and I stayed up for another hour or so and kept on proceeding.

Q. Did you have any conversations with the Coast Guard following that?

A. No, I didn't.

Q. You did not make a report of any kind as to what you had seen or not seen?

A. No.

Q. Do you recall whether or not there were any reports made by the Captain of the Benfri to the Coast Guard regarding the deviations?

A. I didn't hear him do any talking to the Coast Guard.

Q. What specific VHF frequency were in operations on the bridge of the Benfri at this time?

A. When he called me and said the Coast Guard wanted to talk to me, he had her on Channel 12 and the majority of the deep-sea ships now have monitors on them. You can listen to two channels and you could usually pick whichever two channels you wished, and usually I would leave them on 16 and 12, but this one did not have a monitor and I left it on 12 for a while and I heard the Coast Guard calling different ships and then afterwards I put her back on 16, and I left her on 16.
So that if I heard anybody calling, they would hear me or I would hear them, I mean.

Q. On departure from Whitefish Bay, what frequency?

A. 16.

Q. You were on 16?

A. Yes, which is normal.

Q. No other frequencies were being monitored, just 16?

A. This ship didn’t have a monitoring system on it.

Q. I see. Then, you went below and when you were called and came back to the bridge, the VHF set was on Channel 12 and you carried on your discussions with the Coast Guard on 12.

A. Yes, sir.

Q. And you left it on 12 for some period of time?

A. Yes, sir.

Q. Do you recall specifically any conversations with other ships in the Coast Guard or between ships?

A. I just heard them calling different ships and asking them if they would go out and I remember the Hildamar Jan, it must have been the mate that answered the phone, because he said, "I will go down and see the captain," and the captain came up.

I guess shortly after that he said that he would go out and also the same with the William Clay Ford, and they said the same thing, and then after that, when I switched it back to 16, I heard the VBB. That is the call sign of the
radio station at Soo, Ontario, and he kept calling and the
Anderson wasn't answering, so I kind of guessed that the
Anderson was on 12, so I called the Anderson on 12, and I
said, "The VBB wants you. They are calling you on 16," and
he thanked me and he called VBB then.

Q. Do you recall any of the gist of any conversations
with regard to the Fitzgerald?

A. No, I didn't.

Q. You have indicated that you had known Captain McSorley
for some period of years.

A. Yes, sir.

Q. What was your impression of Captain McSorley as a seaman?

A. Well, I thought he was an excellent Captain, but I had
never sailed with him. I was an AB and he was a porter on
the ship, so this was a long time ago.

Over the years, we have talked to each other and he
also talked to me and he knew my wife and, of course, I knew
his wife, too.

REAR ADMIRAL BARROW: Do you have anything
further at this time or do you want to come back?

CAPTAIN ZABINSKI: Not at this time.

REAR ADMIRAL BARROW: Counselor?

MR. MURPHY: Thank you, Mr. Chairman.
EXAMINATION

By Mr. Murphy:

Q. Captain, my name is Thomas Murphy, and I am one of the attorneys for Oglebay-Norton Company.

A. Yes, sir.

Q. Can you tell us what your previous experience has been?

A. Would you tell us what that experience was?

Q. I was Captain for Midland Steamship Lines.

A. I was a Captain on the Michael Gallagher. I think this was for six years, and they had two ships that were called Michael Gallagher. There was a smaller one and then the bigger one, what we considered bigger at that time. It was formerly the Charles O. Jenkins and after that it was the John W. Davin.

Q. Were those ships all ships of the type that you have described earlier as having the leaf hatch or the telescopic hatch?

A. Yes, sir.

Q. And the newer, more modern ships that you were talking about is the ship that has a single hatch cover over each hatch, is that right?

A. Yes, sir.

Q. And to the best of your knowledge, was that the type of
ship that the Fitzgerald was?

Q. Yes, sir.

Q. Do you know that to be true?

A. Yes, sir.

Q. Did I understand from your testimony that you do not have any of your log entries with you or the log?

A. I don't have them with me, no, sir.

Q. And so that you don't have any personal knowledge of the entries that appear in that log on your ship.

A. We have what we call a speed card for the St. Mary's River, and we mark down the different points and that happens to be at Detroit, Michigan, right now in my cottage, and when I got to Benfri coming down, I was to be relieved at Soo Locks, and then a few hours before I got there they called me and said, "You have to go down to Port Huron," and those things are there, and my giving you these times when I left St. Mary's River, I am just guessing, and they could be different, and if I had that card I could tell you the times.

Q. But you don't have any of that information with you now?

A. I don't have anything.

Q. I see. Captain, you have described how strong these winds were and the nature of the seas.

Do you know approximately what the height of the bow of your vessel was above the waterline at the draft, that
she was at the time of this occurrence?

A. You mean from the waterline to the top of the bow?

Q. Yes, sir.

A. I really couldn't say, but she was in the neighborhood of 12 to 13 feet forward and up to the main deck is here—well, the depth is 49 feet, so that would be approximately 18 feet, and then there is on the forecastle head, there are steps to go up to the forecastle head and then there is a slight rake to the deck and then when you got up in the bow, then, you've got the bulwarks up there.

Q. The bulwarks is approximately what height, as you recall?

A. That seems to be quite high. I would say six or seven feet high, anyway.

Q. And so green water was coming on occasion, coming over that entire height, is that correct, sir?

A. Yes, sir.

Q. Would that give you any indication as to the height of the waves, or because of the pitch of the vessel would that not be anything significant?

A. I think the pitch of the ship, when she was pitching, when she would come down, would hit some of them, and if you happened to hit them just right, they would come over.

Q. Would you say that the waves could have been higher than 20 or 25 feet?
Q. Could they have been about that?

A. They could have been, I suppose, but as far as I know, I couldn't say.

Q. You mentioned earlier that you had occasion to step out on the bridge. Did I understand you to say that correctly, when you were looking, you and the Captain were out on the wing of the bridge?

A. Yes, we were.

Q. Were you out of the door, outside, at that time?

A. Yes, sir.

Q. Would you describe the wind that you had encountered then as a noisy and howling wind?

A. Yes, sir.

Q. Would that be a fair description?

A. Yes, sir.

Q. Would you say that the wind was blowing with more noise than you had ever heard in your life? Would that be a fair description to say something like that?

A. I wouldn't say that.

Q. But, as much noise as you had ever heard before, maybe?

A. I would say about the same, maybe.

Q. Would you also describe those seas as being wild seas?

A. Would that be an apt description for the seas as well as being high and the winds blowing as strongly as you have described?
A. I would say they were more or less of a steady sea.

Q. What would a wild sea mean to you? What would a wild sea mean to you, sir?

A. I suppose it would be coming from maybe two or three directions.

Q. Sort of all the directions or several?

A. Yes.

Q. You would not necessarily describe these seas, let's say in the vicinity of Whitefish Point, would you describe those seas as being wild or would you not?

A. No.

Q. You were questioned by one of the members of the Board with respect to why you would stay away from Whitefish Point. When you get a strong heavy sea and a heavy blow, isn't there some backwash off of that point from the waves?

A. Yes, sir.

Q. And isn't that one of the reasons that you would stay away?

A. That is true.

Q. And you tried to give it a clear berth as you went by.

A. Yes, sir.

Q. As I understand your testimony or recall it, you didn't hear any radio telephone conversations between the Fitzgerals and the Anderson.

A. No, sir.
Q. Did you, in fact, have a telephone conversation with Captain Woodard on the Avorfor?

A. Yes, I did.

Q. Would you tell us what that conversation was, sir?

A. I can't remember all of it, but he said that we were a bunch of damn fools for coming out of here like this, and he said he wanted to stop but the old man wouldn't stop, and he said, "We are not going to make any time," so we come out there and just, you know, were making a poor time of it.

Q. You were out there sort of heading into it and not making any way, really, is that right?

A. We figured we were making about three, and he had less power than I did, and I think, I don't know what his draft marks were, but I don't think that they were as deep as we were.

Q. Was there anything else to that discussion that you recall?

A. I think he told me about talking to the Fitzgerald because I had remembered Sid telling me earlier in the area that his son was on there, and I had asked him about that, and I said, "Geez, you are kind of lucky that he is not there."

Q. Sid was Captain Woodard?

A. Yes, sir.

Q. So you mentioned the fact that his son had served on the Fitzgerald.
A. I think I brought it up to him.

Q. I see. I think you mentioned a number of vessels which
were at anchor off of Whitefish.

Were there also some vessels at anchor in Goulais Bay
as far as you know?

A. I don't know that.

Q. You did know that the William Rosch was in anchor
some place there, is that right?

A. Yes.

Q. Were you aware of the fact that the Benfri was at anchor
somewhere in there?

A. I don't know.

Q. You weren't aware of that?

A. No.

Q. Was it reported to you that the locks at the Soo were
closed sometime during the time of this storm?

A. Yes, sir.

Q. Do you know approximately when that was?

A. No, I don't.

Q. All right. Was in your experience that an unusual
experience, for the locks to be closed during the season?

A. It has happened several times that I know of that they
close the locks when the water gets so high and goes over
the top of the gates.

When I left the locks, the water was up over those
fenders, those leveeing fenders they have on the piers. In fact, at the outer end of the piers, they were
taken in a lot of water over them.

Q Captain, I think you did mention seeing the lights of a
vessel, and you described as you thought it was the after-
lights or the aftercabin lights of the vessel?

A Yes, sir.

Q Now, where was that sighting with relation to your
vessel? Was it to the port or starboard?

A The starboard side.

Q And I think you also said it indicated to you that this
vessel was downbound? This was the impression you had?

A Yes, sir.

Q Could you tell us approximately in your best estimate
what the heading of your vessel was at about that time and
the bearing of that other vessel to you at about that time?

A We were steering around 290 degrees, and the wheelsman
or the helmsman, as we call him, could have been off the
course a little bit.

Q I understand.

A I would say that the ship was in the vicinity, I would
say, about two to three points on the starboard point.

Q Two to three points on the starboard point?

A On the starboard bow.

Q All right. That would have been then to the north and
eastward of you; is that correct? Or eastward?

Q. No. Westward. It would have been northwest.

Q. Northwest of you?

A. Yes, sir, because we were steering 290, and if it was
two or three points, it would have been anywhere from, let's
say, 20 to 30 degrees.

Q. All right, sir. Now, did you at any time report to the
Coast Guard at the Soo that you remembered seeing the lights
of such a vessel at about 190?

A. No, I didn't.

Q. If such a report was made to the Soo that appears in
the Soo long, then it must have been someone else on your
vessel who made that report; is that correct?

A. Do you mean reported it to the Coast Guard?

Q. Reported it to the Coast Guard that approximately
1900 the Benfri had seen the lights of a vessel off the
starboard side, an unidentified vessel?

You don't recall making any reports like that?

A. No, I don't recall it. It could have been, but I don't
recall it.

Q. I see. Just one or two more questions, if I may --

REAR ADMIRAL BARROW: I wanted to give the
Captain a break, unless you were about finished. If you
are about finished, I think we can continue.

MR. MURPHY: We can give him a
break now.

REAR ADML BARROW: We'll take a recess.

(Recess had.)

REAR ADML BARROW: Let the record show we reconvened at 11:46 a.m. Counselor?

By Mr. Murphy:

Q Captain, I do have a few more questions.

Just for comparative sizes, would you be good enough to tell us the approximate size, length and beam of the lakers that you served on as Master without going into detail?

A The Gallagher, which we used to call the big one, which was formerly the Jenkins and John W. Davin, was 504 feet in length and 54 feet in beam.

Q And the others were less in length and beam; is that right?

A I was Master on the Carmi Thompson, and she was a little bigger. I think she was 525 and 56 or 58 -- I am not sure, and the other ones were smaller, of course.

Q Was there any radar plotting going on on the Benfri during this particular voyage?

A No, sir.

Q Was radar being used, for instance, in determining the distance away of these lights that you observed?

A Not the ships, but at Whitefish Point and Crisp Point.

The radar was on from the time I boarded the ship at detour
until we got to the dock in Duluth.

Q Then this observation that you made with respect to these lights was visual?

A Yes, sir.

Q Could you give us your best estimate as to how far away they were when you saw them?

A I just couldn't give you an opinion on that.

Q You mentioned in your ordinary weather conditions and the ordinary course that you take in passing Whitefish Point upbound that you generally pass about a mile off?

A A nautical mile.

Q And would you say that when you do that, you pass close aboard to Whitefish Point? Would that be a proper way of describing that?

A I would say so. I would suppose so.

Q If you were to pass that distance off, would you say you were passing close aboard?

A I would say it was normal.

Q All right. Well, what is your description of the term "close aboard," when you use it in a nautical term as a mariner?

A That would you be kind of close, I suppose.

Q But not necessarily a distance in that area? Let's use that area as an example. I understand that "close aboard" one point or at a dock would be different than others, but
What would you consider to be close aboard at Whitefish Point?

A. Like I said, a nautical mile, because it was more or less drilled into me when I was a Third Mate, and the old man used to leave orders that it would be "a good mile off."

Q. Just one other question with respect to these telephone conversations that might have taken place. Were the watch standers, the Mate and the Captain, those on the Swedish vessel, were they English-speaking gentlemen?

Did they speak English well so that either one of them might have had a conversation with the Soo or someone else?

A. The one ahead of me?

Q. The vessel on which you were, what nationality were those people?

A. The Captain was Norwegian. The Chief Mate was Dutch. The Second Mate was Yugoslavian, and the Third Mate was from the Philippines.

I could go down through the crew and really get some differences.

Q. How about the Captain? Did he have a good command of the English language?

A. Yes, very good.

Q. And the Mate on watch, say, between 1700 and 1800 or 1900 on your vessel?

A. That was the Chief Mate, and he was Dutch.

Q. And what was his command of the English language?
A. It was good. If he spoke too fast, I wouldn't then be able to understand him.

Q. Did he use the telephone and speak English in your presence?

A. No, but on the return trip when I was there, he called a couple of times, and he said the pilot station wants me, and he answered them. So he managed to get by a little bit.

Q. Just one more question: When you spoke with Captain Woodard, do you remember what channel you spoke to him on?

A. No, I don't. It was possibly 6 or 8, but I wouldn't swear to it, because I felt that at that particular time we had better stay off 12 and 16 as much as possible because of the Coast Guard using the channels.

Q. Could it have been Channel 11?

A. It could have been.

I have nothing further.

REAR ADMIRAL BARROW: Commander Loosmore?

COMMANDER LOOSMORE: Just a moment, sir?

REAR ADMIRAL BARROW: Captain Zabinski?

EXAMINATION

By Captain Zabinski:

Q. Captain, was there an anemometer aboard the Benfri?

A. No, sir.

Q. So this wind estimate was strictly your estimate,
rather than from some instrument on board that you had seen?

A. That's correct.

Q. Captain, on ocean-going ships and so forth, there is usually a requirement, an international requirement to vessels in distress that ships proceed to their assistance.

Is there any such procedure here on the Great Lakes?

A. I don't think there is any difference than on the ocean.

Q. Do you know of any requirement by law or regulation that would require a vessel on the Great Lakes to proceed to the assistance of another vessel in distress?

A. I think if you would not be jeopardizing your own ship, you should go, or I mean you should proceed and render whatever assistance you can.

Q. I am asking: As far as you know, is it a requirement of law? Do you have to do it, or is it something that you can use judgment on?

A. I don't think they require you to do it if you will endanger your own ship.

Q. Well, my question is this: If your ship is in no way endangered, and you received a May Day, are you required by law, regulation or custom, if you know, to proceed to the assistance of another vessel?

A. I don't know about law or anything, but I would say it would be tradition that you would do whatever you could.

Q. You would expect if you were in trouble that people
would come to your assistance?

A. Yes, sir.

Q. Well, let's take the circumstances that existed on the Benfri as you proceeded around abeam of Whitefish Point. You received this call from the Coast Guard. Is it your testimony that the Captain felt that his vessel would be in danger if he turned around?

A. Yes, sir.

Q. Let's say you did see somebody. What equipment was there on the Benfri? Could you have launched a lifeboat on the Benfri?

A. Absolutely not. The lifeboats are way high on the Benfri, and if you did swing around, you would no doubt be rolling. It would smash the boat.

Q. What other means could you use to save people?

A. I would say the only means that would have been available to us would have been -- she has cranes on deck, and if we could have got, say, cargo nets and put on the hook and lowered them over the side and just hoped that if there was somebody in the water that they could grab a hold of the net, then maybe you would be okay.

I don't know if they would be able to even crawl inside the net. That would have been the only way.

Q. How cold was the water, Captain?

A. I don't recall, but --
Q. Is it usually pretty cold this time of year? Is it starting to get cold?

A. It is starting to get cold, yes, sir.

Q. How long do you think a man could survive in those water conditions?

A. If it would have been me, I would say about two minutes, because of my physical condition.

Q. You look in good health to me. You are a picture of health sitting there.

A. I know that, Captain. Well, I don't like to be joking about this, but I have said that if the damn ship is going to go down, I would get in my bunk and pull the blankets over my head and say, "Let her go," because there was no way of launching the boats.

Q. There was no way that you feel you could have been saved; is that your testimony?

A. Yes.

Q. Is this on a laker or on any vessel?

A. On any vessel.

Q. In other words, you don't have too much hope of rescue with the equipment that we have today? Would that be a fair statement with respect to the boats and so forth?

A. If you could get -- most of these deep-sea ships, in fact, every one of them have those inflatable liferafts, and if you could possibly get into one of them, you would be all
right. But the biggest problem is that if you are in the 
water and you have to get over to the raft, I don't think I 
would last.

Q. Are there any inflatables on the lake vessels, to your 
knowledge?

A. I have heard they have them.

Q. Do you pilot any of the lake vessels, Captain?

A. None of the American lakers. We did at one time handle 
Canadian, not Canadian ships but -- they were actually owned 
by Canadian companies, but they were under a foreign flag. 
They purchased the ships from American companies and put them 
under foreign flag and had to have a pilot in the designated 
waters.

Q. Captain, do you bring any portable communications when 
you come aboard the vessel?

In some places pilots do bring their own radios.

A. No. The only time we ever bring a portable radio, and 
we usually refer to them as walkie-talkies, is when we have 
some at the detour pilot station, because we do get some of 
these ships -- well, they have radio problems, and the 
Coast Guard won't allow them in the river unless you can 
talk to the Coast Guard.

So we have these radios, and we bring them aboard. 
Then we use them on the ship.

Once in a while, we do know that one of the pilot
stations will notify the other pilot stations that this ship
has a poor radio, so we do sometimes bring a walkie-talkie
with us.

Q. Do you have bridge-to-bridge communications here on the
Lakes, Captain?

A. Oh, yes.

Q. What channel do you use for bridge-to-bridge?

A. Well, they kind of changed the regulations, but in
talking bridge to bridge, usually you use 6 and Channel 3,
Channel 10, Channel 11 and 13. That's about it.

Q. 6 and 8?

A. 6, 8, 10, 13 and once in a while we'll use 14 if we
are away from the Soo Locks because that's what the Lock
Master uses is 14, and we don't like to use it if we don't
have to.

Q. Were the radio channels, whichever ones you were
listening to, 16 or 12, were they pretty congested when this
Fitzgerald situation was taking place or going on as you
recall?

A. At times they were quite busy, and then again there
was nothing. They weren't being used at some points.

Q. How do you know what vessels were in Whitefish Bay,
Captain? Did you talk to them, or how did you know?

A. Earlier you asked me what ships were ahead of me in
the river, and I said that the William Clay Ford and the
Hilda Marge Ann were there.

Then you asked me something about the William R. Rosch.

He was ahead of me.

Then I heard them talking that they were going to go up in anchor inside of Whitefish Point.

I remember those, because I was talking to the Captain of the Rosch, and also the Captain of the William Clay Ford.

Q. Were they taking shelter from the water, Captain?

A. Yes.

Q. Is there any requirement or regulation or procedure on the Lakes that when a vessel departs from a track and, let's say, after leaving the Soo takes shelter somewhere, they must notify anyone that she is deviating from the regular course?

A. No. You know, you usually try to tell somebody else what you are going to do, and most of the time the fellows know about what the other fellow is going to do.

Q. But this is for navigational purposes; is that correct?

A. Yes, sir.

Q. Rather than advising anyone that you are going to anchor just for that reason?

A. Well, the only ones that I used to tell when I was on the lake ships, was -- we used to have to notify the company where we were if we could talk to them by radio communications at that time.

Q. That was the scheduling and a lot of other things?
Yes, just so they would know where you were.

CAPTAIN ZABINSKI: That's all I have.

REAR ADMIRAL BARROW: Commander Loosmore?

EXAMINATION:

By Commander Loosmore:

Q. Captain, to go back to the point where you just rounded Whitefish Point and said you were having heavy seas and heavy pitching, can you picture how many waves there were at any one point along the length of the ship you were on? Did you look at it?

A. No. I was aft.

Q. As you were looking forward, could you picture how many waves there were? Can you reconstruct that and picture how many waves there were?

A. No, I can’t.

Q. You have spoken several times about the radio-telephone conversations about the Fitzgerald, and you mentioned a position of the Fitzgerald.

How did you get that position? Who gave you that position?

A. I am not sure who gave me that position, but I did hear somebody saying it, and I immediately went to the chart. I pointed out to the Captain and assumed that I heard right. I just guessed that they were using statute miles.

Q. Was that a conversation in which you were a party?
A. No. I heard somebody else talking, I believe.

COMMANDER LOOSMORE: I believe that's all.

REAR ADMIRAL BARROW: Captain Wilson?

EXAMINATION

By Captain Wilson:

Q. You mentioned when you heard "May Day" was when the Bradley sank? Were you in Lake Michigan?

A. No. I was anchored off of Redcliff Buoy in the Apostle Islands.

I was Captain of the Carmi Thompson, and we were bound for Silver Bay to load iron ore pallets, and I went in there for shelter, because of the weather.

I just happened to come up on the bridge.

At that time we didn't have VHF radios. I don't even remember the year that was.

It has got to be about 1958 or something like that, I believe.

I am not sure, but we did have the AM radios, and you could hear them for a long distance.

Q. So you were not even in the general weather pattern?

A. No, I wasn't.

Q. You also mentioned that you established the position as reported by the Fitzgerald, and that was approximately 5 to 6 miles from your position at that time?

A. Yes, sir.
Q The other vessel that you saw off to your starboard, would you say it was more or less than that distance?
A I just don't know. I would be just guessing.
Q So it was not close aboard?
A No.
Q You saw the afterhouse lights. Did you see any side lights on it?
A It was raining at the time, and I don't recall -- possibly I saw the headlight and the range light, but I know that I wouldn't have seen the side lights.
Q Was that vessel ever identified? Did you ever know who that was that you saw?
A No, sir.
Q And you mentioned that a couple of times you took solid water.

Do you remember, were these times before or after you had received notification of the Fitzgerald?
A I think it was before.
Q Before?

Let's see, I think you said the Fitzgerald notification was about an hour out of whitefish. Could you divide that hour up as to when you took these heavy seas?
A No, I couldn't.
Q Would it be --
A It was around when I came back up on the bridge then
after we got around there. I mean, when we were steering the
290, we were on the 290 course.

Q You were on the 290?
A That's when we did have those because when we pitched,
we came down into them and they came over.

Q So it would be sometime in that period?
A After 1800. I would say 1759 there at Whitefish.

Q But, before you received the identification of the
Fitzgerald?
A Yes, sir.

Q Before you had seen the lights of the other vessel or
afterwards?
A I would say possibly both, before and after.

Q So you took --
A We was taking a lot of spray, but not solid water.

Q But one was before you saw the lights of the other
A Yes.

Q You mentioned that vessels rolled more with ore than
with grain?
A Than with grain.

Q By more, do you mean more as to the angle that they
roll or more frequently?
A Both, because when you are loaded with grain, I have a
few friends on the Lakes, and I used to see some captains
that I knew quite well and I would say, "I don't give a damn
about the weather," and I would say, "I don't give a damn about
the weather. She'll ride like an old shoe."

Q  During the time that you sailed on the, I believe you
said the Davin, was that the one you had or was that the
Gallagher on the Lakes?

A  The Michael Gallagher -- What you have to remember was
that the Gallagher and the Davin and the Jenkins were all
the same ship, but with different names at different times.

Q  What was the general practice on her as to securing
or anything else in the winter or in November?

A  You mean securing the hatches?

Q  Yes.

A  I was quite strict about that. I used to walk down
the deck when we left port or shortly after. If I went back
for a meal and it was daylight then I used to take a piece
of chalk with me and I would walk down one side and when I
came back from the galley, if the weather was all right, I
would come back on the other side and I would notice if they
didn't have her battened down right and they would have to
go out and do it over.

I know that the crew didn't like it and I told them,
"I don't give a damn whether you like it or not. It could be
your life as well as mine," and then it got to the point
where they knew that they better do it right in the first
place.
So we very seldom had a problem. Only -- well, once in a while the men would miss getting the battens in properly when it was night. It was hard for them to see. So you could allow for that, but then they would correct it in the daylight.

Q So this was an item that you had to stay on top of.
A I always did, yes.

Q Was this customary all the time or did you take extra precautions in the fall of the year?
A This is always when we had the tarps on. I was on the older ships where we always had tarps.

Q You have spent a lot of time in the rivers and up the Soo. You have had a lot of contact with the lakesters. You know quite a bit of people and obviously you have kept up some old friendships.

Can you tell us a little bit about this? Is this common practice in the fall? Is everybody very conscious about the hatch covers or isn't it important with the newer and bigger ships?
A I think everyone would be the same way. Of course, you do have some captains that are careless and I suppose they just take it for granted or assume that it is being done properly.

Q So you still feel that this is probably something that you would stay on top of.
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.