

UNITED STATES OF AMERICA

NATIONAL TRANSPORTATION SAFETY BOARD

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In the matter of: *
*
MARINE BOARD OF INVESTIGATION *
INTO THE SINKING THE *EL FARO* *
ON OCTOBER 1, 2015 *
*
* * * * *

Prime F. Osborn III Convention Center
Jacksonville, Florida

Thursday,
February 9, 2017

APPEARANCES:

Marine Board of Investigation

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SPENCER A. SCHILLING, P.E.
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WILLIAM R. BENNETT, III, Esq.
On behalf of Mrs. Theresa Davidson
(Next of kin to Captain Michael Davidson)

Also Present

MR. EISENHOWER
(On behalf of Mr. Gruber)

ROBERT BIRTHISEL
(On behalf of Mr. Berrios)

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P R O C E E D I N G S

(9:00 a.m.)

CAPT NEUBAUER: Good morning. This hearing will come to order. Today is Thursday, February 9th, and the time is 9:00 in the morning. We're continuing at the Prime F. Osborn Convention Center in Jacksonville, Florida. I am Captain Jason Neubauer of the United States Coast Guard, Chief of the Coast Guard Office of Investigations and Analysis in Washington, D.C. I'm the Chairman of the Coast Guard Review Board Investigations and the presiding officer over these proceedings.

The Commandant of the Coast Guard has convened this Board under the authority of Title 46 United States Code Section 6301 and Title 46 Code of Federal Regulations Part 4 to investigate the circumstances surrounding the sinking of the SS *El Faro* with the loss of 33 lives on October 1st, 2015 while transiting east to the Bahamas.

I'm conducting the investigation under the rules of 46 C.F.R. Part 4. The investigation will determine as closely as possible the factors that contributed to the incident so that proper recommendations for the prevention of similar casualties may be made; whether there's evidence that any act of misconduct, intention to duty, negligence or willful violation of law on the part of any credentialed merchant mariners contributed to the casualty; and whether there is evidence that any Coast Guard personnel or any representative or employee of any other

1 government agency or any other person either caused or contributed
2 to the casualty.

3 I have previously determined that the following organizations
4 or individuals are Parties in Interest to this investigation:
5 TOTES Services, represented by Mr. Luke Reid; ABS, represented by
6 Mr. Gerard White; Herbert Engineering Corporation, represented by
7 Mr. Spencer Schilling; and Mrs. Theresa Davidson as the next of
8 kin for captain Michael Davidson, master of the SS *El Faro*,
9 represented by Mr. William Bennett.

10 These parties have a direct interest in the investigation,
11 and have demonstrated a potential for contributing significantly
12 to the completeness of the investigation or otherwise enhancing
13 the safety of life and property at sea through participation as a
14 party in interest. All parties in interest have a statutory right
15 to employ counsel to represent them, to cross-examine the
16 witnesses and to have witnesses called on their behalf.

17 I will examine all witnesses at this formal hearing under
18 oath or affirmation, and witnesses will be subject to federal laws
19 and penalties governing false official statements. Witnesses who
20 are not parties in interest may be advised by their counsel
21 concerning their rights; however, such counsel may not examine or
22 cross-examine other witnesses or otherwise participate.

23 These proceedings are open to the public and to the media. I
24 ask the cooperation of all persons present to minimize any
25 disruptive influence on the proceedings in general or the

1 witnesses in particular. Please turn your cell phones or other
2 electronic devices off or to silent or vibrate mode. Photography
3 will be permitted during this opening statement and during recess
4 periods.

5 The members of the press are welcome and an area has been set
6 aside for your use during the proceedings. The news media may
7 question witnesses concerning the testimony they have given after
8 I release them from these proceedings. I'd ask that such
9 interviews be conducted outside the room.

10 Since the date of the casualty, the National Transportation
11 Safety Board (NTSB) and Coast Guard have conducted substantial
12 evidence collection activities, and some of that previously
13 collected evidence will be considered during these hearings.
14 Should any person have or believe he or she has information not
15 brought forward but which be of direct significance, that person
16 is urged to bring that information to my attention by emailing
17 elfaro@uscg.mil.

18 The Coast Guard relies on strong partnerships to execute its
19 missions, and this Marine Board of Investigation is no exception.
20 The NTSB is providing representatives for this hearing. Mr. Brian
21 Young, also seated to my left, is the Investigator in Charge for
22 the NTSB investigation.

23 Mr. Young, would you like to make a brief statement?

24 MR. YOUNG: Yes. Good morning all. I'm Brian Young,
25 Investigator in Charge for the National Transportation Safety

1 Board's investigation of this accident. The NTSB has joined this
2 hearing to avoid duplicating the development of facts.
3 Nevertheless, I do wish to point out that this does not preclude
4 the NTSB from developing additional information separately from
5 this proceeding if that becomes necessary.

6 At the conclusion of these hearings, the NTSB will analyze
7 the facts of this accident and determine the probable cause
8 independently of the Coast Guard, issue a separate report of the
9 NTSB findings and, if appropriate, issue recommendations to
10 correct safety problems discovered during this investigation.

11 Thank you, Captain.

12 CAPT NEUBAUER: Thank you, Mr. Young.

13 Before we start with the first witness of the day, I'd like
14 to make one addition to the record, or clarification. Yesterday
15 during the testimony by Captain Flaherty an ABS official was named
16 in the testimony, Mr. Michael Mallar. His title is Senior
17 Principal Surveyor, Charleston Port. ABS just gave me that
18 clarification.

19 At this time I would like to call our first witness of the
20 day, Mr. Tom Gruber with ABS, Assistant Chief Engineer for
21 Statutes.

22 (Witness sworn.)

23 CAPT NEUBAUER: Mr. Gruber, since we went through your
24 background in your prior testimony, we're going to move right into
25 your questioning, starting with the questions from Mr. White.

1 MR. GRUBER: If I could just, if I could just correct what
2 Captain Neubauer said. My official title is Chief Engineer -
3 Statutes, not assistant chief. Thank you.

4 CAPT NEUBAUER: Thank you, sir. I apologize for that.
5 (Whereupon,

6 TOM GRUBER
7 was called as a witness and, after having been duly sworn, was
8 examined and testified as follows:)

9 EXAMINATION OF TOM GRUBER

10 BY MR. WHITE:

11 Q. Good morning, Mr. Gruber. This morning I'd like to discuss
12 some of your prior testimony to some extent, and the last time you
13 testified before the MBI you discussed the approvals given to the
14 *El Faro* in 1975 when she was built, in 1993 when she was
15 lengthened, and in 2006 when she was converted.

16 In addition, you testified at that last round of hearings
17 concerning, more specifically, some of the more technical aspects
18 regarding the load line approvals, the approval in the trim and
19 stability book, and the approval of stability in general.

20 I'm not going to repeat your testimony this morning. What
21 I'd like to do this morning is a little different -- is something
22 a little different. I'd like to touch, as far as the practical
23 side, for the purposes of the family members here today, to have
24 them -- or provide them with a practical understanding as to what
25 ABS does and what ABS does not do when ABS works in concert with

1 the Coast Guard and when it works independently of the Coast
2 Guard.

3 In addition, during the course of the week we've heard
4 specific technical issues raised by Dr. Stettler and other members
5 of the Board. We've heard, elicited the testimony of your
6 counterpart at MSC, Mr. Jaideep Sirkar. And some of the questions
7 or issues that were more specific, or technical, I'm going to ask
8 you to address them. Okay?

9 But as far as ABS's role, there's been testimony concerning
10 the design of *El Faro* and the approval of stability or the
11 approval of load line. Could you explain to the victims' families
12 here today what ABS's role is with regard to a design? Does it
13 design the vessel? And when it receives a design, how is its
14 actions dictated by statute for review for stability purposes?

15 A. ABS does not have any involvement with design of a vessel.
16 Once the vessel is designed, either the designer or the shipyard
17 will submit the drawings to ABS for review. That could be for
18 review with compliance with the class rules or for the area -- you
19 indicated stability, we have class rules and we also review them
20 on behalf of the administration, in this case the U.S. Coast
21 Guard. That's done in coordination with the Marine Safety Center
22 under, at this point, under NVIC 3-97.

23 Q. And more specifically, to the extent that plans or, you know,
24 booklets are submitted to ABS, who creates the plans or the
25 booklets?

1 A. The booklets and plans are created by either the naval
2 architect or the shipyard designated by the owner. We have no
3 involvement or recommendations as to who that -- how that choice
4 is made.

5 Q. And getting back to the stability side of things, you know,
6 we heard testimony concerning U.S. Coast Guard criteria, the wind
7 heel criteria, and what intact stability was. And there have been
8 discussions during the course of the week on a specific section of
9 the Code of Federal Regulations at 170.170 where all that's
10 written out.

11 Can you tell us with regard to the design and ABS's review
12 for stability purposes, how does the C.F.R. govern whether it's
13 acceptable or unacceptable?

14 A. The C.F.R. delineates what the stability criteria is for each
15 vessel. For certain vessels there are additional requirements
16 based on lifting or towing. But the basic criteria is in
17 Subchapter S, starting with 170.170, the weather criteria. ABS is
18 required to review these vessels in accordance with those
19 regulations under NVIC 3-97.

20 Q. So under NVIC 3-97, the Coast Guard has delegated certain
21 functions to ABS for review of stability, correct?

22 A. That's correct. They originally delegated this under NVIC 3-
23 84, Change 1. And then in 1997, issued a new NVIC broadening that
24 authorization to ABS.

25 Q. And the Code of Federal Regulations is federal law, correct?

1 A. I believe so. Yes.

2 Q. So to the extent the specific design is submitted to you as
3 Chief Engineer - Statutes to work on behalf of the Coast Guard to
4 determine whether it meets or doesn't meet the stability criteria
5 in the federal regulations, what specifically do you determine as
6 to whether it meets it or whether it doesn't meet it?

7 A. The calculations are submitted by the naval architect to show
8 compliance with the Code of Federal Regulations. It's our job to
9 perform a third-party independent analysis of those calculations
10 to confirm that it does meet the criteria.

11 Q. And so, in essence, if it meets the criteria, your job is to
12 grant the approval?

13 A. That's correct.

14 Q. ABS's job, and your job, in particular, is not to provide
15 design recommendations or to change the design because that's not
16 your role, is it?

17 A. That's correct. If it doesn't meet the criteria, we advise
18 the submitter to redo the calculations and resubmit them.

19 Q. So aside from the stability aspects of the vessel, and the
20 Code of Federal Regulations, ABS has a role in the establishment
21 of what the load line is, correct?

22 A. Yes.

23 Q. And while ABS may review a design for stability purposes on
24 behalf of the Coast Guard, can you tell us what ABS's role or
25 authority is with regard to determining the load line?

1 A. The Code of Federal Regulations has designated ABS as the
2 load line signing authority for the Coast Guard. So, therefore,
3 we do the review and issue the load line certificates on behalf of
4 the United States.

5 Q. So by law, for purposes of load line, the government has
6 designated ABS to review and establish whether a particular vessel
7 meets load line requirements?

8 A. That's correct.

9 Q. And do you know how long ABS has determined load lines for
10 the government, approximately? Is that a recent development or is
11 that well, or longstanding?

12 A. That's a fairly longstanding arrangement between the U.S. and
13 ABS.

14 Q. Let's go back to the practical side, what a load line is.
15 And as far as -- if someone in the audience walked up to a vessel
16 and looked at its side shell, what would the load line look like?

17 A. The load line is a circle with a line through the center
18 marked on the side of the vessel in a contrasting color that
19 indicates the maximum draft that the vessel can be loaded to in
20 accordance with the Load Line Convention.

21 Q. And then to the right of the load line -- I think it's to the
22 right, but the, you know, the specific draft marks as far as how
23 many feet that the vessel is submerged in the water, that's
24 indicated to the right of the load line, correct?

25 A. There are draft marks that indicate what the official draft

1 is on each loading condition, and they're located at the forward
2 end, the midship point, and the aft end.

3 Q. So if someone went up to the vessel to see what the load line
4 was, they would see a circle, and then a horizontal line through
5 that circle. And that is, in effect, the load line. And that is
6 established by ABS?

7 A. That's the load line -- the summer load line draft assigned
8 by ABS. Forward of that is an allowance tree, if you will, that
9 gives allowances for different drafts in different seasonal zones
10 designated by the Load Line Convention

11 Q. So we talked about stability. And we've talked about the
12 load line. During the course of the week, we heard Mr. Jaideep
13 Sirkar from MSC talk about GM. We heard Dr. Stettler talk about
14 GM and what that means, and what a vessel is required to sail
15 with.

16 As far as GM, there were further discussions concerning what
17 an inclining was. And could you explain for us, on a practical
18 side, what is an inclining? If a vessel is going to under an
19 inclining experiment, what do they do with weights or pendulums?
20 What is that?

21 A. An inclining experiment is a test to determine the lightship
22 weight and vertical and longitudinal centers, and in some cases
23 the transverse center of gravity of the vessel. It's done by
24 shifting weights across the deck to port side and starboard side,
25 do that multiple times, and we measure the angle of inclination,

1 or the angle of heel, each time, using a pendulum or similar
2 measuring device.

3 Q. So during an inclining they put weight on the vessel and it
4 heels over, correct?

5 A. Yes, sir.

6 Q. And there are certain measurements or calculations that are
7 taken into account that determine the vessel's center of gravity?

8 A. Correct.

9 Q. And they do that for each vessel, even though vessels may be
10 built to the same design, because the particular weight or
11 intricacies of the vessel, whether there's a little more steel or
12 a little less steel, requires the vessel to be inclined?

13 A. Typically each vessel is inclined at construction. The Coast
14 Guard does allow a waiver to that -- the conduction of a
15 deadweight survey, based upon a sister vessel meeting certain
16 requirements, such as being built to the same plans, in the same
17 shipyard within a 2-year period.

18 Q. And if we go back to the inclines that were conducted for the
19 *El Faro*, there was an inclining in 1975, when she was first built;
20 there was an inclining in 1993, when she was lengthened; and there
21 was an inclining in 2006, when she was converted. Correct?

22 A. That is correct.

23 Q. And as far as the inclining, there's a certain criteria or a
24 plan by the person conducting the inclining test as to how that's
25 going to be carried out, right?

1 A. Yes. In accordance with the Code of Federal Regulations,
2 Subchapter S, and the ASTM standard for conducting inclining
3 experiments, the naval architect has to submit the inclining test
4 procedure that dictates the condition of the vessel, the
5 arrangements of the vessel, who's in charge of the vessel, the
6 place and time for the vessel -- for the test. That has to be
7 approved by either ABS on behalf of the Coast Guard or the Coast
8 Guard prior to the test.

9 Q. Okay. And if we talked about the 2006 inclining, who
10 performed that? What naval architect or what company did that
11 incline?

12 A. I believe the 2006 was done by the shipyard where the vessel
13 was modified.

14 Q. And do you know if Herbert Engineering did the inclining?

15 A. In 2006, Herbert Engineering did perform the inclining.

16 Q. And Herbert Engineering's a party in interest in these
17 proceedings?

18 A. Yes.

19 Q. So when they do the inclining, the test is performed, you
20 know, and the weight's moved and the vessel moves and they do the
21 calculations, and then what do you do, or what does ABS do with
22 those calculations?

23 A. First, if I could back up a little bit. ABS is involved with
24 the test itself. After the procedure is approved, we have a
25 surveyor that goes on board as the official witness to make sure

1 the test is conducted in accordance with the approved procedure.

2 It's the surveyor's job to provide guidance if there's
3 questions that crop up during the test. But the overall
4 responsibility of the test, for conducting it, belongs to the
5 person designated in the procedure.

6 Q. Okay. And through the inclining, eventually tables are
7 generated, and then the naval architect submits curves, and a
8 determination is made concerning GM, right?

9 A. Correct. The lightship values are submitted, reviewed by --
10 an independent review is done by the ABS Engineering office and
11 approved. On that basis, the naval architect takes those values
12 and creates loading conditions and stability guidance for the
13 master that's then submitted and approved.

14 Q. So the vessel, when it sails, has to comply with the GM
15 requirements and it has to make sure the load line that ABS put on
16 the side of the ship is also complied with?

17 A. Correct.

18 Q. If we talk about GM for a minute, what it is and what it is
19 not. Mr. Sirkar from MSC testified concerning GM. And there was
20 discussions earlier in the week from Dr. Stettler as far as GM and
21 GZ. Dr. Stettler concluded that the *El Faro* on the accident
22 voyage sailed from the port of Jacksonville, and was in compliance
23 with the GM requirements. Okay. So the GM was met when it sailed
24 from Jacksonville.

25 There were further questions or comparisons between the

1 stability criteria in the federal regulations in Section 170.170
2 and some newer regulations. There were questions raised by
3 Dr. Stettler and other members of the Board to Mr. Sirkar as to
4 what relationship, if any, GM has to survivability.

5 And I'd like you to address that. What relationship, if any,
6 does GM have to, quote/unquote, "survivability"?

7 A. Compliance with the required GM curve means simply that the
8 vessel, with that GM, will comply with the regulations, in this
9 case 46 C.F.R. 170.170, the Coast Guard weather criteria.

10 It does not, in any way, shape or form, say that the vessel
11 will survive in a seaway. Survival in a seaway depends upon the
12 vessel itself, the seaway itself, the sea conditions, the wind
13 conditions, and the ability of the master and the crew to operate
14 the vessel in a safe manner.

15 Q. Mr. Sirkar indicated that the calculation of GM under 170.170
16 has been in effect for many years. He indicated that 170.170 has
17 served the industry well concerning GM and stability.

18 Before we get to some of the regulations, I'm going to
19 revisit one of the exhibits we have for the inclining. And on
20 Exhibit No. 366, Mr. Gruber, there's a NVIC circular 17-91. Could
21 you explain to the MBI and the victim's families here, what is
22 NVIC, and what does this NVIC tell you or instruct you, at ABS, to
23 do?

24 A. A NVIC is a Navigation and Vessel Inspection Circular. These
25 are guidance documents published by the U.S. Coast Guard on a wide

1 variety of topics. This topic, in particular, is to address the
2 Coast Guard's requirements for performing stability tests on
3 behalf of the U.S. Coast Guard.

4 In this case, there's some background information about
5 history leading up to this. But what it does call out is it
6 requires the use of ASTM Standard F1321-90 as the basis for
7 conducting and performing inclining experiments on behalf of the
8 U.S. Coast Guard.

9 Q. And so pursuant to this NVIC, your guidance from the Coast
10 Guard is to review an inclining test in accordance with ASTM
11 F1321-90, correct?

12 A. That's correct.

13 Q. And over the years, has ASTM F1321-90 been revised or
14 changed?

15 A. There were updates to the ASTM standard in 1992, 2004, 2013,
16 and 2014 is the current version of this document.

17 Q. Sitting here today, is there any reason why NVIC 17-91
18 doesn't incorporate the most recent ASTM standard for inclines?

19 A. I am not aware of the process that the Coast Guard uses to
20 update these NVICs. However, 2 years ago I did contact Mr. Sirkar
21 in the naval architecture branch, and request the approval to use
22 the most current version of the ASTM standard, to which he replied
23 that he preferred us to use the most updated version of the ASTM
24 standard in doing these reviews on behalf of the Coast Guard.

25 Q. I'm going to move you back to GM, all right? And then during

1 the course of the week we talked about GM, and Mr. Sirkar
2 described GM. And he said one should not quantify or extrapolate
3 survivability based on GM. Do you recall that testimony?

4 A. Yes, I do.

5 Q. And during the course of the proceedings, we looked at a
6 couple of C.F.R.s, and I'm going to direct you to Exhibit 333,
7 Title 46 of the C.F.R.s. And I'm going to shift to some of the
8 more specific aspects of the statute, and some of the technical
9 aspects that were raised during the course of the last week.

10 On page 3 of Exhibit 333, there was some discussion about
11 Section 170.170, Coast Guard Weather Criteria, in paragraph (d).
12 And can you explain to the public and to the MBI Board generally
13 what is 170.170(d)? Why is it there?

14 A. In 2008, there was a Notice of Proposed Rulemaking, where the
15 Coast Guard had considered updating this criteria because it was
16 felt that for certain vessels it could be updated to be more
17 applicable to specific vessel types. Although the proposed
18 rulemaking ended, this additional paragraph was added to address
19 concerns, is my understanding of the testimony earlier this week.

20 Q. And, if any, significance does paragraph (d) have to the *El*
21 *Faro*?

22 A. Since paragraph (d) was added to the C.F.R. in 2010 and the
23 reviews done on the *El Faro* were done 2006, this had absolutely no
24 effect on the reviews that were done for the *El Faro*.

25 Q. And why were the reviews for the *El Faro* done under this Code

1 of Federal Regulations?

2 A. At the time of the review, the vessel was reviewed under NVIC
3 3-97 and was not considered under the ACP program. Therefore, we
4 had to apply the Code of Federal Regulations requirements.

5 Q. During the course of the week there was some discussion or
6 testimony from Dr. Stettler regarding more recent stability
7 requirements under the 2008 IS Code. And there were certain
8 provisions that were discussed by Dr. Stettler and again by
9 Mr. Sirkar in the IS Code part, in Sections 2.2 and 2.3. And
10 there was some discussion as to whether or not *El Faro* would meet
11 the criteria in the 2008 IS Code.

12 Before we get to the code in Exhibit 334, can you tell us why
13 the 2008 IS Code isn't applicable to the *El Faro*?

14 A. Again, the IS Code is the International Code on Intact
15 Stability produced by the International Maritime Organization, or
16 IMO. It was an option that the naval architect or the owners
17 could have chosen to apply in lieu of the Code of Federal
18 Regulations. But what it comes down to is the Code of Federal
19 Regulations was the applicable criteria at the time of the review.

20 Q. So for you and ABS, to the extent that there's other
21 stability criteria out there, what are you required to do by law
22 as far as the review of the specific design for stability
23 purposes?

24 A. By law, our review is to show compliance with the required
25 criteria. We are not permitted to require something over and

1 above the minimum criteria set forth in the C.F.R.

2 Q. And going to one of the more technical aspects of Exhibit
3 334, I'm going to direct you to page 7, note 12. And from the
4 practical side, can you explain to the people in the audience what
5 vessels the IS code would apply to, and whether the length or any
6 other considerations determine whether it's applicable?

7 A. Could you indicate what section you're referring to?

8 Q. Yeah, it's page 7 of the exhibit, and it's under Section --
9 the footnote is next to 2.3.1 Application. And it's footnote 12.

10 MR. WHITE: Commander Yemma, would it be possible to put
11 page 7 of Exhibit 334 on the screen for the witness, please?

12 MR. EISENHOWER: I think this exhibit may have been updated.

13 LCDR YEMMA: I don't have an updated version of the exhibit.
14 Page 7 doesn't have that section that you're referring to on the
15 version that we have.

16 MR. WHITE: Okay. I'll read it then. All right?

17 MR. EISENHOWER: Commander Yemma, if you go to the Section
18 that starts with 2.3, Container ships greater than 100 meters, and
19 just scroll down, I think we'll get to it.

20 THE WITNESS: This is at Part B, the recommended non-
21 mandatory section of the IS Code.

22 BY MR. WHITE:

23 Q. Okay. To the extent that the IS Code on that page of the
24 exhibit determines applications as to *Faro's* length, can you give
25 us an overview of what it applies to for the length, and what the

1 significance may be for a vessel that's greater than 200 meters?

2 A. If I could back up. The IS Code is separated into two
3 sections. Part A is the required section for compliance. Part B
4 is a recommended section for compliance. So vessels are required
5 to comply with Part A. But Part B, where this section is, is only
6 a recommendation.

7 The section you're referring to is for container ships
8 greater than 100 meters in length. This is applied to container
9 ships greater than 100 meters in length as defined in Section 2,
10 which refers to purpose-built container ships. There is a caveat
11 in this that states, and I'll read it verbatim, "Since the
12 criteria in this section were empirically developed with the data
13 of container ships less than 200 meters in length, they should be
14 applied to ships beyond such limits with special care."

15 I believe the *El Faro*, being over 700 meters -- 700 feet in
16 length, exceeded the 200-meter limit. So the applicability of
17 this criteria would first have to be discussed with the U.S. Coast
18 Guard before it was applied to the ship.

19 Q. And the *El Faro* was not a container ship, correct?

20 A. The *El Faro* was a Ro-Ro container ship, carried Ro-Ro cargo
21 on the main deck and below, and containers above the main deck
22 only.

23 CAPT NEUBAUER: But could you answer that question directly?
24 Do you -- would you say the *El Faro* was not a container ship?

25 THE WITNESS: The *El Faro* was not a purpose-built container

1 ship as defined in the IS Code. Is that acceptable?

2 CAPT NEUBAUER: Yes, sir. Thank you.

3 BY MR. WHITE:

4 Q. One of the other technical points on Exhibit 334 I wanted to
5 bring out is, let's say the vessel or a vessel was built today,
6 and then, you know, it traded internationally and there was a
7 requirement for the 2008 IS Code to apply. In the event that the
8 design that was submitted by the naval architect, that was
9 submitted to ABS for review on behalf of the United States Coast
10 Guard, what if the design didn't meet the criteria? What, if
11 anything, does the 2008 IS Code say if the design doesn't meet the
12 criteria?

13 A. There are many different parts of the required criteria.
14 There are some caveats in the code. And I'll read one here. And
15 this is a part that -- in accordance with Dr. Stettler's report,
16 the vessel did not comply with this regulation. It's IS Code Part
17 A, Section 2.2.3: "The maximum righting lever shall occur at
18 angle of heel not less than 25 degrees." And on the basis of
19 Dr. Stettler's report, this vessel would not comply with the --
20 the *El Faro* would not comply with this requirement.

21 It goes on to say, "If this is not practicable, alternative
22 criteria based on equivalent level of safety may be applied
23 subject to the approval of the administration." That means that
24 the Coast Guard can -- is allowed to consider alternate criteria,
25 and it can be applied as they see fit.

1 This is typically done for many different types of vessels
2 that would also have problems meeting this criteria, typically
3 wide-beam, shallow-depth vessels like supply vessels and deck
4 barges have an alternative criteria that can be applied in place
5 of the required criteria. I did not see any indication of
6 evaluation of that opportunity in the Marine Safety Center's
7 report.

8 Q. So to the extent that the *El Faro* was not a dedicated
9 container ship, was in excess of 200 meters, and did not meet any
10 or some -- or did not meet some of the criteria in 2008 IS Code,
11 do I understand your testimony correctly that that doesn't mean it
12 would not be approved?

13 A. That is correct.

14 Q. Let's go back to some of the practical things for a minute.

15 Dr. Stettler testified about certain what he called
16 vulnerabilities of *El Faro*. He discussed, or there was a
17 discussion as to what a one compartment ship was. Or the term was
18 mentioned. But tell us what a one compartment ship is.

19 A. A one compartment ship is a vessel that's designed to be able
20 to sustain damage to one watertight compartment and survive that
21 in accordance with a designated criteria, designated survival
22 criteria.

23 Q. And, similarly, if a particular vessel or design was a two
24 compartment ship, the same would be true, right? You could flood
25 two compartments and it would meet certain design criteria, and

1 not necessarily capsize or sink by design?

2 A. Just one correction. You could damage two compartments and
3 survive. A flooding situation is a different situation than a
4 damage situation.

5 Q. You got to help us with that. What's the difference between
6 a flooding situation under regulations and a damage situation?

7 A. A damage situation is where there's a physical damage to the
8 watertight envelope of the vessel, removing buoyancy of the hull,
9 and evaluation of the vessel in that condition. A flooding
10 condition is where there's introduction of water into a tight
11 space, a watertight space, that essentially fills up that space
12 like a tank, like a water tank.

13 Q. And then Dr. Stettler moved from the criteria, or the
14 discussions, from whether or not a vessel is -- has to meet the
15 one compartment or two compartment or X compartment criteria.

16 Before we move from there, who determines, who requires
17 whether a vessel has to be one compartment, two compartment or
18 three compartment?

19 A. That designation is dependent upon the required stability
20 criteria. Those are developed either based upon the different
21 criteria in the C.F.R. or for international requirements, the
22 different damage stability instruments contained in, for example,
23 MARPOL for tankers, the Gas Code for gas carriers, SOLAS for cargo
24 vessels and passenger ships.

25 Q. So the Coast Guard determines whether or not it has to meet

1 one compartment, two compartment, or X compartment, correct?

2 A. The criteria is based upon the Coast Guard requirements, yes.

3 Q. And for *El Faro*, the requirements were that she was to meet
4 probabilistic damage requirements, correct?

5 A. As built, she had no damage stability requirements from a
6 regulatory standpoint. When she was modified in 1993 and
7 lengthened, the Coast Guard made a major modification
8 determination, which brought in the current SOLAS probabilistic
9 damage stability requirements.

10 Q. So the probabilistic damage stability requirements, did they
11 equate to whether the ship is a one compartment, two compartment
12 or X compartment ship?

13 A. No. There's no correlation with the probabilistic damage
14 stability requirements and either a one or two compartment
15 designation. The one or two compartment is determined using the
16 deterministic damage requirements, or philosophy, where the
17 probabilistic does not require all specific damage cases to meet
18 the criteria.

19 Q. So a particular -- withdrawn.

20 You mentioned that for the 2006 -- withdrawn.

21 To the extent that the major modification determination in
22 1993 was made by the Coast Guard, you indicated that certain
23 damage stability criteria was applicable, correct?

24 A. Yes.

25 Q. And just for point of reference, for the *El Yunque* was there

1 any determination that the *El Yunque* would have to comply with
2 damage requirements?

3 A. No. At the time of construction and when the vessel was
4 lengthened, there were no damage stability requirements applicable
5 to the vessel.

6 Q. So there was a distinction in regulatory requirements for the
7 damage stability aboard the *El Faro* and what was not required for
8 *El Yunque*?

9 A. That's correct.

10 Q. Before we move from the subject of GM and the idea of what
11 survivability means or doesn't mean, can you explain again as to
12 the calculations and the requirements under the C.F.R. for GM
13 stability, whether that is a static or a dynamic analysis?

14 A. The requirements applicable under the C.F.R. are done under a
15 static stability analysis. There's -- a dynamic stability
16 analysis is one that puts a vessel in a seaway, applies waves and
17 wind to the vessel. As of this time, there are no statutory
18 requirements for a dynamic stability analysis to be performed.

19 Q. So GM, when it was calculated and approved in 1975, 1993 or
20 2006, or today, never includes an assessment of the dynamic
21 factors affecting the vessel as far as sea state, correct?

22 A. That is correct.

23 Q. And it never did?

24 A. That's correct.

25 Q. If we revisit Dr. Stettler's testimony and report during the

1 course of this week, he provided certain analyses concerning the
2 inclinings and GM. He revised his uncertainty analysis concerning
3 the inclinings to indicate that there was a uncertainty concerning
4 the inclining in a range of approximately .2 feet. As far as an
5 uncertainty analysis, has that ever been used by the Coast Guard
6 or the Code of Federal Regulations or any regulations in effect
7 for the last 50 years?

8 A. For the past 28 years, which is how long I've been doing
9 stability on behalf of the Coast Guard, I have not seen or been
10 made aware of any uncertainty analysis being done on a vessel
11 under U.S. flag. The Navy, U.S. naval vessels that we've done,
12 we've never done one. And the U.S. Coast Guard cutters that we've
13 approved have never done an uncertainty analysis. So I've
14 never -- this is the first one I've heard of at all.

15 Q. And as far as ABS's role in reviewing the vessel, whether the
16 *El Faro*, the *El Yunque*, or any other vessel, an uncertainty
17 analysis has never been part of the regulations or the statutory
18 requirements, correct?

19 A. Correct. Before any such analysis would be done, the process
20 would have to undergo a peer review, a third-party review, that
21 would evaluate the process involved. And there would be a comment
22 period, there would be discussions before that would be allowed to
23 be inserted into the regulations. At this point that hasn't been
24 done.

25 Q. You've read the report. You've sat in during the course of

1 testimony of Dr. Stettler. You've seen the corrections to the
2 report and the changes. In your opinion, was there any reason to
3 include an uncertainty analysis in the calculation of GM?

4 A. Until such a process is approved, and there's a sensitivity
5 analysis done to evaluate how this would affect other vessels and
6 how it applies to other vessels in the entire fleet, I see no
7 reason to include this in any review of an inclining experiment at
8 this time. There's no -- as stated by Dr. Stettler, there's no
9 practical way to include this in the regulations, and I agree with
10 that comment.

11 CAPT NEUBAUER: Mr. White, I'd like to make a follow-up on
12 that question.

13 Mr. Gruber, I understand from your testimony that you're
14 saying that an uncertainty analysis shouldn't be brought into
15 federal regulations. Is that what you're testifying to?

16 THE WITNESS: Yes, sir.

17 CAPT NEUBAUER: Are you also testifying that you disagree
18 that an uncertainty analysis, after proper review by ABS and
19 Herbert Engineering as parties in interest, for this investigation
20 it should not be introduced?

21 THE WITNESS: What I'm stating is I don't know that the --
22 from what I've read in the report, the uncertainty analysis was
23 picked from -- portions were picked from several different papers,
24 many of them 30 and 40 years ago, and created into one process
25 that Dr. Stettler used. I don't know if there's -- I haven't

1 heard of any recent documentation on the process. But I don't
2 think there's been an outside review of the process itself that
3 would lend itself to, say, decisions to be made on the basis of
4 such a report.

5 CAPT NEUBAUER: Thank you.

6 BY MR. WHITE:

7 Q. And to your knowledge, has the IACS or IMO working groups
8 ever looked into this?

9 A. No. I have no indication that they've ever looked into this
10 procedure.

11 Q. And you're on the working group for IMO, correct?

12 A. I -- as a matter of fact, next week will be attending the IMO
13 working group for ship design and construction with Mr. Sirkar.

14 Q. Getting back to the inclines, okay? We heard discussions on
15 the inclines and what ABS's role is with regards to inclines. And
16 as far as some of the criticisms that were provided by

17 Dr. Stettler, I understood that the criticisms went to primarily
18 three aspects of the inclines: the measurement of weights, the
19 angles at which the vessel was inclined, and the use of pendulums.

20 I asked you before coming today what the -- withdrawn.

21 You know, to the extent -- let's talk about the angles. To
22 the extent that ABS has to review and provide comments to an
23 inclining experiment, what angles is it required to provide
24 approval for?

25 A. Inclining experiment, the maximum angle heeled -- to heel a

1 vessel over is to be between 1 and 4 degrees.

2 Q. Okay. And practically speaking, in the context of *El Faro*,
3 do you recall what the 1993 inclining heeled the vessel, and what
4 angle it heeled the vessel to?

5 A. I believe the maximum heel angle of the 1993 inclining
6 experiment was 1.3 degrees.

7 Q. And if I moved you over to the 2006 inclining of *El Faro*, do
8 you recall what angle of heel she was inclined to?

9 A. I believe it was approximately 1.1 degrees.

10 Q. And in Exhibit 367, before coming here today, I asked you to
11 look through your reports and give some context of angles or heel
12 for vessels. And Exhibit 367 provides that data for nine ships.
13 And can you summarize for us what the angle to heel was for those
14 nine vessels?

15 A. For those nine vessels, which were inclined between 2014 and
16 2016, the maximum heel angle was between 1.1 and 1.4 degrees.
17 These vessels were all chosen because they are of the same or
18 similar size to the *El Faro*.

19 Q. And can you tell us, based on your table, whether or not the
20 Coast Guard performed any oversight of those nine inclines?

21 A. As shown in the exhibit, ship 3, which was inclined in
22 December of 2015 with a 1.1 maximum heel angle, underwent a U.S.
23 Coast Guard Marine Safety Center oversight. They issued their
24 findings on 31 August 2016 and indicated they accepted the report
25 without any comments.

1 Q. Before you received a copy of Dr. Stettler's preliminary
2 report, did anyone consult with you concerning this statement of
3 what other vessels would have been inclined to?

4 A. No, nobody did.

5 Q. More specifically, with regard to *El Faro*, we mentioned
6 Exhibit 368, which was not addressed by Dr. Stettler in his
7 report. Can you tell us what Exhibit 368 is, and what the basis
8 for the approval was?

9 A. Exhibit 368 is the inclining experiment report on what was
10 then called the *Northern Lights*, which was later renamed the *El*
11 *Faro*. That was the inclining experiment that was conducted after
12 the vessel was lengthened in 1993. And this report was approved
13 by ABS, and the entire stability package at that point was
14 oversights by the Coast Guard, and there were no findings given
15 at that time.

16 Q. So in 1993, the Coast Guard reviewed or performed oversight
17 with respect to the 1993 inclining and provided no comments?

18 A. Correct.

19 Q. And from 1993 onward, did anyone report to you or anyone else
20 at ABS that there were any problems with the stability of *El Faro*
21 or *El Yunque*?

22 A. No.

23 Q. There were comments from Dr. Stettler concerning the
24 transverse center of gravity. Can you tell us whether the
25 transverse center of gravity is included in an incline?

1 A. At the time of the 2006 inclining, it was industry practice
2 not to include the calculations of transverse center of gravity in
3 an inclining experiment, with the exception of mobile offshore
4 drilling units. So the test was conducted in accordance with
5 standard industry practice at the time.

6 Q. And based on your review of the 2006 inclining for *El Faro*
7 and the 1993 inclining for *El Faro* and the 10 or 9 vessels that
8 you've looked at, you know, as far as recent inclines, is there
9 any doubt as the validity of the approvals for the inclining for
10 *El Faro* for 1993 and 2006?

11 A. No, I stand by the approvals, those two approvals.

12 Q. Let's talk about trim and stability book for a minute. The
13 trim and stability book was introduced as Exhibit 8.

14 On the practical side of things, for the families and the
15 people here, can you explain to us what the trim and stability
16 book is, who writes it, and what is ABS's role in approving it?

17 A. The trim and stability booklet is a manual provided for the
18 master to enable the master to verify compliance -- the loading
19 conditions that they're sailing on are in compliance with the
20 applicable sailing criteria.

21 It is a booklet developed by the shipyard naval architect in
22 conjunction with the owner, and it's submitted to ABS for review.
23 We review it for compliance with the requirements in the Code of
24 Federal Regulations, in this case, and then it's stamped, sent
25 back, and required to be placed on board the vessel for the

1 guidance of the master and crew.

2 Q. And as far as Exhibit 8 is concerned, who wrote this
3 particular trim and stability book?

4 A. This booklet was submitted by Herbert Engineering
5 Corporation. They've -- there are portions of this book that
6 they've written and there are portions of this book that are
7 existing data that was in the original approval from 1975 by the
8 U.S. Coast Guard.

9 Q. During the course of the week, there have been some questions
10 from different individuals on the trim and stability book. One of
11 the recurring questions has to do with what the master should
12 know. And when we started the testimony today, one of our goals
13 was to describe what ABS does and what it doesn't do.

14 And more specifically, can you tell, or explain what ABS's
15 role is in training the master, or anyone else, in connection with
16 the trim and stability book?

17 A. ABS has no role whatsoever with training the on-board crew
18 for -- in the use of the stability book.

19 Q. Who does?

20 A. That is up to the master and the crew and the owner of the
21 vessel.

22 Q. And as far as GM, does ABS have any role in training the
23 master or telling the master or explaining to the master what GM
24 is?

25 A. No.

1 Q. And would it be fair to say that the reason why a master or a
2 Coast Guard -- or a merchant marine officer is licensed by the
3 Coast Guard is to make sure he has proficiency in certain aspects
4 of the vessel, including stability?

5 A. That's my understanding.

6 Q. So based on you ABS's review of the trim and stability
7 booklet submitted by Herbert Engineering on the *El Faro*, was it
8 approved for stability purposes and was it compliant with the
9 C.F.R. regulations?

10 A. Yes. We approved it for compliance with the Code of Federal
11 Regulations requirements.

12 Q. I'm going to move to the CargoMax program. And we're going
13 to work to describe the correlation of, or the significance of the
14 trim and stability book with the CargoMax program. All right?

15 Now, let's start out with CargoMax. All right? CargoMax is
16 a computer program. Okay. Tell us -- and tell the people in the
17 audience here today what is CargoMax? What has ABS approved it
18 for and what else can it do?

19 A. CargoMax is one example of a commercially available stability
20 program that can be used on board a vessel. It is an automated
21 routine that can do the longhand calculations from the trim and
22 stability book in a much faster and more accurate manner than
23 doing it by hand. There are additional capabilities in the
24 CargoMax program that eliminated some of the conservative
25 estimations that were built into the trim and stability book.

1 These conservative estimations were included in the T&S booklet in
2 a manner to ease the burden on the master. Removing them does not
3 adversely affect the stability, nor does it negate the results of
4 the CargoMax program from meeting the applicable intact stability
5 criteria.

6 Q. Okay. So as far as the CargoMax program, what did ABS
7 approve the CargoMax program for on *El Faro*?

8 A. The program was submitted by Herbert on behalf of the owner
9 for review and approval of the stability portion of the program.
10 ABS reviewed the program solely for compliance with the applicable
11 regulatory stability requirements. And that was what our approval
12 was for, and it was noted that way in the approval letter.

13 Q. Okay. So the -- ABS reviewed the CargoMax program, they
14 determined it was compliant with the statutory requirements and
15 the data in the trim and stability book, and it was approved for
16 use on *El Faro*. Correct?

17 A. That is correct.

18 Q. There's been some discussions this week concerning the
19 approval of computer software. And in the context of CargoMax,
20 can you tell us whether or not the Coast Guard has ever approved,
21 reviewed, or understood what CargoMax does?

22 A. Back in 1998, the first CargoMax program was submitted to ABS
23 for review on behalf of the Coast Guard for a tanker. This was
24 done to -- the damage stability requirements under MARPOL for a
25 tanker are very dependent upon the way each tank is loaded. So

1 the number of loading conditions in the trim and stability book
2 severely limited the amount of conditions that the master could
3 load to. The program had a feature that allowed an individual
4 loading condition to be evaluated by the push of a button from a
5 master with all the applicable damage requirements.

6 Herbert submitted this to ABS. There was tremendous amount
7 of discussion back and forth between Herbert, ABS, the Marine --
8 Coast Guard Marine Safety Center, and the naval arch branch at the
9 Coast Guard headquarters. When we came to an agreement, the
10 program was approved.

11 Since that time, Cargo Max has been approved for stability as
12 an on-board stability program for dozens, well over 100 vessels at
13 this point.

14 Q. Mr. Schilling from Herbert Engineering yesterday indicated
15 that CargoMax had been in existence for 30 years. Is it your
16 understanding that CargoMax is used worldwide by vessel owners in
17 other classification societies?

18 A. I know that for a fact, that it has been used for that long,
19 and it is used worldwide by multiple classification societies.

20 Q. In our discussions with Captain Flaherty yesterday, he
21 indicated that CargoMax, or computer programs, are not reviewed or
22 oversighted by the United States Coast Guard. Was that a correct
23 statement?

24 A. That was an incorrect statement. I have here two letters
25 from the Coast Guard Marine Safety Center in November of 2015

1 performing oversight reviews on CargoMax stability programs for on
2 board a series of vessels. And the first was approved with no
3 comment. The second was approved with no findings under the
4 oversight, and there was just one question in the letter about how
5 we verify the accuracy of the Herbert computer model. That was
6 explained by our principal engineer that we use -- we do an
7 independent review using the GHS stability program to verify the
8 accuracy of the model. And that was accepted. And that was the
9 last we heard about that oversight review.

10 Q. As far as the suggestion that the use of CargoMax or any
11 other program by an owner that's submitted to ABS constitutes,
12 quote/unquote, "a monopoly," can you advise or correct the record
13 concerning what the process is for a submitter to use any computer
14 program, and what computer programs are accepted by ABS?

15 A. Our class rules, which include the IACS Unified Requirement
16 L5, provide requirements that a program has to comply with and
17 dictates how we review the programs for approval. There's
18 absolutely no indication of a requirement for any specific
19 program, much the same as ABS does not recommend or require the
20 use of a specific naval architect or shipyard to do any reviews or
21 work.

22 I've got a list of 16 different computer programs: NAPA
23 Onboard, Loadstar, LOADMASTER, TankMaster; there's an IBM program.
24 Offhand I can't recall all of them. I'd be happy to provide them
25 to the Board. But these are all programs approved by ABS for

1 different owners. And the choice of that program is entirely up
2 to them. We have no requirements for a specific program or
3 developer.

4 Q. There were some suggestions during the course of the week by
5 Dr. Stettler that there were certain errors in the tank capacities
6 aboard *El Faro*. Could you address that contention in the context
7 of what the GA plan or what the General Arrangement plan is, and
8 how it's used? And what if any errors might be introduced by the
9 use of a computer program based on a design submitted in 1975?

10 A. The General Arrangement program is a -- sorry -- General
11 Arrangement plan is an indication of the specific arrangements of
12 a vessel. It's not to scale. It's not used, at least by ABS, to
13 determine any specific measurements on board the vessel. It's not
14 accurate for that purpose. We would use other drawings,
15 dimensions and scale drawings to do that.

16 The tank -- there were differences in the tanks, as shown by
17 the models at the Marine Safety Center and the trim and stability
18 booklet. Those are to be expected. When you compare a vessel, or
19 a calculation done using advanced computer programs in 2016 versus
20 the hand or rudimentary computer programs that were available in
21 1975, there are going to be differences in the results.

22 The results from '75 were based solely upon the lines plan
23 and integration of that data and the offsets. The use of the
24 Rhino program, which certainly is not -- I don't object to, but it
25 is going to introduce some differences to the hull shape. And

1 since the tank is bounded by the hull shape, it's definitely going
2 to introduce some deviation in the tank capacities.

3 Having not seen the Marine Safety Center's model, I can't
4 quantify any differences they found at this point versus the
5 original 1975 tank capacities.

6 CAPT NEUBAUER: I have a follow-up question on that,
7 Mr. Gruber.

8 THE WITNESS: Sure.

9 CAPT NEUBAUER: Is going by the old plans the only way that
10 the tank capacity could have been determined? I mean, is there a
11 more accurate way it could have been done?

12 THE WITNESS: Are you talking about now, or is that in 1975?

13 CAPT NEUBAUER: No, I'm talking about when it was redone,
14 after the -- if I understand your testimony right, the 1975 plans
15 were done and converted, and you're saying that introduced some
16 degree of error. Is that a correct assessment?

17 THE WITNESS: No. What I was saying is the creation of a
18 model today using advanced stability -- advanced programs and
19 fairing programs is going to yield different results that were
20 done by hand in 1975.

21 CAPT NEUBAUER: Do you think that the data used in
22 Dr. Stettler's report is accurate, the points he made? And you're
23 just saying it would be -- or are you saying it's difficult to
24 determine if it's accurate?

25 THE WITNESS: I have not seen or examined the model created

1 by the Marine Safety Center so I'm not going to say that that's
2 more accurate or less accurate. I mean, all's I can say is the
3 point is that's what was determined by the Marine Safety Center to
4 be what they feel is accurate. And I'd just say there's going to
5 be differences when you redo calculations using advanced computer
6 abilities 40 years after the vessel was built.

7 CAPT NEUBAUER: Thank you.

8 BY MR. WHITE:

9 Q. And to revisit the comments by Captain Neubauer, who did the
10 approval of the tank capacities in 1975?

11 A. All reviews on U.S. flagged vessels built, or done prior to
12 1984, were done by the U.S. Coast Guard.

13 Q. So in 2006, when the vessel was converted, would the tank
14 capacities be revisited? You know, what's the procedure for that?

15 A. Typically the review that we do accepts the documentation
16 that was done prior and approved prior, and then we review the
17 items that have changed and have them updated.

18 CAPT NEUBAUER: Mr. Gruber, that actually gets to what I was
19 trying to -- my original question.

20 So in 2006, there could have been an assessment done to be --
21 to get more accurate than the original 1976 plans. Is that a fair
22 assessment?

23 THE WITNESS: Yes.

24 CAPT NEUBAUER: Okay. Thank you. That was really the point
25 I was trying to get to.

1 BY MR. WHITE:

2 Q. You know, before we move to the next topic, based on, you
3 know, our discussions here today, the evidence presented, do you
4 have any reservations concerning the approvals for the inclinings
5 in '75, '93 and 2006?

6 A. I can't speak to the '75 inclining. But to the 1993 and
7 2006, as I previously stated, I stand by the approvals and the
8 results from those tests.

9 MR. WHITE: Captain Neubauer, can we take a 5-minute break,
10 please?

11 CAPT NEUBAUER: Yes, sir.

12 The hearing will recess and reconvene at 10:30.

13 (Off the record at 10:22 a.m.)

14 (On the record at 10:38 a.m.)

15 CAPT NEUBAUER: The hearing is now back in session.

16 We're continuing on with the live questioning from Mr. White,
17 ABS.

18 MR. WHITE: During the break, it was pointed out to me that I
19 mis-described Mr. Sirkar's title. He's not with the Marine Safety
20 Center. He's with the United States Coast Guard, CG-ENG-2. And
21 that's the naval architecture group, and in the design and
22 engineering standards section.

23 BY MR. WHITE:

24 Q. I'm going to move to another subject area, and we're going to
25 talk about load line. We're going to talk about wind heel.

1 And earlier on, the practical side for the people here, we talked
2 about the Plimsoll mark, we indicated that ABS issues that
3 Plimsoll mark that's on the side of the vessel, the circle with
4 the line in it.

5 And then I'm going to move -- well, let's move now to
6 ventilation arrangement. Okay? So the ventilation arrangement
7 has been the subject of discussions over the course of these
8 proceedings and, you know, during this week and the last set of
9 hearings. But, you know, before we get to that, let's talk about
10 what is the ventilation arrangement of a ship. And on the *El*
11 *Faro*, what did it do?

12 A. On the *El Faro*, there were separate air intake arrangements
13 for the holds and exhaust arrangements. The air intakes were
14 mounted in -- on the side of the ship and had blisters outside the
15 hull where the air was drawn in from the outside and pumped down
16 into the cargo holds. The exhausts were -- the air was pushed out
17 the exhausts. As it was pushed in, it was -- the old air was
18 pushed out the exhausts, which went up through vent trunks, and
19 exited through the side of the ship, through louvers on -- just
20 above the 2 deck.

21 Q. So the supply side vents bring air into the hold and the
22 exhaust vents let the air out of the hold, right?

23 A. Correct.

24 Q. And these arrangements -- these arrangements were subject to
25 approvals, correct?

1 A. Yes. When the vessel was constructed, it was constructed to
2 and approved by the U.S. Coast Guard for their requirements. It
3 was reviewed and approved to class requirements, and it was
4 reviewed and accepted for all vent requirements.

5 Q. And so the plan arrangements for the supply vents and dampers
6 and the exhaust vents and dampers were submitted, and they were
7 approved by the United States Coast Guard in 1975?

8 A. Correct.

9 Q. When the vessel was lengthened in 1993, they put a section
10 in, and there were ventilation -- or the same ventilation
11 arrangements that were used in 1975 were used for the section that
12 they put in the ship, right?

13 A. That is correct.

14 Q. And getting back, from the practical side of what the vents
15 and dampers do, let's talk about load lines first. In determining
16 a load line, can you tell us what the significance is of the
17 freeboard deck? Tell us what the freeboard deck is and what the
18 significance is.

19 A. The freeboard deck is typically the uppermost complete
20 weathertight deck on the vessel exposed to the weather. That is
21 the basis of the calculations that are done to determine what the
22 maximum draft is. That's the calculation significance.

23 From the conditions of assignment, everything below that
24 point, below the freeboard deck or the 2 deck has to be
25 watertight. The 2 deck, and everything above with respect to the

1 load line and what's part of the load line calculations has to be
2 weathertight.

3 Q. Below the freeboard deck, watertight; above the freeboard
4 deck, weathertight?

5 A. Correct.

6 Q. And as far as the dampers that are in the ventilation system,
7 for the purposes of load line, how are they treated? Weathertight
8 or watertight? How are they treated?

9 A. The ventilators on the 2 deck are in what's called position
10 1, which requires a higher sill height than, say, position 2,
11 which is a higher level, higher level of the vessel, upper decks.
12 So --

13 Q. Give us that again. Where's position 2 and where's position
14 1?

15 A. Position 1 is the entire freeboard deck from stem to stern.
16 It's also any superstructure decks in the forward quarter-length
17 of the vessel. So the forward 25 percent length of the vessel, if
18 there's a fo'c'sle fitted, anything on that deck would also be
19 considered in position 1. All other superstructures decks are
20 considered to be position 2.

21 Q. Okay. You mentioned the term sill heights. What is a sill
22 height and what is its relationship to load line?

23 A. Sill heights and coaming heights are used interchangeably.
24 So I just wanted to bring that right out in the beginning. Sill
25 heights are the distance of an opening from the deck to the lowest

1 point of the opening. So it would be -- in a doorway it would be
2 to the lower edge of the doorframe. On a hatch it would be to the
3 lowest point where the water would have to go over to get into the
4 hatch.

5 Q. And is there any requirements for sill heights?

6 A. Yes. The load line requirements under conditions of
7 assignment have different requirements for different types of
8 openings. Hatch coamings, door sill openings, ventilator
9 openings, air pipe openings all have specific required sill
10 heights.

11 Q. And getting back to the dampers in the context of them being
12 required by load line to be weathertight, is there a particular
13 document that describes how openings in a vessel are going to be
14 treated?

15 A. Well, the load line regulations require closing devices on
16 each of these openings, you know, hatches, doors, air pipes and
17 ventilators. There's additional guidance published by the Coast
18 Guard in 1990 called the Load Line Technical Manual that gives
19 additional guidance on how to apply the load line requirements.

20 Q. And can you tell us what the function of a document called
21 the LL-11-D? What is it and what does it tell us?

22 A. The 1988 protocol to the load line requirement, the Load Line
23 Convention requires a record of conditions of assignment form to
24 be filled out by the attending surveyor and maintained on board
25 the vessel. The use -- ABS has designated this form internally as

1 a Form LL-11-D. So when we refer to an LL11, we're referring to
2 the required record of conditions of assignment for load lines.

3 Q. And what does that document tell us as far as openings?

4 A. That documents lists all openings that allow water to enter
5 into the deck, all doors, hatchways, air pipes and ventilators.
6 It also talks about crew protection items such as guardrails.
7 Talks about bulwarks and, you know, documents the freeing port
8 area. All the requirements in that section of the Load Line
9 Convention are documented to that form and are maintained on board
10 the vessel.

11 Q. And what would that say about dampers?

12 A. The LL11 that was -- I have a copy of the original one from
13 the *El Faro*, which the surveyor refers to the exhaust dampers as
14 weathertight closures.

15 Q. Okay. And we talked about watertight; we talked about
16 weathertight. And now for the purposes of the LL-11-D, you said
17 the exhaust ventilators were designated to be weathertight,
18 correct?

19 A. Yes. And the air intakes were designated as watertight.

20 Q. Okay. So air intakes are on the supply side and watertight.
21 So for purposes of the Load Line Convention, in determining
22 distances, how are ventilators treated, as watertight or
23 weathertight? For your analysis or analysis by ABS on the load
24 line, under the international convention, how are dampers treated?

25 A. Dampers are treated, as noted by the surveyor, as

1 weathertight. If there is an indication of being watertight, we
2 consider that to be over and above the requirements. As long as
3 it meets the requirements of weathertight, it would be acceptable.

4 Q. I have them both here, and I've lost the reference. But for
5 the purposes of a damper, how is that defined as being
6 weathertight? Whether or not it can be secured, or what's the
7 definition?

8 A. If you give me a second, I'll read to you from the load line
9 requirements.

10 Okay, under Regulation 19, let's see, as far as closures go,
11 the first paragraph dealing specifically with the coaming height
12 requirements. And then paragraph 3 talks about ventilators over a
13 certain -- it's coaming height over 14.8 feet above the deck in
14 position 1 don't have to be fitted with closing appliances, unless
15 it's required by the administration. Therefore, all other
16 ventilators have to have an efficient closing appliance that can
17 be secured weathertight.

18 Q. Weathertight?

19 A. Weathertight.

20 Q. And does that mean that it had to be capable of being closed?

21 A. Yes.

22 Q. And the treatment of those dampers are addressed by the LL-
23 11-D?

24 A. The surveyor has indicated that they -- he considers them to
25 be weathertight. And although I'm not certain, they are required

1 to test and verify the weather-tightness of each opening and
2 closure.

3 Q. And let's get back to that. Let's get back to the approval
4 in 1975 of that arrangement. Are you indicating that the
5 ventilation arrangements and the dampers were accepted as
6 weathertight in compliance with the inspections and the plan
7 approvals in effect in 1975?

8 A. That's correct.

9 Q. Mr. Gruber, we talked about the Load Line Convention and the
10 sill heights and dampers. With regard to the *El Yunque* -- you
11 were aboard the *El Yunque*, correct?

12 A. Yes, I was on board the *El Yunque* twice.

13 Q. And to revisit some of your comments earlier in the context
14 of the ventilation arrangements, was the *El Yunque* subject to
15 damage requirements by statute?

16 A. No. At the time of the build, the *El Yunque* was not subject
17 to any damage stability requirements, nor were there any major
18 modifications that would have required the application of current
19 damage stability requirements to the vessel.

20 Q. Now, you're not a surveyor, correct?

21 A. That is correct. That is correct. With ABS, I'm an
22 engineer. The surveyors have different training and different
23 qualifications.

24 Q. So at ABS we've got surveyors and we've got engineers?

25 A. Yes, sir.

1 Q. Would you take a look at Exhibit 371, please?

2 MR. WHITE: And then, Commander Yemma, you know, can you
3 throw 371 up on the screen there it might be helpful.

4 BY MR. WHITE:

5 Q. Looking at Exhibit 371, Mr. Gruber, I don't know if it's on
6 the screen in front of you. But, you know, let's start out with
7 did you take this picture?

8 A. Yes, I did.

9 Q. And can you orient us as to where we are on the vessel? The
10 135 or 138, what's that mean?

11 A. This is a back-to-back air exhaust -- two air exhaust trunks.
12 The 134 to 135 is the exhaust trunk to hold 2A, which was part of
13 the parallel mid-body added in 1993. The trunk for 135 to 138 is
14 the trunk that goes to hold 3, which was part of the original
15 existing ship.

16 Q. And are we looking at supply or exhaust?

17 A. These are two exhaust trunks.

18 Q. Okay. And the dampers we talked about, the dampers are on
19 the forward end, on the right-hand side of the photo, where it
20 says open/close. And then on the after end of the photo, in frame
21 138, where it says open/close, correct?

22 THE WITNESS: Do you have a laser pointer, sir?

23 CAPT NEUBAUER: Yes.

24 THE WITNESS: Thanks.

25 This right here is the damper for the after trunk. And this

1 right here is the damper for the forward trunk. The actual
2 dampers are on the other side of this bulkhead.

3 BY MR. WHITE:

4 Q. Okay. And as far as where we are, are we on the port side,
5 of the left-hand side of the ship looking forward, or on the
6 starboard side, the right-hand side of the ship looking forward?

7 A. This is on the port or left-hand side of the ship looking
8 forward.

9 Q. Okay. There was some testimony, you know, with prior
10 witnesses concerning the flow of water and the use of baffle
11 plates. And using your pointer, can you give an example as to the
12 role of baffle plates and how water would flow, or how it's
13 treated by the design?

14 A. In this case, the fire dampers are there for a twofold
15 purpose. One is to seal the hold in case of a fire situation, and
16 that was not part of the stability or load line review. But I
17 just want to indicate that they have a duplicate role. The other
18 role is to secure the opening that leads into the cargo hold from
19 water coming inside the ship.

20 Now, the way these are arranged, this opening here is an
21 inspection port that the surveyor or inspector can open up and
22 look at the condition of the fire damper itself without opening up
23 this large watertight opening here.

24 Air flow, and I'll use the aft -- the 135 to 138 as an
25 example. Air comes up the trunk from below the deck, through the

1 air damper, up, 12 feet over the deck, over a baffle plate. And
2 that baffle plate is located approximately, you know, from the
3 deck, 12 feet up here. So the air comes up, over that baffle
4 plate, into this chamber, where it exits through this. This is on
5 the shell of the vessel, the side shell, this is a louvered
6 opening. So, basically, the air has to come up, over the 12-foot
7 baffle, into this chamber, then out the side of the ship.

8 This plate here is a cover plate here, basically it's an
9 inspection cover. The difference here is you can notice there's
10 very closely spaced bolts on this to maintain the watertight
11 integrity of this chamber, whereas this has just a few bolts
12 because this chamber here is not tight. It's actually open to the
13 sea and, by the use of these drain holes, open to the second deck,
14 as well. These drain holes are in place here so if any water does
15 come in these louvered openings, it doesn't pool in here. It
16 actually drains to the second deck to where it can exit over the
17 side of the vessel.

18 Q. And just to clarify, could you just give us what the role of
19 the baffle plate is? What it is, and what's its role.

20 A. The baffle plate, like I said, it's located here and then
21 here, are to force any water the comes in through the side of the
22 vessel into this chamber from -- it's to prevent water from going
23 into the chamber that goes below the deck. So with a 12-foot high
24 baffle, it keeps -- eliminates the water -- any water that does
25 come into this space will just drain out through these drain

1 holes.

2 Q. And is there any requirements in baffle heights? How does
3 that work?

4 A. The baffle, in this case the baffle height is actually the
5 sill height, which is regulated by the Load Line Convention. The
6 requirement of the Load Line Convention is for a 35½ inch high
7 sill height. These, being 12 feet above the deck, far exceed the
8 requirements of the Load Line Convention.

9 Q. So as far as sill heights, if the baffle plates meet the 35½
10 inches, they're -- that's what the Load Line Convention's looking
11 for, right?

12 A. Yes.

13 CAPT NEUBAUER: Mr. Gruber, I have a follow-up question.

14 Is it your understanding that all of the vent trunks on the
15 *El Yunque* have that 14-foot baffle when it's open to the sea?

16 THE WITNESS: It is my understanding that all the vent trunks
17 arranged like this have a 12-foot baffle height, as previously
18 indicated in testimony.

19 CAPT NEUBAUER: Thank you.

20 BY MR. WHITE:

21 Q. I'm going to move from that to sort of address testimony that
22 was introduced yesterday on the *El Yunque*. And Exhibit 201,
23 Mr. Gruber, is a -- Figure 3, is a picture of the *El Yunque* hold 3
24 exhaust ventilation trunk. And I guess the description in the
25 photo says large opening around longitudinal. Should be Figure 3.

1
2 You were aboard *El Yunque*, and there was -- the last time you
3 were here you testified concerning the significance of this
4 opening for *El Yunque*. You indicated that the *El Yunque* is not
5 subject to damage requirements for stability, correct?

6 A. That's correct.

7 Q. So in some of the testimony yesterday, there was an
8 indication that this photo illustrated a hole into the side shell,
9 that there was a hole in the side shell. Could you address what
10 the hole is on the right side where the beam goes through and
11 where that's oriented to the vessel, so the record can be clear?

12 A. This hole here is in the internal baffle plate that's
13 perpendicular to the side shell. This hole here is the actual
14 louvered opening in the side shell. So the testimony that stated
15 that this hole was in the side shell was incorrect.

16 Q. So the beam that runs through the hull is running the length
17 of the ship?

18 A. That is correct. It's a longitudinal structural member
19 attached to the side shell, running in a longitudinal direction.

20 Q. It's not running across the ship and out the side shell?

21 A. That's correct.

22 Q. Now, as far as the significance of the hole, is there any
23 violation of having that hole on *El Yunque*?

24 A. As there are no damage requirements applicable to *El Yunque*,
25 the only sill requirements for the ventilator are the load line

1 requirements. This opening here is well above 35½ inches.

2 To put it in context, the bottom of this louvered opening is
3 4 feet above the deck. So this is approximately, conservatively,
4 6 to 7 feet above the deck, which would -- is at least double the
5 sill height requirement, 35½ inch sill height requirement of the
6 Load Line Convention.

7 MR. WHITE: I'm finished with that, too. Thanks.

8 BY MR. WHITE:

9 Q. During your testimony, Mr. Gruber, and the testimony of
10 Mr. Sirkar earlier in the week, you know, we talked about GM and
11 what it means and doesn't mean; what survivability means and what
12 it doesn't mean. You indicated that GM is based on a specific
13 requirement in the statutes for the C.F.R. that was premised on a
14 static environment, correct?

15 A. Yes.

16 Q. And similarly, that there are no current stability
17 regulations in place to assess a dynamic environment.

18 A. That is correct.

19 Q. Let me ask you this. Why can't class rules and the statutory
20 requirements for load line, wind heel and everything else assure,
21 guarantee or warranty survivability?

22 A. As I stated before, survivability is dependent upon the sea
23 state that the vessel's in, and the actions taken by the crew to
24 deal with the situation that they're encountering.

25 Q. And similarly, can you comment what role the master or the

1 operation of the vessel has concerning class requirements?

2 Let me rephrase the question.

3 As far as the operation of the vessel and the exercise of
4 proven seamanship, isn't that outside what class does?

5 A. Yes, that is outside the purview of the class requirements.

6 Q. Sitting here today, sir, Mr. Gruber, have there been any
7 problems reported on the Ponce Class vessels, including *El Yunque*
8 and *El Faro*, in their 35-plus years of service that you've been
9 made aware of?

10 A. I have not been made aware of any problems on these two
11 vessels or any of the sister vessels, which comprises over 300
12 years of service on the oceans.

13 MR. WHITE: Captain Neubauer, sir, we have nothing further.

14 CAPT NEUBAUER: Mr. Gruber, you can continue, or would you
15 like to take a break?

16 THE WITNESS: We're good.

17 MR. WHITE: Could we take a 2-minute break?

18 CAPT NEUBAUER: Yes, sir.

19 The hearing will recess, and reconvene at 11:15.

20 (Off the record at 11:10 a.m.)

21 (On the record at 11:20 a.m.)

22 CAPT NEUBAUER: The hearing's now back in session.

23 Mr. White, I just want to confirm, are you done with your
24 line at this time?

25 MR. WHITE: Yes, we are. Thank you.

1 CAPT NEUBAUER: I'd like to go to TOTE. Is there any
2 questions?

3 MR. REID: No questions, sir. Thank you.

4 CAPT NEUBAUER: Mrs. Davidson?

5 MR. BENNETT: Yes, sir.

6 BY MR. BENNETT:

7 Q. Good morning, Mr. Gruber.

8 A. Good morning.

9 Q. When a master or a chief mate arrives at a ship, that T&S
10 booklet is already there, correct?

11 A. Yes, sir.

12 Q. And the master and the chief mate can take comfort in the
13 fact that that T&S booklet was created, checked and assessed by
14 some really, really, really smart mathematicians, correct?

15 A. Yes, sir.

16 Q. And over the course of the MBI hearings, we've had hours and
17 hours and hours of technical testimony. We've heard about GM, KG,
18 T&S booklets, intact stability, Coast Guard regulations, ABS
19 regulations. But at the end of the day, the facts are, is that
20 when the *El Faro* left Jacksonville under the command of Captain
21 Michael Davidson, she met all U.S. Coast Guard regulations and was
22 permitted to sail, correct?

23 A. That is correct.

24 Q. And, finally, when she sailed under the command of Captain
25 Michael Davidson from Jacksonville, the *El Faro* then was in full

1 compliance with the trim and stability booklet. Isn't that
2 correct?

3 A. It was in full compliance with the approved trim and
4 stability booklet and the on-board stability program.

5 Q. Thank you, sir.

6 MR. BENNETT: No further questions.

7 CAPT NEUBAUER: So, Mr. Gruber, I want to clarify one point.
8 The trim and stability booklet mentioned states that the vessel
9 should not have minimized slack tanks. From your testimony I
10 understand that you would be testifying that the CargoMax program
11 could be used and that provision could be disregarded. Is that
12 correct?

13 THE WITNESS: That's correct. In accordance with Coast Guard
14 NVIC 3-89, you are allowed to include conservative restrictions or
15 estimations for free surface in the trim and stability booklet to
16 make it easier for the master to run the hand calculations that
17 are there. These conservative estimations that were put in to the
18 trim and stability booklet went beyond the requirements for free
19 surfaces in 46 C.F.R. 170.285.

20 The on-board calculations in the stability program were there
21 to allow a little greater flexibility, i.e., to remove that
22 conservative estimation yet still maintain compliance with the
23 free surface requirements that I mentioned.

24 CAPT NEUBAUER: Is there a specific statement that says that
25 you can disregard that or is it your interpretation?

1 THE WITNESS: The conservative estimation is described in
2 Coast Guard NVIC. Okay. It does not -- it is an option to be
3 applied. It is not required to be applied. That conservative
4 estimation came from 1975, well prior to there being any damage
5 stability requirement that might be impacted by such a restriction
6 on free surface. Therefore, the approved stability program did
7 not have to include that. And it doesn't -- and it is in
8 compliance with all applicable regulations.

9 CAPT NEUBAUER: At this time I'd like to go to Herbert
10 Engineering.

11 MR. SCHILLING: No questions.

12 CAPT NEUBAUER: Before we continue with our questions from
13 Commander Venturella, I do have one follow-up. You mentioned in
14 your testimony for inclining tests that you had called over to our
15 office and discussed potentially applying new ASTM standards. Is
16 that a correct assessment?

17 THE WITNESS: I called over, and then followed up with emails
18 we can provide to you if necessary.

19 CAPT NEUBAUER: I'm guessing there was a reason, or something
20 that you were looking to apply for new inclining tests. Can you
21 give just a general assessment of any assessments you were
22 specifically looking to apply?

23 THE WITNESS: The ASTM standard has been continually improved
24 to allow -- well, to reflect experience with the ASTM standard,
25 much the same as ABS class rules, the IMO stability regulations,

1 they're under constant review for updating. The latest -- the two
2 latest revisions actually include the permitted use of water
3 tubes, inclinometers and laser readers for -- in lieu of
4 pendulums, which were previously not included.

5 I can't tell you specifically 2 years ago what the discussion
6 was. It was brought up from our engineering office in Houston
7 that there was a conflict in what the official Coast Guard
8 requirements were and what was available. Therefore, as part of
9 my job to liaise with the U.S. Coast Guard on these statutory
10 matters, I addressed that through the Naval Engineering Branch.

11 CAPT NEUBAUER: In your professional opinion, would using
12 updated technology during tests reduce the amount of uncertainty?

13 THE WITNESS: It could. Yes.

14 CAPT NEUBAUER: Like to continue on with questioning by
15 Commander Venturella.

16 CDR VENTURELLA: Thank you, Captain.

17 BY CDR VENTURELLA:

18 Q. Good morning, Mr. Gruber.

19 A. Good morning, sir.

20 Q. I appreciate the testimony so far this morning. It's been
21 very helpful. And I'm just going to continue on with a little bit
22 of clarification on the load line side of things. I know you've
23 already discussed some of it, but I'm going to get into a couple
24 of extra details.

25 First of all, during your testimony this morning, you

1 mentioned a Form LL-11-D. I don't believe I have a copy of that.

2 Is there any way that you can provide that to the Board?

3 A. Actually, you've already got a copy of it. We provided our
4 complete contents of our stability and load line folders, and it's
5 actually in the load line folder. But we would be happy to
6 provide a copy to you.

7 Keep in mind that this is the original one. The one that was
8 updated and was on board the vessel, I do not have a copy of that
9 one from 1993.

10 Q. Thank you. Also I wanted -- you spoke briefly about Exhibit
11 201, page 2. Can we go back to that.

12 CDR VENTURELLA: And Lieutenant Commander Yemma, if you could
13 put that one back up, Exhibit 201, page 2.

14 BY CDR VENTURELLA:

15 Q. Do you have that, sir?

16 A. Yes, sir. Go ahead.

17 Q. Okay. I have a full understanding of what you explained
18 earlier with regard to the height of this opening is far above the
19 35.5 inches required in the Regulation 19 of the Convention.
20 However, I did want to discuss another topic with regard to an
21 opening like this. Would you agree, first of all, that the plan
22 requires a 12-foot baffle in this region?

23 A. Do you have the approved plan that I can look at?

24 Q. Yes. Let's refer to Exhibit 351, page 1 of Exhibit 351,
25 shows the exhaust ventilation trunks between frames 159 and 162.

1 There may not be the -- I think that is actually the exact same
2 one that that picture's taken of.

3 A. Okay. I see it.

4 Q. So would you agree that an opening in the 12-foot baffle
5 would violate the 12-foot baffle in that plan?

6 A. Yes.

7 MR. WHITE: As a matter of clarification, Exhibit 351 refers
8 to *El Faro*, correct? And the picture you have is of *El Yunque*?

9 CDR VENTURELLA: Yes, sir. That's correct.

10 THE WITNESS: Yes, the drawing for the *El Faro* does show the
11 12-foot sill height on the drawing.

12 BY CDR VENTURELLA:

13 Q. Okay. Would you also agree that in reviewing plans at the
14 technical office that you often made tradeoffs, and that it may be
15 that a 12-foot baffle height was part of the acceptance of a fire
16 damper as a weathertight fitting, especially an un-gasketed fire
17 damper. Do you have knowledge that that's not the case?

18 A. Since the LL-11-D and the surveyor determined that the fire
19 damper was, in fact, weathertight, the requirement for -- that
20 closing appliance requirement was satisfied. Therefore, the sill
21 height was required to be 35½ inches, the 12 foot far exceeded it,
22 and there was no consideration using that sill height to accept
23 the damper.

24 Q. Thank you. So just to clarify a little further. Is it then
25 your understanding that if the crew wanted to cut the top off the

1 of baffle there, that no plan revision would be required from ABS?

2 A. From a structural plan of rule side of ABS, I cannot answer
3 that question. From a load line standpoint, it would not be
4 required because it met the requirements.

5 Q. Thank you, sir. Just to clarify a little further. Would you
6 agree, then, that if modifications are made to the 12-foot baffle,
7 if holes are opened in it that you were not expecting to be there,
8 that you would expect notification be made to ABS so you could
9 make those determinations as to whether this is acceptable to
10 remain as is?

11 A. Yes. We are -- the owners and operators are required to
12 report modifications to the vessel to ABS.

13 Q. And do you have record of any notification of modifications
14 within this particular ventilation trunk?

15 A. In the context of load line stability files, which I use, I
16 don't have any indication of that.

17 Q. Thank you. Based on previous testimony from Mr. Sirkar, the
18 Board understands that *El Faro* would be considered a new ship to
19 which the 1966 International Convention on Load Lines would apply.
20 Based on *El Faro*'s 1974 approximate keel lay date, do you concur
21 with that assessment?

22 A. Yes, I do.

23 Q. Earlier you testified that the openings for the supply and
24 exhaust ventilation trunks are within position 1 of that
25 Convention. Is that accurate?

1 A. Yes.

2 Q. Please turn your attention to Exhibit 322, page 8. Exhibit
3 322 is an excerpt of select portions of the 1966 International
4 Convention on Load Lines. Page 8 specifically shows Regulation 19
5 for ventilators.

6 This will just be a quick question, so it's not -- I don't
7 need you to read the whole thing right now. But is this the
8 regulation that you would use to provide load line related design
9 criteria for the ventilators on *El Faro*?

10 A. Yes. This is the original 1966 Load Line Convention that was
11 applicable to the *El Faro* when built.

12 Q. Okay. Could you please turn your attention back to Exhibit
13 351, and for now look at page 133 of that exhibit. I'll briefly
14 describe that exhibit.

15 Exhibit 351 contains plan excerpts from *El Faro*'s ventilation
16 drawings. The later part of the exhibit does have pictures taken
17 aboard her sister vessel *El Yunque*. But for now I want to look at
18 the plans and drawings on pages 1 to 3 of the exhibit. They
19 provide a general arrangement of the exhaust ventilators on *El*
20 *Faro*'s starboard side, between racking bulkheads at frame 159 and
21 162. Page 3 does include its fire damper, as well. Please note
22 that this ventilator has a louver chamber and a fire damper
23 chamber. There is a 12-foot baffle plate, as previously
24 described, between the louver shell opening and the hold freeboard
25 deck opening. The hold opening has an additional separate 39-inch

1 plate coaming within the fire damper chamber protecting it from
2 any water that may enter the fire damper chamber from an alternate
3 flow path.

4 Have you had a chance to review these plans before, sir?

5 A. Yes, sir.

6 Q. Sir, it's my understanding that the *El Faro* was the seventh
7 ship in a class of 10. Class started with *Ponce de Leon* in 1967
8 and finished with *Westward Venture* in 1977. *El Faro* was built in
9 '74. The class in that way, straddles two Load Line Conventions,
10 the 1930 International Load Line Convention and the 1966
11 International Convention on Load Lines. The design of the
12 ventilators does not appear to the Board to have changed during
13 the class's time.

14 Were the *El Faro*'s ventilators provided plan approval
15 extension based on original review to the 1930 International Load
16 Line Convention, or were they reviewed again to ensure they
17 complied with the more recent Convention?

18 A. Specific to the *El Faro*, it was reviewed for the issuance of
19 a load line under the 1966 Load Line Convention.

20 In general, vessels are reviewed for compliance with the
21 Convention as of the date it was constructed. If it does happen
22 to straddle across a sister vessel under a previous Convention,
23 that previous Convention does not matter. It is solely done to
24 the applicable Convention that it's assigned to -- assigned under,
25 sorry.

1 Q. Thank you. Are you aware whether the *El Faro* does have the
2 same arrangements as the beginning of the class had?

3 A. I have not reviewed the drawings from the *Ponce de Leon*.

4 Q. In your view, would the starboard exhaust ventilation trunk
5 between frames 159 and 162 satisfy the plain language of
6 Regulation 19 in the '66 International Load Line Convention, or
7 would it be an equivalency of sorts?

8 A. This exhaust arrangement on page 2 would comply with the
9 written requirements of the Regulation 19 of 1966 Convention.
10 There would not be any equivalency requirements necessary.

11 Q. Can you explain a little further as to how the baffle
12 combination would help you comply?

13 A. The sill height -- would it be possible to put it up on the
14 screen so the families can see what we're talking about?

15 Q. Yes.

16 CDR VENTURELLA: Lieutenant Commander Yemma, could you put up
17 Exhibit 351, slide 2?

18 THE WITNESS: Okay. This 12-foot baffle plate is between
19 this chamber here, which goes down below the deck into the holds.
20 And then the louver opening in the side of the vessel's right
21 here. So the sill height would be this 12-foot baffle plate.

22 This chamber here, there's actually a door, correct me if I'm
23 wrong, right here, or a watertight opening -- or a tight opening
24 here that grants access into this space and allows the inspector
25 to look at the damper here. So this 39-inch coaming height allows

1 the inspector or the surveyor to be able to see the damper.

2 BY CDR VENTURELLA:

3 Q. Thank you. Can you confirm that it's your view on the plans
4 that the fire damper chamber would be weathertight all the way
5 around?

6 A. Based on the arrangement shown in slide 1 of this exhibit, it
7 would appear that that chamber would be weathertight.

8 Q. Thank you. Specific to this trunk, if the fire damper were
9 allowed to be used as both a fire damper and a weathertight
10 fitting, as it is here, would operational considerations such as
11 the need to continuously ventilate holds be taken into account?
12 Let me give you an example with that.

13 In 46 C.F.R. subchapter (i), which is equivalent to a cargo
14 vessel subchapter under regulations, 46 C.F.R. Part 92 has a
15 regulation for holds that are especially suitable to vehicles and
16 requires them to be under continuous positive pressure
17 ventilation. In fact, drawings from this class have, on occasion,
18 had specific instructions not to close the fire dampers under
19 normal operations for safety reasons.

20 Can you explain if that goes into the considerations at all,
21 those operational considerations?

22 A. I will. But just to go back to your question. You said
23 drawings have that indicated on them. Can you indicate what
24 drawings?

25 Q. Yes. We actually just received a drawing earlier today from

1 Mr. Peterson, I believe it was of the *El Yunque*, and it has notes
2 on the drawing about the need for remaining positive pressure
3 ventilation. It's not surprising, per se, because it's consistent
4 with the federal regulations for vehicle holds. That's what I'm
5 saying.

6 CAPT NEUBAUER: Mr. Gruber, would you like some time to look
7 that over before making a comment?

8 THE WITNESS: Not -- I can answer the question.

9 Our review was done to Load Line Convention independent of
10 the Coast Guard's review back in 1975. If there was a disconnect
11 between the two reviews, or lack of communication between the two
12 reviews, I can't speak to that. What we've done, based on
13 drawings that were submitted and based on what the surveyor
14 advised, was reviewed to Load Line Convention.

15 BY CDR VENTURELLA:

16 Q. From your -- I'd like to get your personal opinion on this if
17 possible. Do you see the conflict there, that you are battling
18 two different uses for the same fitting that could, in fact -- you
19 know, if the crew think they're not supposed to close these and
20 they're not marked as weathertight fittings, they're marked as
21 fire damper on all these pictures, why would they close them?

22 A. From a load line standpoint, they're marked on the LL-11-D,
23 which is on board the vessel to indicate what the openings are
24 that need to be kept weathertight. I understand that they're
25 marked as fire dampers. And I understand that the Coast Guard

1 reviewed them for the class to that different requirement. But
2 that had no -- you know, there was no indication of that when we
3 did load line.

4 Q. Thank you. Have you personally examined these fire dampers
5 during your two visits to *El Yunque*?

6 A. In my position as an observer, yes, I've seen some of the
7 dampers.

8 Q. Do you think any of the fire dampers you saw could be closed
9 weathertight?

10 A. As I'm not a surveyor and certified in the survey process
11 instructions for making these determinations, that would be
12 outside my area of expertise.

13 CAPT NEUBAUER: Commander Venturella, I recommend we address
14 that question with Mr. O'Donnell. Would that be more appropriate?

15 CDR VENTURELLA: Thank you, Captain. I'll do that.

16 BY CDR VENTURELLA:

17 Q. Please turn your attention to Exhibit 342. Exhibit 342 is an
18 ABS Circular of Instruction provided to surveyors on November
19 22nd, 1982. Please turn to page 7 of that exhibit.

20 On page 7, in the paragraph starting, "All ventilator
21 openings," it says, "It should be pointed out that a fire damper
22 alone generally does not suffice as a weathertight closing
23 appliance." This, of course, is in addition to something I
24 brought up with you previously, the Load Line Technical Manual,
25 which goes on to state -- I'll read that one. The Load Line

1 Technical Manual says, "Fire dampers of the normal type are not
2 considered as meeting the minimum requirement unless they are
3 strongly constructed, gasketed, and capable of being secured
4 weathertight."

5 The exhibit before you, Exhibit 342, is that the earliest
6 that you're aware of that ABS was informed in their survey
7 department or to the load line department that fire dampers should
8 not be used as a watertight fitting?

9 MR. WHITE: Just to clarify, I don't think that's what the
10 paragraph you read says.

11 CAPT NEUBAUER: I agree with that clarification. Can you
12 restate that to say what a fire damper would have to be?

13 CDR VENTURELLA: All right. I'll just go back and read it
14 again.

15 MR. WHITE: I think the word is weathertight. You see it's
16 bolded there, and then in the last portion of the paragraph, it
17 says weathertight closing appliance. It doesn't say weathertight
18 -- watertight.

19 CDR VENTURELLA: Yes, sir. I didn't mean to say watertight
20 if I said that. I'll restate the sentence again.

21 BY CDR VENTURELLA:

22 Q. "It should be pointed out that a fire damper alone generally
23 does not suffice as a weathertight closing appliance."

24 I do understand that in this particular document it says
25 generally, and so it has a little play. But as you know, in 1990,

1 at least, the Load Line Technical Manual no longer had such play.

2 So could you please explain like at what point ABS became
3 aware that the Coast Guard isn't comfortable with this?

4 A. Well, the document --

5 MR. WHITE: Just for the sake of clarity, whether the Coast
6 Guard is uncomfortable or not uncomfortable, I think that's
7 subject to -- that's not included in any of the paragraphs you
8 read. So, I mean, if you -- if you want to ask the witness a
9 question concerning what the paragraph says, or how he used it,
10 you know, please do.

11 CDR VENTURELLA: Yes, sir. I'll restate slightly.

12 BY CDR VENTURELLA:

13 Q. Can you please inform the Board when ABS became aware of this
14 guidance?

15 A. The guidance in the Load Line Technical Manual, which is
16 report USCG-M-1-90, was published by the Coast Guard in 1990. It
17 was written by an ABS engineer that was contracted to the Coast
18 Guard for this purpose, to compile a list of decisions that were
19 made since the implementation of the 1966 Convention in 1968 up to
20 that time. So that's what this is. There's no indication in that
21 section that you quoted as to when that came up. So I -- there's
22 no way to backtrack that information out.

23 As far as this, the Exhibit 342, this is a circular of
24 instructions to our surveyors for filling out the LL-11-D, record
25 of conditions of assignment. And, as you said, generally does not

1 make it a requirement; it just says in general. It leaves open
2 the opportunity to evaluate other issues before making a decision.

3 In this case, the surveyor made the decision which happened
4 to be 7 years prior to this instruction actually being published.
5 You'll note at the top right corner the date of the instruction is
6 27 January 1948, and this shows as revision in 22 November 1982.
7 Like everything else, we updated the instruction -- ABS updates
8 the instructions on a regular basis. Where this decision came
9 through can't be determined on the basis of reading this specific
10 exhibit.

11 Q. Thank you. Would you say it would be best to direct any
12 further questions to Mr. O'Donnell about the survey side?

13 A. From survey requirements, yes. But I don't know that -- I
14 don't know personally how you can go back 40 years to pick apart
15 the decision of the surveyors without speaking to that person or
16 fully understanding the details that that person was faced with at
17 that time.

18 And in my opinion, he made that decision at that point in
19 time and that's what was accepted, not only on this ship, but, as
20 you said, numerous other vessels in the class. On that basis, I
21 would stand by our surveyor's decision to declare those to be
22 weathertight.

23 Q. Thank you. Sir, can you comment on whether any major
24 conversion or other modifications could trigger the fire damper
25 being updated to include a gasket or perhaps having a separate

1 fitting for weathertight separate from the fire damper?

2 A. Are you referring to a modification to the ventilator itself
3 or to the ship in general?

4 Q. I'm looking for either. I guess I'm looking for -- are there
5 circumstances by which the damper would come up to date with the
6 current guidelines in the Load Line Technical Manual?

7 A. In accordance with the Load Line Convention and the
8 requirement laid there out, therein, we would not -- the
9 requirements are the same today as they were then in the
10 Convention. I don't know of any modification offhand that would
11 require us to update that to reflect what's in the Load Line --
12 the guidelines in the Load Line Technical Manual.

13 Q. Thank you.

14 CDR VENTURELLA: Could you put Exhibit 371 up, Lieutenant
15 Commander Yemma? Exhibit 371.

16 BY CDR VENTURELLA:

17 Q. Exhibit 371 is a photo that was referred to earlier. It's of
18 the other kind of exhaust ventilation trunk that is prevalent on
19 *El Faro*. I wanted to bring this photo up, in particular, to
20 discuss one element in the picture we didn't discuss before.

21 Do you see the rat holes that are in the bulkhead in front of
22 us that allowed drainage from the louver chamber?

23 A. Yes, and I would like to clarify that I did discuss these in
24 my earlier testimony this morning.

25 Q. Okay. Maybe I'm discussing a different aspect of it. Can

1 you discuss specifically why they would be there? Why are they
2 needed?

3 A. Okay. And I'm going to use the pointer to indicate this.
4 Air is coming up through the chamber from below decks here, over
5 the baffle into this chamber that goes from the baffle to this
6 bulkhead here. The air then goes out the louvers outside the
7 ship. There is the possibility of water from runoff of wave
8 action to actually enter the louvers here. These drain holes, or
9 rat holes, as you refer to them, allows that water to drain out of
10 that space so it's not contained in there.

11 Q. Thank you. Could you go back to Exhibit 351, page 2.

12 CDR VENTURELLA: And, Lieutenant Commander Yemma, could you
13 put that up, 351, page 2?

14 BY CDR VENTURELLA:

15 Q. Okay. I want to discuss this particular exhaust ventilation
16 trunk with regard to the one we just looked at. We just discussed
17 needing rat holes from the louvered chamber to free water from
18 that chamber. With this particular design, we now have enclosed
19 that chamber with a separate set of bulkheads. Do you see that?

20 A. Yes.

21 Q. Do you think that this design would require the same rat
22 holes from the louvered chamber? And how is that accommodated in
23 the plans?

24 A. This is the *El Yunque*. I don't think --

25 Q. For *El Yunque* and *El Faro*. But, yes, for *El Yunque*, too.

1 A. The drain holes are given in the other ventilators. I don't
2 know that there's a requirement for them. But as a practical
3 standpoint, they're there. I don't know that they would be
4 required in that space.

5 Q. But you agree the original design believed that there needed
6 to be rat holes for freeing water from that site, right?

7 A. Which site? This or the other one?

8 Q. Exhibit 371 had planned and designed rat holes. Do you
9 agree?

10 A. Yes. Those are showing on the drawing.

11 Q. Okay.

12 CDR VENTURELLA: For Exhibit 351, if we could go to slide 4,
13 and put that up on the screen.

14 BY CDR VENTURELLA:

15 Q. All right. What this is showing is this is aboard *El Yunque*,
16 and these are NTSB photos from Mr. Stolzenberg next to me. These
17 are actually photos of drain holes cut into the starboard exhaust
18 vent between frames 159 and 162. There's one in each corner
19 inboard, both before and aft on the sides of this.

20 CDR VENTURELLA: If we could go then to slide 5, and put that
21 up on the screen.

22 BY CDR VENTURELLA:

23 Q. Slide 5 shows that additional holes were cut into the chamber
24 from the louver. These are actually directly right under the
25 louver. And one side, the aft side, leads into the fire damper

1 chamber. That one's still open. The forward side would have gone
2 right into the hold without any kind of baffle in the way, and it
3 was recently closed. Can you see that?

4 A. I can see the pictures, but I can't -- I've got no
5 verification as to where they lead to since they're only showing
6 one side.

7 Q. I understand. But where I told you is where they're at.
8 They are -- they're coming into the 12-foot baffle and the
9 bulkhead on the other side from the 12-foot baffle, both
10 underneath the louver. And then, as well, as I showed you on the
11 previous slide, the fire damper chamber has holes going into them
12 fore and aft.

13 MR. WHITE: Could we take a 5-minute break to address some
14 concerns?

15 CAPT NEUBAUER: Yes.

16 The hearing will now recess, and reconvene at 12:10.

17 (Off the record at 11:58 a.m.)

18 (On the record at 12:12 p.m.)

19 CAPT NEUBAUER: The hearing is now back in session.

20 Before we start up with the questioning, Mr. Gruber, I want
21 to make a few clarifications for the record. And then, after
22 that, if you want to make any further clarifications, please do.

23 Based on the line of questioning from Commander Venturella,
24 we've asked you to do a comparison of holes that were seen in the
25 vent trunk and asked you if it was part of the plan, and then

1 showed you an *El Faro* plan. So at this time it would difficult to
2 make any assessment of whether those holes were or were not on the
3 plan without looking at the *El Yunque's* plan. So that comparison
4 can't be done at this time.

5 We also discussed the holes, and there was some confusion as
6 to what holes -- where those holes are that we were looking at.
7 There was a clarification made that those holes were not in any of
8 the baffle plates inside of the vent trunks. And we -- the Coast
9 Guard agrees with that assessment.

10 Based on your testimony with Commander Venturella, are there
11 any other clarifications you'd like to make over the last few
12 questions?

13 THE WITNESS: At this point in time I think we're okay going
14 forward.

15 CAPT NEUBAUER: Thank you.

16 Commander Venturella, can you continue, please.

17 CDR VENTURELLA: Yes. Thank you, captain.

18 BY CDR VENTURELLA:

19 Q. Mr. Gruber, we'll just speak generally about the holes
20 instead of referring to the plans now. These holes in these
21 pictures appear to be cut out for drainage purposes, would you
22 agree?

23 CAPT NEUBAUER: And then before we begin, why don't we orient
24 everyone to exactly where you're assessing that these -- or
25 claiming that these holes are, what hole, and where that would be

1 on the vessel, and which vessel.

2 CDR VENTURELLA: Yes, sir. I'll restart again.

3 If we could go to Exhibit 351, page 4. These are NTSB photos
4 aboard *El Yunque* of the starboard exhaust vent between frames 159
5 and 162. And the picture's taken, the one on the left is from
6 outside the trunk on the forward side. And the other picture, on
7 the right, is taken from inside the trunk looking towards the aft
8 side, and you can see another opening in that picture.

9 Then we're also referring to page 5 in that exhibit, which
10 shows inside the louver chamber aboard *El Yunque*, same exhaust
11 trunk, starboard exhaust vent, frames 159 to 162. And the
12 presence of holes cut out in the boundaries there.

13 CAPT NEUBAUER: And for the clarification for the public,
14 this frame is located in the aft section of hold 3. Is that
15 correct?

16 THE WITNESS: That is correct, sir.

17 MR. REID: Can I ask for clarification of that last point?
18 These pictures were not taken inside hold 3, correct?

19 CAPT NEUBAUER: That's correct. This vent trunk serves the
20 exhaust for the aft section of hold 3.

21 MR. REID: Thank you.

22 THE WITNESS: Could you just repeat the actual question,
23 please?

24 BY CDR VENTURELLA:

25 Q. Yes, sir. These holes appear to be cutouts for drainage

1 purposes. Would you agree with that assessment?

2 A. I can't tell if they were cut, or what the intention was. It
3 looks like there are plates that have been welded over at times to
4 those areas. Whether or not the intent -- the intention of the
5 person making the holes or if they weren't made by somebody, I
6 can't determine from the picture itself.

7 Q. Referring to page 4 of the exhibit again, those particular
8 cutouts are on the exterior portion, or in the fire damper chamber
9 outside the louver chamber. And I'd like your opinion on whether
10 these would bypass the 12-foot baffle if water were to enter from
11 the second deck through these openings.

12 A. These openings would lead to that inspection chamber where
13 there is a 39-inch sill leading to the baffle. That 39-inch sill
14 also exceeds the 35½-inch sill height requirement from Regulation
15 19 of the Load Line Convention. Therefore it would still be in
16 compliance with the Load Line Convention.

17 Q. Are you aware of these openings? And do you have any
18 knowledge if ABS was notified?

19 A. Well, I can see them, so I'm aware of them. But I don't know
20 whether or not ABS was made aware of them at an earlier date.

21 Q. Based on the appearance of these openings, can you make any
22 judgments from that, whether they look like they're shipyard cut
23 or whether they're rough cut, burned in type of openings that
24 would have been made by someone outside of the shipyard?

25 A. I would defer that to our surveyor that's going to be

1 testifying later. Thank you.

2 Q. Based on the prior showing of the other style of the exhaust
3 trunk that does have rat holes from the louver chamber that are
4 larger, do you believe that holes like this would end up being cut
5 on *El Faro*?

6 CAPT NEUBAUER: I think that would be difficult to speculate
7 on.

8 Do you feel comfortable answering that, sir?

9 THE WITNESS: No. Unless someone can show me that the holes
10 are actually on the *El Faro*, I would not speculate that they're
11 there.

12 CAPT NEUBAUER: And I wasn't sure if the question was -- are
13 you saying the holes that you believe are in addition to the
14 normal rat holes?

15 CDR VENTURELLA: Captain, what I'm saying is that aboard the
16 *El Yunque* there were holes cut to allow water to drain from the
17 louver chamber out to the second deck.

18 It seems to me that the other style of exhaust ventilation
19 trunk aboard *El Yunque* shows that drainage is required typically
20 from the louver chambers. And so this would be something that the
21 crew may need to do to allow water to drain out. So I thought it
22 would be something that an opinion could be formed on.

23 CAPT NEUBAUER: The question would be do you have an opinion
24 on whether the crew would need to add a rat hole potentially to
25 the louver chamber? Can you make an opinion on that, sir?

1 THE WITNESS: Not being on board and familiar with the
2 operations and the actions of the crew, I would not want to
3 speculate on what they may or may not do.

4 CDR VENTURELLA: Thank you. I'll move on.

5 BY CDR VENTURELLA:

6 Q. If you could turn your attention to Exhibit 356.

7 CDR DENNING: Before we move on on that, let me ask that
8 question in a way that -- the last question in a way that I think
9 it might clarify it.

10 You spoke about, earlier, water could come in through the
11 louver openings based on sea action and such. If a hole was not
12 cut, what would happen in that space? Would it fill up with water
13 eventually?

14 THE WITNESS: The picture shown right here on page 4 of
15 Exhibit 351, if the water came in the louvers, they would not fill
16 that space.

17 CDR DENNING: In Exhibit 371 -- or, I'm sorry. Let me find
18 the right exhibit.

19 Okay. Go back to page 2 of 351. I'll try to clarify later,
20 after we have a chance to talk.

21 CAPT NEUBAUER: At this time does the -- are you done,
22 Commander Venturella?

23 BY CDR VENTURELLA:

24 Q. If you can turn your attention to Exhibit 356.

25 CDR VENTURELLA: And if Lieutenant Commander Yemma could put

1 that up.

2 BY CDR VENTURELLA:

3 Q. Exhibit 356 is a scale drawing of the cross-section at frame
4 159, the location of the aft hold 3 exhaust ventilator. This is
5 the condition with hold 3 flooded to 20 percent and heeled to 15
6 degrees. Based on the VDR audio transcript and Coast Guard Marine
7 Safety Center analysis done by Dr. Stettler, this is a condition
8 which may have existed around 0700 on October 1st.

9 Please note the dashed line extending the static waterline
10 outside the ship onto the open second deck. Please note the
11 waterline's position with regard to the 39-inch plate protecting
12 the opening into 3 hold.

13 The VDR transcript includes comment by the *El Faro*'s chief
14 mate at 0725 that the water is chest deep on the second deck.

15 Sir, if the *El Faro* had these cutouts in the fire damper
16 chamber, much like the *El Yunque* does in these pictures that we've
17 seen just a minute ago, would it be likely that the 3 hold would
18 be continuously downflooding in the exhaust trunk's fire damper
19 chamber during this point in time pictured here?

20 A. To go back to the picture here, the 39-inch interior sill to
21 the inspection chamber is not shown on the drawing. What's shown
22 is the damper and where the damper sits. That's two different
23 heights within that space.

24 Number two, the dashed line going across is not parallel with
25 the outside waterline. So that would be an inaccurate indication

1 of what may or may not be submerged at that waterline.

2 Q. All right. Understood. For the purpose of analysis, though
3 -- the diagram may be slightly off, but if --

4 A. But if it's off, how can you do a meaningful analysis?

5 CAPT NEUBAUER: So, sir, your answer is from this graphic you
6 cannot do a meaningful or estimated analysis?

7 THE WITNESS: Correct.

8 CDR VENTURELLA: All right. Thank you.

9 No further questions.

10 CAPT NEUBAUER: Mr. Gruber, the NTSB has some questions.
11 Would you like to continue on or take a break for lunch?

12 THE WITNESS: Honestly, sir, I'm fine. But in deference to
13 the people behind me, I'd more like for them to be comfortable.

14 CAPT NEUBAUER: So you are available to come back after
15 lunch? I know you're flying out today.

16 THE WITNESS: That's debatable, depending on the airlines
17 right now.

18 CAPT NEUBAUER: The hearing will now recess and reconvene at
19 1:15.

20 (Whereupon, at 12:25 p.m., a lunch recess was taken.)
21
22
23
24
25
26

A F T E R N O O N S E S S I O N

(1:21 p.m.)

CAPT NEUBAUER: The hearing is now back in session.

And I'd like to pick up with questions by NTSB.

Mr. Stolzenberg.

MR. STOLZENBERG: Thank you, Captain.

BY MR. STOLZENBERG:

Q. Mr. Gruber, earlier you discussed damage stability and the vents for the exhaust and supply trunks on the *El Faro* and the *El Yunque*. I'd like to clarify some of that discussion.

What -- are there differences in the sill height requirements between the *El Yunque* and the *El Faro* for the exhaust and supply ventilation trunks?

A. Are you referring to the Load Line Convention or something else?

Q. The Load Line Convention.

A. No. For the Load Line Convention, both the *El Yunque* and the *El Faro* had to meet the same 1966 International Convention on Load Lines.

Q. And so with regard to the sill height requirements, I believe that -- I thought I heard 35.5 inches. With regard to sill height requirements, are they the exact same for each vessel for the exhaust trunks?

A. Yes. The load line requirements in Regulation 19 require a sill height of 35½ inches from the deck.

1 Q. Is there any effect to those sill heights due to the *El Faro*
2 meeting a damage stability standard and the *El Yunque* not meeting
3 a damage stability standard?

4 A. The load line requirements aren't changed by the damage
5 stability standards. However, the damage stability standards that
6 the *El Faro* was required to meet did have -- the downflooding
7 points were taken into effect, or into account in the
8 probabilistic damage requirements. So, therefore, that's why the
9 baffle plates on the *El Faro* were used as downflooding points for
10 damage stability. That does not affect -- it doesn't change the
11 load line requirements. They're two separate issues.

12 Q. Thank you. If we're to look at the LL-11-D for the *El*
13 *Yunque*, would we expect it to be the same as the LL-11-D for the
14 *El Faro*? And I guess I should state ahead of time, have you seen
15 the LL-11-D for the *El Yunque*?

16 A. At this point in time I have not actually pulled up the LL-
17 11-D for the *El Yunque* to look at it.

18 Q. Is that document available in the future, the LL-11-D for the
19 *El Yunque*?

20 A. It should be, yes.

21 Q. Thank you. I'll move on to another question.

22 In your experience, have the on-board ABS surveyors requested
23 assistance from your previous group -- I believe it's called, and
24 forgive me, the load line and stability technical group, regarding
25 ventilation or other holds and closures in the time you were in

1 that group?

2 A. When I ran the load line stability group, and it holds true
3 today, the surveyors have very open communication with the
4 engineers. If there are any questions, they will call or email.
5 Back in that day, they faxed us questions for clarification. So
6 that's part of our -- that's part of what we do.

7 Q. In your recollection, has there been communication regarding
8 the treatment of exhaust and supply vents on board *El Yunque* --
9 or, excuse me, *El Faro* during that time?

10 A. I do not recall any discussions that you refer to.

11 Q. Any discussions regarding the entire class of Ponce vessels
12 with treatment of exhaust and supply vents?

13 A. Not that I recall.

14 Q. Earlier we had Exhibit 351. I'd like to go to page 6 of that
15 exhibit, which is a screenshot, or a close-up shot of the damper,
16 the fire damper for the *El Faro* drawing. And what I'm looking for
17 -- I think you said earlier that the LL-11-D for the *El Faro* noted
18 a watertight supply damper? Am I correct? Did you mention the
19 LL-11-D noted a watertight damper?

20 A. I stated that. That's my recollection. Yes.

21 Q. So looking at this fire damper here, it appears -- it's
22 worded as a watertight, and they underlined the word "as required"
23 on the lower right, as required for complete watertight closure.

24 I'm looking for some insight as to why this damper is
25 required to be watertight per this drawing?

1 A. I don't have an answer for you that -- on that question.

2 Sorry.

3 Q. In other words, is -- from your perspective, as far as load
4 line treatment on *El Faro* and stability, there isn't a reason to
5 have a required watertight damper here?

6 A. Correct. The load line requirements only specify a
7 weathertight closure appliance. I do not know what the person who
8 drew this drawing is indicating by that comment.

9 Q. Thank you. Shifting gears a bit. Earlier in your -- there
10 was a discussion regarding the Intact Stability Code on Exhibit
11 334. And I believe, if I recollect correctly, you mentioned that,
12 even if built today, the *El Faro* might not have to meet the
13 righting lever criteria here under 2.2 on page -- it's page number
14 2, 2.2.3. Specifically, you mentioned, that it would not have to
15 meet that due to the -- as it says, if it's not practical,
16 alternative criteria based on equivalent level of safety may be
17 applied. Am I correct?

18 A. Yes, that is an option given the criteria.

19 Q. I believe you said that often wide beam, shallow draft
20 vessels don't need this and might be given an alternate criteria.
21 What alternate requirement or criteria would be used for a deep
22 draft 800-foot vessel like *El Faro*? What should -- what could be
23 used?

24 A. That is something we would handle on a case-by-case basis as
25 proposed by a naval architect or the owner. We would discuss it

1 with them, and then discuss it with the Coast Guard to see if they
2 would approve it. If the Coast Guard rejected it, then that would
3 answer your question.

4 Q. Do you know of a specific criteria that's been used in the
5 past for a large draft ship to -- what alternate criteria has been
6 used here in the past for a large, deep draft ship?

7 A. This criteria hasn't been applied to U.S. flag vessels at
8 this point, because we've been applying the Code of Federal
9 Regulations which don't require it.

10 This criteria is actually in 46 C.F.R. 170.73, which is
11 applicable -- only applicable to vessels under 100 meters in
12 length, which is why it's not applicable to the *El Faro*, the *El*
13 *Yunque*, or any of the other sister vessels.

14 Q. But I thought earlier we were discussing this criteria, that
15 the *El Faro* couldn't be expected -- may not meet the 2.2, and may
16 be able to do an alternative criteria. Have you ever seen -- I'll
17 be straight -- more straight with the question.

18 Have you ever seen any vessel, a deep draft larger vessel,
19 that can't meet the 2.23 criteria here?

20 A. No. I only offered that as a comment that it would -- had
21 not been investigated in the MSC report; that it was a possibility
22 of applying it to the *El Faro*. I did not comment whether or not
23 it would be successful or not.

24 Q. Okay. Thank you. One last question.

25 Earlier you mentioned that GM alone does not provide known

1 survivability in a seaway. But does a relative increase in GM for
2 a given set of conditions -- given weights at a given wind set
3 improve survivability in a seaway?

4 A. The GM, as determined, does not take into account the wave
5 action of the seaway, so it cannot be extrapolated to assume that
6 an increase in GM's going to make a vessel more survivable in a
7 certain sea condition.

8 Q. Thank you.

9 CAPT NEUBAUER: Mr. Kucharski.

10 MR. KUCHARSKI: Thank you, captain.

11 BY MR. KUCHARSKI:

12 Q. Good afternoon, Mr. Gruber.

13 A. Good afternoon, sir.

14 Q. And I don't think these questions will be highly technical,
15 so -- but I'd just like a few points of clarification before I get
16 into some of the meat of it.

17 You stated that you attend IMO. Is that correct?

18 A. Yes, sir.

19 Q. And, sir, what -- is there a special committee that you're on
20 or work group, MSC, or something?

21 A. I attend as an industry advisor to the U.S. delegation to
22 IMO. The head of the delegation in this case is Captain Ben
23 Hawkins, and the assistant being Mr. Sirkar, will use me wherever
24 they see fit, depending on what's being discussed in that specific
25 time frame.

1 I started going to talk about the Load Line Convention back
2 in the '90s, and worked extensively on the revisions to the Load
3 Line Convention. Since then I've been working variously on
4 different damage stability, intact stability working groups.

5 Q. And your role is as an advisor to the group, or you advise?

6 A. Yes, I take part on the delegation as an advisor. I'm not a
7 U.S. government employee so I can't be designated as that, as it's
8 been explained to me. So anybody outside the government is
9 labeled an industry advisor.

10 Q. Is there a, like a two-way flow of information, too? Where
11 you come back from those meetings, information that you carry
12 back, does it flow also -- affect any of the reviews or any of the
13 recommendations that you make?

14 A. The data that -- I attend what's -- what used to be known as
15 subdivision load line of fishing vessels subcommittee. That's
16 been changed now to the ship design and construction subcommittee.

17 The recommendations that are approved by that subcommittee go
18 up to the Maritime Safety Committee for final approval and
19 implementation. So once it's published is when it gets
20 implemented.

21 Q. Great. And you mentioned damage control. What is a DCM or
22 damage control manual or damage control plan? Can you enlighten
23 us on that?

24 A. Damage control plan is a plan that shows
25 watertight/weathertight openings, and any cross-flooding

1 arrangements or anything necessary for compliance to damage
2 stability requirements.

3 Q. And I'm correct in saying that the *El Faro* was not required
4 to have the damage control plan or damage control manual?

5 A. The damage control plan is a plan that's noted in the SOLAS
6 regulations; however, it's not noted as a plan that needs to be
7 approved. So the requirement for a damage control plan falls to
8 the OCMI to require it to be put on board the vessel. Since the
9 modifications were done prior to entry into ACP, that remained the
10 responsibility of OCMI.

11 Q. So if the vessel was a brand-new build today, as we speak,
12 keel was laid today, would it be -- would the requirement be to
13 have a damage control plan?

14 A. There would be a requirement for it to be on board, and there
15 are guidance notes for how it should be prepared. But it is,
16 again, still not an approved drawing.

17 Q. There were comments made over the last couple days about GM.
18 And I guess I had asked is it suitable alone, or was that the best
19 measure of a vessel's stability -- not survivability, but
20 stability, at other than small angles of heel. Do you have an
21 opinion on that?

22 A. I would agree with the testimony that's been given earlier
23 this week that GM is not a good indication of stability at large
24 angles of heel.

25 Q. Could you tell us what other factors you would look at, or

1 would be critical to the assessment of the vessel's overall
2 stability at large angles of heel?

3 A. The review that ABS does is for compliance with the stability
4 regulations. If the regulations don't include a parameter to
5 review the vessel at large angles of heel, there's nothing that we
6 can require to show compliance with that.

7 Q. Okay. What do you -- would it be a recommendation moving
8 forward to have anything -- some kind of a requirement or
9 something to better help the vessel's master in understanding that
10 when you say the GM -- I mean, I grew up on GM, GM, GM, you know,
11 and, you know, by the LoadMax -- CargoMax and testimony from many
12 people to look at GM, GM, GM, initial stability, if you will,
13 would it be a recommendation to include other things that would
14 help at larger angles of heel?

15 A. I think what's important, especially with the report that
16 Dr. Stettler presented, is that the current stability criteria
17 applicable today already includes more information that would be
18 helpful to the master. It includes a righting energy criteria
19 that looks at GZ curves beyond just the small angles of heel.

20 So to say is there anything more we could do, I think we've
21 already done it. It's in the Intact Stability Code and it's
22 applicable to the regulations. So -- and Dr. Stettler made that
23 pretty clear, and I would agree with him on that.

24 Q. Mr. Gruber, there was a conversation where I believe you said
25 that the *El Faro* was not a container ship. Is that correct?

1 A. I said it was not a purpose-built container ship.

2 Q. Okay. Take out the purpose-built. Was it considered a
3 container ship when it sailed on its last voyage?

4 A. As indicate on the load line -- I mean trim and stability
5 booklet, it's a Ro-Ro/Lift-on/Lift-off container ship.

6 Q. Okay. And that's on the face of the cover page. But on the
7 instructions it says Ro-Ro vessel; is that correct?

8 A. Yes. If you open up Exhibit 008 on page 1, it says Trim and
9 Stability Booklet, single screw roll-on/roll-off and lift-on/lift-
10 off steamship.

11 Q. Okay. So that would supersede page 8 at the very top? If
12 you look at it, it says, Instructions for Roll-on/Roll-off Vessel
13 Trim Stability; that's incorrect, then?

14 A. I agree page 8 could include -- could be clarified to include
15 both. But I wouldn't expect that a trained master would need to
16 look at the trim and stability booklet, page 8, to determine what
17 kind of ship he was on.

18 Q. So tell us, practically speaking, what is the difference,
19 then, as a container vessel, a roll-on/roll-off vessel? I agree
20 with what you say. A trained master would -- you wouldn't have to
21 explain that to a trained master. But practically speaking, for
22 that master of that vessel, does it make any difference whether
23 it's a Ro-Ro vessel, a Ro-Con, or a straight container ship? Does
24 it make a difference?

25 A. No, it does not -- the title on the page makes no difference.

1 It's the content of the booklet that makes -- that's what the
2 master's going to be using.

3 Q. Great. Thank you for that clarification.

4 Does it make a difference, then, as to stability criteria
5 whether it's a container ship, whether it's a roll-on/roll-off
6 vessel, whether it's a Ro-Con vessel, does it make any difference
7 then to the stability criteria?

8 A. At what point in time are you referring to?

9 Q. When the vessel sailed on its last voyage?

10 A. No. It was fully in compliance with all intact and damage
11 requirements applicable at the time the vessel sailed.

12 Q. Let me rephrase the question. So if it was a container ship
13 and it sailed out there -- a container ship, straight container
14 ship, would there be different stability criteria for that vessel
15 than the Ro-Con or the Con-Ro configuration?

16 A. No. Based on when the vessel was built, the GM weather
17 criteria was -- would have been applicable to a Ro-Con ship, to a
18 Ro-Con container ship, and a container ship. If it was modified
19 at the same time in 1993, the same stability requirements would
20 have been applicable to all three types of ships.

21 Q. Great. Thank you. That's what I was trying to get my arms
22 around.

23 And how about in 2005 or 2006 when they did the incline audit
24 -- Mr. White can help me out on the exact date of the incline, but
25 there was an incline done afterwards, 2006 I think Mr. White said

1 it was. When it was converted, I think the words he used. So
2 would it have been different then, if it was -- the classification
3 was a container ship or the Ro-Con?

4 A. Are you talking classification or are you talking about
5 stability requirements?

6 Q. Stability requirements.

7 A. No, the intact stability requirements and damage requirements
8 would not have changed in 2006.

9 Q. So I believe there was -- wasn't discussion today, but this
10 was not, a complete stability review was not required for the
11 vessel when it was converted in 2006; is that correct?

12 A. No, sir.

13 Q. So why was the vessel inclined?

14 A. The vessel was inclined to take into account the changes that
15 were being made to the vessel. Those included, but are not
16 limited to the addition of permanent ballast into the double-
17 bottom tanks, and the removal of the spar deck that was above the
18 main deck, and then any strengthening that was done to support the
19 containers on the main deck.

20 Q. And so who makes that call to say that an incline -- is that
21 just the owner says that they want to be extra safe, and say we
22 want to do an incline? Or is that, does class require incline
23 and --

24 A. The Coast Guard has guidance in the form of Marine Technical
25 Note 04-95. In essence, it looks at the aggregate weight change

1 that's been made to the vessel. An aggregate weight change -- and
2 I'll just quantify what that is. If you add 20 tons to a vessel
3 and remove 10 tons, the aggregate weight change is 30 tons. So as
4 a percentage of lightship, if the change is under 2 percent, a
5 detailed weight change is all that's necessary to approve the
6 lightship changes. If it's between 2 and 10 percent of the
7 lightship weight, you have to do a deadweight survey. And if it's
8 above 10 percent, you have to do an inclining experiment. And if
9 the LCG changes by more than a certain percent, it also ups the
10 requirement.

11 In this case, I don't believe there was any discussion as to
12 whether or not they could do a deadweight survey. It was
13 determined right from the beginning that they would do an
14 inclining experiment. And that was acceptable.

15 Q. Good. Thank you for that clarification. Very succinct.
16 Thank you.

17 So if I understand correctly from your earlier testimony,
18 just to be clear, the ABS role in stability -- review of stability
19 manuals and a stability review, unless you want to call it
20 something else, is to ensure that the regulations, per C.F.R., are
21 enforced?

22 A. That is correct.

23 Q. Out of curiosity, when a trim and stability book -- and you
24 were in charge of that whole group, the trim and stability. Is
25 that correct?

1 A. Yes. I ran the load line stability group from summer of 1992
2 until approximately the summer of 2009.

3 Q. During your tenure there, running that, did you ever get
4 stability manuals that you came in that you said, ah, I don't like
5 this, this should be changed? Did you ever see any of that? Or
6 did everything come in, basically you looked at it and they were
7 all --

8 A. I'm sorry. I cut you off again.

9 There were times when stability booklets or stability
10 calculations, for that matter, were submitted, reviewed. There
11 were requirements that it was felt that they needed to be
12 resubmitted and revised and resubmitted. And we discussed that
13 with the naval architect, and they would go ahead and revise
14 whatever had to be done and resubmit it.

15 Q. And could you for my benefit, and maybe benefit of everyone
16 here, could you discuss the interplay between the trim and
17 stability book and the loading instrument, which I believe
18 CargoMax is technically a loading instrument under the rules. Is
19 that correct?

20 A. It all depends on what the CargoMax program is approved for.
21 The CargoMax program is very -- has a multitude of options that
22 can be included at the request of the owner.

23 In the case of the *El Faro*, we reviewed it solely as a
24 stability instrument, as that was what the owners requested us to
25 do. There was no requirement for a loading instrument, which is

1 one that does longitudinal strength and that portion.

2 Q. Okay. And could you explain the interplay between the trim
3 and stability booklet and the stability instrument, then, that
4 CargoMax was?

5 A. Trim and stability booklet is required -- a written and
6 printed trim and stability booklet is required on virtually all
7 vessels. The Coast Guard has some options where they'll issue a
8 simplified stability letter if the operating restrictions are
9 simple enough to be included in a two- or three-page letter for
10 the master. We'll discuss just the trim and stability booklets.

11 A trim and stability program is designed to meet the -- has
12 to meet the same requirements, stability requirements as the trim
13 and stability booklet. It goes beyond what a trim and stability
14 booklet can approve just because of the intricacies of the
15 calculations.

16 Take a -- I explained before, a tank vessel, double-hulled
17 tanker. The damage stability requirements would require a two
18 compartment damage where you're damaging cargo holds and you have
19 fluid runoff from the cargo holds. That directly affects how the
20 outcome is.

21 The master can't do those calculations on a paper trim and
22 stability booklet. It's a long drawn-out calculation, and doing
23 it by hand, you know, used to take weeks. So you're not going to
24 expect a master to do that. The stability program, in that case,
25 is pre-programmed with all the necessary damage cases that have to

1 be looked at. So when the master inputs his loading condition, he
2 simply presses one button and it automatically goes through the
3 required damage stability review and tells the master is this
4 condition acceptable or is it unacceptable.

5 So in that case, it is actually approving a trim -- a loading
6 condition that is not necessarily approved in the trim and
7 stability booklet, nor does he have the capability of approving it
8 through the trim and stability booklet.

9 Q. So would you say that the stability program, and I'm looking
10 at a document here that calls it a loading program. I'm sorry.
11 It's an ABS-approved document, that's why I'm getting wrapped
12 around this loading program or stability program, what you say is
13 a stability program and not a loading program.

14 A. Yeah.

15 Q. Okay. And I'll hold this up; we'll look at this for a
16 second.

17 So when you say that the CargoMax or the stability instrument
18 calculates intermediate values over these -- what they call load
19 cases, I believe, that the trim and stability booklet has. So,
20 and you said you'd have to do a long calculation to find
21 something, find out what the stability was, but this allows you
22 quickly to do something in between, not what the actual load case
23 is?

24 A. In a trim and stability booklet for a tanker, each condition
25 is evaluated for damage stability. So to have a condition that's

1 not in the trim and stability booklet, it would -- prior to having
2 a stability program, the owner would have to submit it to either
3 Coast Guard or ABS for a single voyage approval, and get an
4 approval. And that would -- that takes time. The stability
5 program is approved to replace that review process.

6 Q. And the stability program -- is the stability program itself
7 based on the trim and stability booklet, the calculations,
8 essentially, of the trim and stability booklet?

9 A. It all depends on what type of program you're looking at.
10 There are -- currently there are three types of stability
11 programs. They're delineated in IACS UR L5.

12 A Type 1 stability program calculates the intact stability of
13 the loading condition for a vessel that's only required to meet an
14 intact criteria. A Type 2 program requires the program to
15 calculate the intact stability of the condition and accept the
16 damage based upon tabular maximum allowable KG values for the
17 damage criteria. A Type 3 program will actually calculate the
18 impact and damage stability requirements and let the owner know if
19 it's acceptable or not acceptable.

20 Q. Well, could you tell us which one the *El Faro*, when it
21 sailed, which type it was?

22 A. The *El Faro* had a Type 2 program.

23 Q. And did it not have a damage stability section in that
24 program?

25 A. I believe it had an option where the master could apply

1 certain damage scenarios to the vessel. That was not a regulatory
2 requirement, so it was outside the scope of ABS's review.

3 MR. KUCHARSKI: So please, Commander Yemma, Exhibit 262.

4 BY MR. KUCHARSKI:

5 Q. And, Mr. Gruber, when you -- as soon as you're ready to go,
6 and you got it open, I've got some questions for you on that.

7 And starting off at page 1.

8 A. Okay. All right.

9 Q. All right. Thank you. So this says wind heel direct
10 calculation required GM for the U.S. Coast Guard wind heel
11 criteria within the CargoMax loading program. I know you said it
12 should be a stability program, not loading program. Is that
13 correct?

14 A. Yes. If Herbert Engineering calls it CargoMax loading
15 program, that's fine.

16 Q. And this is wind heel criteria, okay, that is in here, or
17 what the title says. So it's calculating wind heel, using wind
18 heel in here to come out with some kind of figures for GM. Is
19 that correct?

20 A. The wind heel criteria noted here is the U.S. Coast Guard
21 weather criteria in 46 C.F.R. 170.170.

22 Q. Okay. I don't think you answered my question. Is this,
23 basically what this is, this whole manual is doing, the bottom
24 line is to calculate the GM at the end. Could we look at some
25 examples here? Would that help you?

1 A. Sorry. This is a document -- it's basically stability
2 calculations, a document supporting Herbert Engineering's work
3 with the CargoMax program to provide a direct calculation of GM in
4 accordance with the Coast Guard criteria. So this is not for the
5 master to use. This is just their verification that the program
6 meets the criteria. And this is then what ABS would go ahead and
7 do an independent check of during a stability review.

8 Q. So when you look at the trim and stability booklet, does it
9 mention anything about wind heel in the trim and stability
10 booklet?

11 A. I'd have to look into the book to see if it specifically says
12 that.

13 Q. I know we've discussed quite a bit -- I think you were here,
14 the weather criteria for the GM curves. Off the top of my head, I
15 think that was around page 8. But --

16 A. It's actually on page 16, and I can answer that. It does
17 refer to the weather criteria provided by the Coast Guard on those
18 curves itself.

19 Q. Great. Weather criteria; no mention of wind heel?

20 A. Correct.

21 Q. Okay. If you would, let's jump down in -- still that
22 exhibit, 262, and go to page 50 for me, please. And towards the
23 bottom of page 50, it has I believe what's called GM margin. I'm
24 not there yet either. Took me a while to scroll through here.

25 Do you see there where it has -- about the middle of the

1 page, says Stability Calculation, then it has the GMt margin 2.388
2 feet. Do you see that?

3 A. Yes, sir.

4 Q. Great. So we have a margin there. And I believe at the top
5 of that page it says departure trim and stability summary sample,
6 full load departure. That's --

7 A. Yes, sir.

8 MR. WHITE: For the sake of the record, just let us know
9 where you are.

10 MR. KUCHARSKI: Same page, counselor. The top of page 50, 5-
11 0, it says departure trim and stability summary sample, full load
12 departure. Do you see that?

13 MR. WHITE: Yes, I do. I thought you were on 58. That was
14 the last page I heard.

15 MR. KUCHARSKI: Okay. Well, mine says it's the top of page
16 50.

17 BY MR. KUCHARSKI:

18 Q. But, Mr. Gruber, you see it, correct?

19 A. Yes, sir.

20 Q. Okay. And then a little bit further down there, it says GM
21 margin 2.388 feet at full load departure?

22 A. Yes, sir.

23 Q. Okay. So the *El Faro* left Jacksonville, was that a full load
24 departure vessel that day? Would that be considered full load
25 departure?

1 A. I believe it was close to the load line draft.

2 Q. So was that -- is that -- when they say full load departure,
3 does that mean at the load line draft, as Mr. White explained
4 about the circle there and the line going through, the load line
5 draft, is that this magical mark where it's at?

6 A. In general, yes.

7 Q. Okay. Great. Now, let's go to Exhibit 57, page 1, please.
8 And the exhibit says Departure Trim and Stability Summary, JAX
9 Final. The date this was printed up, it looks like this was
10 printed in 08:23 12 February 2016.

11 A. Okay.

12 Q. Look down midway in the page there, it says stability
13 calculation GMt small margin again .462 feet. Okay.

14 So my simple question is if you got the auto wind heel, ABS
15 got the auto wind heel so those whole 59 pages of calculations,
16 whatever it is, if you saw a GM margin 2.3 something feet, and
17 then all of a sudden you saw .4 feet, .462 feet, would that cause
18 ABS any concern seeing that margin like that?

19 MR. EISENHOWER: Mr. Kucharski, just for the sake of the
20 record, I think this is Exhibit 57, you say?

21 MR. KUCHARSKI: Yes, sir.

22 MR. EISENHOWER: It looks like there might have been a more
23 recent version of this document in the exhibits, but maybe you
24 know that.

25 MR. KUCHARSKI: It's slightly different and that's maybe --

1 if you want to pull it up, I think the GM margin's still -- it'll
2 be very slight.

3 BY MR. KUCHARSKI:

4 Q. Okay, I can almost do this by memory, Exhibit 59, go to that
5 same position, page 1, GM margin, what does it say there?

6 A. The GM margin of 0.640 feet.

7 Q. Okay. Great. And the margin, again, the difference between
8 2.33 feet and .6 feet, would that cause the ABS any concern, full
9 load departure to have a GM margin of .4 -- .6 feet as opposed to
10 2.388 feet, as submitted under the auto wind heel calculations?

11 A. No. It really depends on the actual details of the
12 individual loading condition. What was shown in the direct
13 calculation required GM for Coast Guard wind heel, in the
14 supporting calculations is a sample condition. It's just used to
15 show how -- what this was done, was used to show how the program
16 complied with the criteria.

17 There were various conditions shown in there. There were
18 various conditions beyond that that were evaluated by ABS in our
19 approval process. This is a specific loading condition, so its GM
20 curve, which is what the program is to do, is to develop a
21 required GM based on that condition.

22 Q. So if the auto wind heel came in and it showed a 1/10th of a
23 foot of GM margin, that would be acceptable to ABS?

24 A. Yes. There is no statutory requirement for GM margin. The
25 requirement is under the GM required. Okay? There's no

1 requirement to go above and beyond the requirement.

2 Q. Great. Thank you. Thank you. That's what I wanted the
3 clarification of.

4 MR. KUCHARSKI: Please pull up, Commander Yemma, Exhibit 365
5 which is NVIC entitled -- I believe it's NVIC 3-89.

6 BY MR. KUCHARSKI:

7 Q. And, Mr. Gruber, just give me a yea, when you're ready to go.

8 A. Go ahead, sir.

9 Q. Are you familiar with this NVIC?

10 A. I've worked with it. I don't know it verbatim. But will be
11 happy to discuss anything you have to ask about it.

12 Q. I promise to be simple, the questions. So this NVIC 3-89,
13 would that have been the NVIC that ABS would have used as guidance
14 for the trim and stability booklet of the *El Faro*?

15 A. For ABS review of the prepared trim and stability booklet,
16 yes. It's one of the pieces of guidance.

17 Q. Okay. Great. Would you go down to Section 5.5 on page 19?
18 And it's entitled Master's Instructions. Let me know when you're
19 ready to go, please.

20 A. Okay.

21 Q. And the third paragraph under Master's Instructions says,
22 "The instructions are to be precise and unambiguous, and sources
23 of data for the document and other information should be clearly
24 defined." Do you see that?

25 MR. WHITE: I think the document says clearly identified.

1 MR. KUCHARSKI: Thank you. Correct.

2 BY MR. KUCHARSKI:

3 Q. Clearly identified.

4 A. Okay.

5 Q. And then dropping down to page 20, item .10, evaluation of
6 stability parameters, if appropriate, in relationship to wind
7 and/or rain forces.

8 A. Yes.

9 Q. And then item number 12, the correct operation of anti-
10 rolling devices and/or heeling tanks implications, other use.

11 A. Yes, sir.

12 Q. What are they talking about there? The correct operation of
13 anti-rolling -- what instructions would be given?

14 MR. WHITE: For item 12? Is that what your question --

15 MR. KUCHARSKI: Yes, it is.

16 THE WITNESS: My understanding of that, that would be flume
17 tanks that are sometimes assigned to vessels to control GM.

18 BY MR. KUCHARSKI:

19 Q. Do you know if the ramp tanks on there, on the *El Faro* were
20 originally flume tanks on there?

21 A. I do not know what their original configuration was.

22 Q. Do flume tanks have their own separate ballast system,
23 separate -- is that a requirement, do you know?

24 A. I don't -- I believe a flume tank has its own duct between
25 two tanks that the water will flow back and forth through. It'll

1 be independent of a piping system.

2 Q. And item number 10, evaluation of stability parameters, if
3 appropriate, in relation to the wind and/or wave forces. What
4 instruction is in the manual for that in the trim and stability
5 booklet?

6 A. There is no indication of any wind or wave forces given.
7 Compliance with the wind heel criteria or the Coast Guard weather
8 criteria is shown by way of the required GM curves.

9 Q. And we have an auto wind heel calculations in CargoMax. And
10 if you look at page 18 of 262, it has that same p value, small p,
11 which I believe is pressure. Is that correct?

12 A. Yes, that's defined in 46 C.F.R. 170.170.

13 Q. And you'd agree that the pressure was in pascals; is that
14 correct?

15 A. I agree.

16 Q. So there's no flow of this information, if you will, the auto
17 wind heel, all these calculations, into the trim and stability
18 book, so the master wouldn't be able to see any of this?

19 A. The NVIC 3-89 specifically states that the supporting
20 stability calculations are not to be included in the trim and
21 stability booklet. They're to be submitted as a separate
22 document.

23 Q. So then would the information regarding that, any advisories
24 to the master instructions, as opposed to the full calculations,
25 would that not be also included in the trim and stability booklet?

1 A. I have not seen such a guidance put it in any either ABS or
2 Coast Guard approved trim and stability booklet throughout my
3 tenure at ABS.

4 Q. Does that tenure include right now?

5 A. I am removed from the plan approval process right now. But I
6 do oversight -- I do oversee the work that's being done.

7 Q. So is your answer you haven't seen any wind -- I'll be very
8 careful on this -- wind speed information, wind heel information
9 in ABS approved trim and stability booklets?

10 A. I haven't -- I don't recall seeing it in any ABS approved
11 stability guidance or Coast Guard approved stability guidance.

12 Understand that we do, in the load line stability group, when
13 we do work on existing vessels, we quite often have to have the
14 previously approved stability guidance as part of our review. So
15 that does include documentation that was approved either by the
16 Coast Guard Marine Safety Center, or in some cases by the
17 different technical offices that existed before the Marine Safety
18 Center.

19 Q. And that also includes any trim and stability booklets that
20 were approved by other classification societies when they
21 converted vessels, say, and they gave -- were given class in the
22 U.S., and they became U.S. flagged, the Coast Guard also reviewed
23 those documents, too?

24 A. When a vessel changes flag from a -- from an outside flag to
25 the U.S., the Coast Guard requires vessels to be -- have stability

1 reviewed as if it was a new vessel on the date that it changed
2 flag. So it would have to meet the current requirements.

3 So a trim and stability booklet would be then, typically, a
4 new one would be developed to comply with the Coast Guard
5 requirements.

6 Q. So the bottom line is, then, ABS does review -- they would
7 review -- I guess I'm not clear. Would they not review, ABS, the
8 trim and stability calculations of another authority to see if
9 they were correct, just as if it were Herbert Engineering, or
10 anybody, any company that was submitting these to ABS for review?

11 A. From other administrations?

12 Q. Yeah, other administrations, classification societies.
13 That's my exact question.

14 A. There are processes that are set up under IACS for the
15 efficient transfer of vessels from class to class. Stability is
16 not -- typically not reevaluated between class societies unless
17 there's a change of flag. At that point, we have to get
18 concurrence of the new flag to accept the previous flag.

19 As far as another administration, if the administration
20 approves stability, then that's the required stability review
21 under Regulation 10, and it wouldn't necessitate a re-review by
22 ABS in order to issue a load line certificate.

23 Q. But the ABS would have to approve that, if it were a U.S.
24 flag, it would carry a stamp of approval from the ABS?

25 A. If it changed flag to a U.S. flag, it would be -- if ABS was

1 reviewing it, it would be reviewed on behalf of the U.S. Coast
2 Guard, yes.

3 Q. Thank you. That's exactly what -- that summarizes it very
4 well. Thank you.

5 MR. KUCHARSKI: Last one, please, is Exhibit 378.

6 BY MR. KUCHARSKI:

7 Q. And let me know when you're ready, Mr. Gruber.

8 A. Ready, sir.

9 Q. Okay. Thank you, sir. Have you see this NVIC before?

10 A. I was not familiar with it, but I have reviewed it since it's
11 been handed to us.

12 MR. WHITE: Is that the exhibit that was issued this morning?

13 MR. KUCHARSKI: Yes, sir.

14 CAPT NEUBAUER: Do the parties in interest have a copy of
15 that exhibit? Okay. Please proceed.

16 BY MR. KUCHARSKI:

17 Q. Is that a current NVIC, do you know? Has it been superseded?
18 Or is it a current NVIC, enforced, let me put it that way.

19 A. I would have to check the Coast Guard website to verify
20 whether or not it is the latest, or whether it's been cancelled.

21 Q. Okay. Well, we checked it this morning. It was as of this
22 morning. But if I can proceed, I'd like to ask you -- you said
23 you did review this, correct?

24 A. Yes, I did review it.

25 Q. And I hate to summarize, but, I mean, it says right in the

1 subject, it says "Shifting Weights or Counter Flooding During
2 Emergency Situations." Do you agree on that?

3 A. Yes, sir.

4 Q. Background, just to summarize, was a bulk carrier. It says
5 it sank 180 miles southwest of Johnston Island. Ingress of water,
6 failure of the hull, starboard list.

7 But down in Action, the Coast Guard's action here -- and I
8 can't read who it's from. It says Chief Office of Merchant Marine
9 Safety. "The stability information of all vessels should contain
10 an appropriate section emphasizing" -- it says section -- "the
11 importance of the master making every effort to determine the
12 cause of the vessel's list." Do you see that? And then --

13 A. Yes, sir.

14 Q. Before taking correction actions, says, to determine the list
15 for -- in instances where the master can definitely ascertain that
16 offset or flooding has occurred, that a cargo ship has not
17 incurred counter flooding or shifting weights -- and let me stop
18 there.

19 Shifting weights, would moving ballasts from one side to the
20 other be shifting weights?

21 A. That's one example, yes.

22 Q. Then it goes on to say, "To bring the vessel to the upright
23 position may be the correct action. In other instances, such
24 measures may be detrimental to the survival of the vessel."

25 Have you reviewed the VDR transcript at all?

1 A. Yes, sir.

2 Q. And realize the vessel went from initially a starboard list
3 and then it went to a port list. And there was talk about,
4 constant talk about transferring the ballast in the ramp tanks,
5 moving that over?

6 A. Yes, sir.

7 Q. So as we sit here today, was there -- is there anything in
8 the trim and stability booklet which mentions this, you know, this
9 action -- stability information that the Coast Guard recommended
10 back in 1977?

11 A. I've seen in a lot of trim and stability booklets a caution
12 note to the master to determine the cause of any list before
13 taking any corrective action. And that's -- normally that's been
14 the extent of any guidance to any of the masters. Unfortunately,
15 that is not in this book.

16 MR. KUCHARSKI: Thank you, Mr. Gruber.

17 No further question, Captain. Thank you.

18 CAPT NEUBAUER: Thank you.

19 And I want to confirm for the record that NVIC 4-77 is listed
20 on the Coast Guard's NVIC publication website, which means that it
21 is current.

22 THE WITNESS: Thank you, sir.

23 BY CAPT NEUBAUER:

24 Q. Mr. Gruber, I just have a few questions on one topic. I'd
25 like to ask those now.

1 Does a major conversion require the assignment of a new LL-
2 11-D?

3 A, Any time there are changes to the data or information on the
4 LL-11-D, the LL-11-D would be updated by the surveyor.

5 Q. I believe you testified earlier that the 1993 LL-11-D for the
6 *El Faro* could not be located. Is that correct?

7 A. Yes, sir.

8 Q. Who is responsible for maintaining the current version of
9 that form?

10 A. The current version of the form would be on board the vessel.

11 Q. Is that -- does ABS maintain a copy of that form to ensure
12 that the load line applicable hull openings are proper?

13 A. Our files do typically contain the LL-11-Ds for the vessel.
14 Unfortunately, right now, as I explained in the previous MBI, our
15 files are being sent out for scanning. And, unfortunately, for
16 the *El Faro*, the files -- the scan files are incomplete. There's
17 data missing that I can identify that should be there. And
18 there's nothing I can do to retrieve that data.

19 Q. Would it be safe to assume that the hull openings in way of
20 the addition to the *El Faro* would be the reason the LL-11-D was
21 updated in 1993?

22 A. Yes, sir.

23 CAPT NEUBAUER: At this time we would like to go to the
24 Parties in Interest for a final round of any follow-up questions.

25 TOTE?

1 MR. REID:

2 Q. Mr. Gruber, do you know the ownership history of the vessel
3 and when TOTE took ownership?

4 A. No, sir. I could not tell you that in detail.

5 MR. REID: Thank you.

6 CAPT NEUBAUER: Mrs. Davidson?

7 BY MR. BENNETT:

8 Q. Mr. Gruber, with respect to Exhibit 378, which dealt with the
9 sinking of 55 *Silver Dove*, that was a bulk ship, correct?

10 A. Yes, sir.

11 Q. Vastly different than the construction of the *El Faro*,
12 correct?

13 A. I would assume so, based upon the limited description of the
14 information in this matter, yes.

15 Q. In the NVIC it speaks about bulk cargo of raw sugar. And you
16 would agree with me that if water gets into a bulker that's
17 containing raw sugar, that you'd get a significant amount of free
18 surface effect, correct?

19 A. Yes, it would cause a slurry mixture in the hold that would
20 flow back and forth.

21 Q. And a typical bulker doesn't have decks like the *El Faro*,
22 correct?

23 A. That's correct.

24 Q. And if Captain Davidson ascertained that a scuttle had been
25 opened up and that there was water going down the scuttle, you

1 would expect him, for the safety of the chief mate, to go and
2 close that scuttle to shift the water to the other side, wouldn't
3 you?

4 A. Could you repeat that? It seemed like there were two
5 different issues that were combined.

6 Q. Sure. If there was water covering the open scuttle, would
7 you want to clear the water from the open scuttle so the scuttle
8 could be closed?

9 A. Yes. That's in line with the guidance in this of determining
10 the cause of the list before taking action.

11 Q. Thank you.

12 MR. BENNETT: No further questions.

13 CAPT NEUBAUER: ABS?

14 BY MR. WHITE:

15 Q. Mr. Gruber, there was some prior testimony on the CargoMax
16 computer program. You indicated that it was approved by ABS for
17 stability purposes. There was a capability in CargoMax for
18 lashing and strength calculations. I think your testimony's been
19 clear that those elements of the CargoMax program were not
20 approved by ABS. Is there any requirement or prohibition --
21 withdrawn.

22 Is there any prohibition for the vessel owner or the master
23 to use the program for the lashing and strength calculations?

24 A. I'm not aware of any prohibition.

25 Q. So to the extent that the master or owner used the CargoMax

1 for lashing or strength requirements, does that violate any
2 requirement of ABS?

3 A. No, it does not.

4 Q. Mention was made of the damage control plan. To the extent
5 that the damage control plan is to be required aboard a vessel,
6 who determines that?

7 A. That's determined by the OCMI at the time of construction or
8 modification.

9 Q. OCMI is the Coast Guard?

10 A. Yeah, Coast Guard officer in charge of marine inspection.

11 Q. And do you know whether a damage control plan was required
12 aboard *El Faro*?

13 A. I do not know that.

14 MR. WHITE: Nothing further.

15 CAPT NEUBAUER: Herbert Engineering.

16 MR. SCHILLING: Yes, sir, just a few quick -- excuse me --
17 few quick questions.

18 BY MR. SCHILLING:

19 Q. Mr. Gruber, just to follow up on the wind heel -- auto wind
20 heel calculation. I believe it's been said before, but it's been
21 verified that that auto wind heel calculation gives the same
22 results as the required GM curves in the trim and stability
23 booklet at the same GM profile. Is that correct?

24 A. Yes, the auto wind heel program, if I can expand on that,
25 uses the actual profile of the containers in that loading

1 condition to develop the required GM. So if the same profile was
2 used in the CargoMax program that was used to develop the curves
3 in the trim and stability booklet, it would come out with the same
4 exact number.

5 Q. And that required GM information based on the wind heel or
6 the weather criteria is 170.170 in the C.F.R.s. There's been
7 discussion about whether any guidance to the master on wind
8 velocity or things like that could be derived from that. Do you
9 recall those discussions?

10 A. Yes, sir.

11 Q. Is it possible to derive the limiting wind heel, or -- wind
12 force from those requirements that would be useful to the master?

13 A. I don't believe that a single number that derives from that
14 calculation would be that beneficial, because in the real world
15 the wind speed drops and increases at different times and produces
16 a different wind heel. The calculation of GM is for a specific
17 instant in time based on a static condition, not a dynamic
18 condition.

19 MR. SCHILLING: Thank you. That's all I had.

20 CAPT NEUBAUER: Mr. Kucharski.

21 BY MR. KUCHARSKI:

22 Q. Let me follow on that. You said in the real world,
23 Mr. Gruber. Have you looked at the hurricane -- the wind heels
24 from Hurricane Joaquin, were they sustained winds? Have you seen
25 that?

1 A. Yes, sir. Just understand that meteorology's not my area of
2 expertise before we go too far on that.

3 Q. Okay. Thank you for that clarification.

4 And you're not a shipmaster, so when Mr. Bennett asked about,
5 you know, changing the ship's course to allow the scuttle to be
6 closed by the mate, are you a ship handler?

7 A. No, sir. My third assistant engineer's license expired years
8 ago.

9 Q. Thank you. And have you ever faced a ship up into the wind,
10 at all, or boat up into the wind?

11 A. Only as a passenger.

12 MR. KUCHARSKI: No further questions. Thank you.

13 CAPT NEUBAUER: Mr. Stolzenberg.

14 BY MR. STOLZENBERG:

15 Q. Mr. Gruber, I had another question following Captain
16 Neubauer's along the LL-11-D. Where does that originate? Does it
17 originate with the trim and stability book, the first time it's --
18 or, excuse me -- the trim and stability group at ABS? Or is there
19 a blank form that a surveyor walks on board with and looks at
20 openings? Could you describe how that form starts?

21 A. The form originates in the 1988 protocol to Load Line
22 Convention. ABS has developed a form based on the guidance that's
23 in the protocol, and we call it the Form LL-11-D.

24 That -- at that time, yes, a blank form was carried on board
25 the vessel, and the surveyor would verify the openings, and

1 document all the openings, sizes, the sill heights, whatever's
2 necessary for the closing appliances, details about the
3 guardrails, frame ports to the guardrails -- all the documentation
4 that's required to be in there, and then submit that to the
5 technical office for review.

6 Q. And so when the surveyor goes on board with the template,
7 what other documentation do they take on board? Do they take a
8 load line, a preliminary load line assessment or general
9 arrangement drawing, or do they just walk around the vessel?

10 A. As I'm not a surveyor, I would just ask that this be directed
11 to Mr. Lou O'Donnell, who's much more experienced in this area
12 than I am.

13 Q. Understood. Regarding the continuation of the form, does the
14 trim and stability book -- or, excuse me. I'm sorry. I'm very
15 used to saying that term.

16 Does the trim and stability group get any updates to that
17 form if the surveyor needs to update it, in your experience?

18 A. Yes, the guidance is in place for the surveyors to submit any
19 changes to the form to the technical office for review.

20 Q. Does the technical office have a copy of the form? Or do
21 they subsequently make changes on another form or document?

22 Do they get a copy of the on-board form or do you handwrite
23 in the changes that the surveyor has communicated?

24 A. The surveyor will submit an updated form to us. And we make
25 sure a copy is left on board the vessel.

1 MR. STOLZENBERG: Thank you. That's all I had, Captain.

2 CAPT NEUBAUER: Mr. Gruber, are you certain that a new LL-11-
3 D was done in 1993?

4 THE WITNESS: Based on the information I've seen, and the
5 check sheets that I've looked at for the information, yes.

6 CAPT NEUBAUER: Are there any final questions for Mr. Gruber
7 at this time?

8 UNIDENTIFIED SPEAKER: No, sir.

9 MR. BENNETT: Yes, sir.

10 BY MR. BENNETT:

11 Q. Mr. Gruber, whether a master, a chief mate, a third assistant
12 engineer or, in your case, a passenger, if you see water going
13 through a scuttle and you need to close that hatch, you'd make
14 every effort to close that hatch, wouldn't you?

15 A. Yes, sir.

16 MR. BENNETT: Thank you very much. No further questions.

17 CAPT NEUBAUER: Are there any final questions at this time?

18 Mr. Gruber, thank you for that extended testimony. You are
19 now released as a witness in this Marine Board of Investigation.
20 Thank you for your testimony and cooperation. If I later
21 determine that this Board needs additional information from you, I
22 will contact you through your counsel. If you have any questions
23 about this investigation, you may contact the Marine Board
24 Recorder, Lieutenant Commander Damian Yemma.

25 (Witness excused.)

1 CAPT NEUBAUER: At this time, do any of the PIs have any
2 issues with the testimony that we just received?

3 MR. REID: No, sir.

4 MR. BENNETT: No, sir.

5 MR. WHITE: No, sir.

6 MR. SCHILLING: No, sir.

7 CAPT NEUBAUER: The hearing will now recess and reconvene at
8 2:40.

9 (Off the record at 2:31.)

10 (On the record at 2:45.)

11 CAPT NEUBAUER: The hearing is now back in session.

12 At this time, we're going to continue with testimony from
13 Captain Phil Anderson and Captain Edward Walker, Jr. with the
14 National Cargo Bureau.

15 Gentlemen, I just remind you from yesterday you're under
16 oath. And we will start the line of questioning with Commander
17 Venturella.

18 CDR VENTURELLA: Thank you, captain.

19 (Whereupon,

20 PHILIP ANDERSON and

21 EDWARD F. WALKER, JR.

22 were recalled as witnesses and, having been previously duly sworn,
23 were examined and testified as follows:)

24 EXAMINATION OF PHIL ANDERSON and EDWARD F. WALKER, JR.

25 CDR VENTURELLA: Good afternoon gentlemen. I have just a few

1 questions to follow up on your report and presentation. Thank you
2 for taking the time.

3 Please turn your attention to Exhibit 360, slide 12. This is
4 your presentation. Slide 12 is for sufficiency of securing
5 arrangements for containers. It specifically states "in initial
6 report identified several stacks overweight or not properly
7 lashed. Subsequently released a number of improperly lashed.
8 Securing in accordance with EL Class minimum lashing requirements
9 is acceptable. In that case, only one improperly lashed container
10 remained outstanding and the EL Class minimum lashing requirements
11 document could not be reconciled with the CargoMax program for
12 that condition."

13 With these statements in mind, gentlemen, please turn your
14 attention to Exhibit 40, page 5. Exhibit 40 is the cargo securing
15 manual for *El Faro*, and it was approved by ABS on January 20th,
16 2006.

17 On page 5, there's a paragraph that starts "In the event..."
18 Do you see that?

19 CAPT. ANDERSON: We see that.

20 CDR VENTURELLA: I'll just read off the paragraph.

21 "In the event the provisions of this cargo securing manual
22 are revised, or the cargo securing devices described herein are
23 significantly modified or altered, this manual shall be
24 resubmitted for review and approval by the American Bureau of
25 Shipping. The manual may be updated without re-approval to

1 reflect changes in the quantity of the portable cargo securing
2 devices, the addition of certificates for newly purchased
3 equipment, minor changes to stowage arrangements and other minor
4 revisions."

5 Was your initial report based on a review of the approved
6 cargo securing manual and the CargoMax software, which supplements
7 it?

8 CAPT. ANDERSON: Yes, it was.

9 CDR VENTURELLA: Was the document entitled, EL Class Minimum
10 Lashing Requirements, part of that cargo securing manual?

11 CAPT. ANDERSON: Not as far as we're aware.

12 CDR VENTURELLA: In your presentation, you stated that the
13 use of the EL Class minimum lashing requirements reduced the
14 number of improperly-lashed containers. You also stated that the
15 document could not be reconciled with CargoMax, which is intended
16 to supplement the cargo securing manual for container lashing.
17 Did the document introduced by TOTE significantly modify the cargo
18 securing manual and the cargo securing devices within?

19 CAPT. WALKER: I think we're back up originally when I
20 reviewed the lashing plan, NTSB provided us with the -- not
21 statements, but a diagram of the load plan and showed us how the
22 lashings were done.

23 For the most part, this is indicating the two outboard stacks
24 were lashed. And when I reviewed and manually entered the stow
25 plan into the CargoMax program, it showed several other stacks

1 that were not lashed in accordance with that plan that was
2 provided to us.

3 After the TOTE response, we looked at the EL minimum lashing
4 requirements, and they made the statement that this is how the
5 ship was supposed to be lashed. And based on that document, there
6 was still the one outstanding stack that we noted.

7 CDR VENTURELLA: So in your judgment, versus the statement we
8 read on page 5, should the cargo securing manual have been
9 revised?

10 CAPT. ANDERSON: It's difficult to say without knowing the
11 source of that document, because if the document -- the
12 information tagging completely with the CargoMax program, and it
13 worked, then there's nothing wrong with using it. But we found
14 this one instance where it didn't work, so it becomes questionable
15 as to where did it come from, who purveyed it, you know, what
16 source information was used. And then it does become a question
17 of is it intended to be used and take over everything else, in
18 which case it should have been -- should have gone for
19 resubmittal. Or is it purely supplementary, just making things
20 easier, in which case it may not have needed to, if you follow
21 what I'm saying there.

22 CDR VENTURELLA: Did you find that the CargoMax container
23 securing portion was in alignment with the cargo securing manual?

24 CAPT. WALKER: With regard to the lashing of the containers
25 on deck, the actual approved cargo securing manual was not very

1 clear, whatsoever, with regards to a common user. And I had a
2 very difficult time understanding what they were trying to tell me
3 in that section of the manual.

4 And so we basically just depended on the CargoMax program to
5 determine what the lashings were required to be based on the stow
6 plans provided to us.

7 CDR VENTURELLA: That leads right into my next question. In
8 the *El Faro's* cargo securing manual there are several sections
9 that it seems would be hard to use, as you put it. For instance,
10 there are several container stack configuration diagrams in
11 Appendix 13. But I've noted examples in cases where stacks are
12 loaded on the *El Faro* that don't match a specific example in this
13 Appendix.

14 In addition, the manual includes, in Annex 13, "Advanced
15 Calculation Method for Non-Standardized Cargo" in Appendix 17.
16 Yet it doesn't seem, when you discuss this Appendix with crew
17 members, that it's something that is within their normal
18 competency, something that they could easily do. Many of these
19 things are also not captured in CargoMax.

20 Is this a common program that you see as you review vessel's
21 cargo securing manuals? Or is this an abnormally difficult to
22 deal with cargo securing manual?

23 CAPT NEUBAUER: Sir, before you answer. I just want to -- on
24 the question, I think you said that it seems that the other
25 sections are difficult to understand. That -- I think the first

1 question would be, do you agree with that assessment?

2 CAPT. ANDERSON: We do agree with the assessment with respect
3 to the container stacks and stratification.

4 We have a bit of a hard time understanding exactly how they
5 were intended to supplement what was being provided. That being
6 the case, if we have a good idea of what we're trying to do and
7 we're having a hard time understanding it, we really don't think
8 that the ship's crew would be able to do that, which is why we
9 mentioned in the report there, that -- although it actually does
10 say in the cargo securing manual that container stowage is done
11 ashore. And I would say most of it has to be done ashore.
12 There's -- I don't think there's any way that it could be done on
13 board the ship properly within the time constraints involved on
14 turning around in voyage.

15 CAPT NEUBAUER: And then the second part of the question, is
16 this typical of what you see for deep-draft vessels that carry
17 container cargo and other types of Ro-Ro cargo?

18 CAPT. ANDERSON: I don't know that I would say it's typical.
19 Unfortunately, I can't say that it's uncommon.

20 CDR VENTURELLA: In your experience reviewing cargo securing
21 manuals, including the *El Faro*'s, it does seem to you that it can
22 be difficult to use. How does the National Cargo Bureau see the
23 use of the cargo securing manual? Are you starting to see the
24 need for software to be used to aid the crew, or can the cargo
25 securing manual, alone, be a standalone aid?

1 CAPT. ANDERSON: We normally don't see issues with it with
2 dedicated container carriers. It's normally -- the standard
3 lashing system is usually fairly clear. And it's generally laid
4 out with, you know, lashing configurations shown that are fairly
5 easy to follow.

6 The background calculations involved in anything different,
7 that's where a lot of the confusion comes in. But we generally
8 don't have to go that far.

9 On general cargo vessels, or even bulk carriers, where they
10 may occasionally carry break-off cargo, they're actually pretty
11 good, I would say, in terms of use, particularly when you come to,
12 you know, the heavy lift type vessels, they usually have excellent
13 cargo securing manuals, that they're using it all the time. Other
14 ones, some better, some worse. But they're normally pretty good.

15 And generally, getting back to Annex 13, how do you get to
16 that, you're looking at something that is not specifically
17 covered.

18 CDR VENTURELLA: With regard to the Annex 13 you just
19 mentioned as far as non-standardized cargoes, is there a way that
20 you've seen to make that more of a simplified calculation for a
21 mariner? Or is that something that is a common competency that
22 you've seen?

23 CAPT. ANDERSON: It's not a difficult calculation, but is it
24 something that needs to be practiced to become fluent with, as
25 with most things. That's one of the reasons that we actually

1 developed a training course, approved by U.S. Coast Guard, to
2 assist mariners or others in the understanding, interpretation of
3 it.

4 CDR VENTURELLA: Are you noticing any trends during your
5 visits to vessels to go towards the software and away from the
6 manual?

7 CAPT. WALKER: With regards to the use of software, I mean,
8 typically, our surveyors, and our company, will use individually
9 developed Excel programs to assist them. So they usually do
10 calculations fairly quick.

11 Probably the most difficult calculation is figuring out the
12 configuration of the ship as related to accelerations it
13 experiences with regard to length and speed. So those are kind of
14 variables, normally, normal calculations that include square roots
15 and a lengthy calculation, whereas the forces are fairly standard.
16 And the use of MSL and breaking strength for the lashings tend to
17 be same throughout.

18 So usually the variables are with the ship. And so what we
19 see is they tend to become more familiar with certain aspects of
20 it. So those -- with regards to using the Excel sheets that aid
21 them in the calculations, I actually used one of those when I was
22 going through and reviewing some of the aspects of the securing of
23 the Ro-Ro cargo.

24 CDR VENTURELLA: What about the use of something like
25 CargoMax instead of the use of the manual?

1 CAPT. WALKER: Well, as far as I know, CargoMax, or the
2 version that we saw with relation to *El Faro*, did not have the
3 Annex 13 calculations that we saw.

4 CDR VENTURELLA: Yes, sir. Not Annex 13. But with regard to
5 things like lashing margins and stack weights, things like that.

6 CAPT. WALKER: Well, with -- you know, we saw typical stack
7 weight diagram up here on the screen for the stack weights for the
8 containers. Generally the stack weights I found coincided with
9 what CargoMax said.

10 So the same discrepancies that I noted initially, because I
11 actually went through the load plan when we received it, manually,
12 and added up each of the stacks, and I compared it to this
13 document first, before I ever went into the CargoMax program. And
14 I looked at it and, you know, generally, it found the same
15 discrepancies I noted when I added up the stack weights.

16 CDR VENTURELLA: Okay. And this is my last question. Just
17 with regard to software for cargo securing, are you aware that
18 typically these are not reviewed by ABS or the Coast Guard? And
19 do you think they should be?

20 CAPT. ANDERSON: We are aware that it's not reviewed.

21 As to whether it should be, I don't know that that would
22 really make much difference, because it's still -- when we look at
23 it, we've still got to check what's gone into it, and as I said
24 before, they really are not difficult calculations.

25 So we would still be checking that. We would still

1 ultimately be going back to confirm that there's no difference
2 with the printed cargo securing manual at this point, unless we
3 were personally confident that there was no difference.

4 CDR VENTURELLA: Okay. No further questions.

5 CAPT NEUBAUER: Sir, I just have one question. In your
6 professional opinion, do you have an opinion of what a good,
7 conservative estimate would be for vertical center of gravity for
8 a container stored on a -- or carried on a vessel like the *El*
9 *Faro*?

10 CAPT. ANDERSON: I'm not sure what you mean. Do you mean the
11 contents of the container? Or --

12 CAPT NEUBAUER: Is there a standard, a conservative estimate
13 can be made for a container vessel if you were trying to estimate
14 a vertical center of gravity for multiple containers? Is there
15 anything that's used?

16 CAPT. WALKER: I would say that would be no more than half
17 the height, unless it was special cargo.

18 In the instance where it was extremely heavy and dense cargo,
19 obviously, the center of gravity would be much lower.

20 Typically, I believe there was a lot of reefer cargo on board
21 the vessel. And that tends to be stacked, in my experience,
22 fairly high with, inside the reefer container itself. So I would
23 -- I could positively say that in those cases, most likely, it
24 would be very close to the mid-height of the container.

25 CAPT NEUBAUER: So .5 may not be a conservative estimate, but

1 would be accurate, in some cases, for a reefer cargo?

2 CAPT. WALKER: I would say that in most cases, it'll be that
3 or less.

4 CAPT NEUBAUER: Thank you. At this time, I'd like to go to
5 the Parties in Interest for questions.

6 TOTE, do you have any questions?

7 MR. KING: Yes, Captain, I do. Thank you.

8 Good afternoon, gentlemen. My name's Jeff King.

9 I first wanted to acknowledge your testimony has put you in a
10 very difficult position. You've been asked to provide testimony
11 regarding a specific casualty, yet you haven't been provided all
12 the facts surrounding that casualty. So it kind of does put you
13 in a hard spot, and I recognize that. So I'll try to be cognizant
14 of that as I ask you my questions. Okay?

15 Where did you get your instructions to perform this work?
16 Where did they come from?

17 CAPT. ANDERSON: We were asked to do this by the National
18 Transportation Safety Board.

19 MR. KING: And who was your contact there?

20 CAPT. ANDERSON: Our contact at that time was Mike Kucharski.

21 MR. KING: Were you provided instructions in writing?

22 CAPT. ANDERSON: We were provided a written request as to
23 areas to be reviewed. And those were reproduced in my
24 presentation.

25 MR. KING: So was there any letter or email communication

1 making a request to you?

2 CAPT. ANDERSON: Yes, there was email communication.

3 MR. KING: Captain Neubauer, would it be possible to get that
4 marked as an exhibit?

5 CAPT NEUBAUER: Yes, sir.

6 Do you have the document? Or have you seen that?

7 MR. KING: I do not have it, have not seen it.

8 CAPT NEUBAUER: Okay. The Marine Board will make a request
9 to the NTSB to obtain that document.

10 But are you willing to proceed without it? That may take
11 some time.

12 MR. KING: Certainly. Certainly.

13 CAPT NEUBAUER: Okay. Thank you. Please continue.

14 MR. KING: Thank you.

15 Gentlemen, I'm going to direct questions to both of you, and
16 either one can feel free to answer. And, of course, if you both
17 have comments on a particular question, feel free.

18 You gentlemen were never on the *El Faro*, correct?

19 CAPT. ANDERSON: I was never on the *El Faro*. I was on the *El*
20 *Yunque* on a number of occasions, but not in any capacity dealing
21 with cargo security.

22 MR. KING: In what capacity, and when was that?

23 CAPT. ANDERSON: This would have been probably in the late
24 '90s or around 2000, the last time, testing the cargo elevators, I
25 believe.

1 MR. KING: Despite the fact that this investigation into the
2 loss of the *El Faro* has been underway for some 16 months now, you
3 were not provided, really, much of any of the information that's
4 been collected regarding the loss, have you?

5 CAPT. ANDERSON: I can't speak to that. Because at this
6 point, I still don't know exactly what information has been put
7 together.

8 MR. KING: Well, then let me go through a few of them, and
9 see if you've seen any of this information.

10 Did you, were you asked to review the VDR transcript?

11 CAPT. ANDERSON: No.

12 MR. KING: Were you asked to review any of the transcripts of
13 the testimony of dozens, many dozens of witnesses that have
14 testified?

15 CAPT. ANDERSON: Not specifically, no.

16 MR. KING: So I'll ask on some specific ones, did you review
17 the testimony of the PORTUS personnel who actually lashed the
18 vessel?

19 CAPT. ANDERSON: No.

20 MR. KING: Did you review the testimony of any of the
21 numerous mariners and others who testified to the following: how
22 they checked lashings before departure, how they tightened
23 lashings before departure, how they determined which lashings to
24 apply, how they requested corrections or additions to lashings,
25 how they did the daily rounds to check on the condition of the

1 lashings on the vessel, both Lo-Lo and Ro-Ro?

2 CAPT. ANDERSON: No.

3 MR. KING: Have you reviewed any of the testimony that there
4 had not been any evidence of lashing failures or cargo claims as a
5 result of a lashing failure on that vessel in the past?

6 CAPT. ANDERSON: No.

7 MR. KING: And you weren't asked to consider the weather and
8 sea conditions that the *El Faro* actually faced on the morning of
9 the 1st, were you?

10 CAPT. ANDERSON: Not directly, although we were advised that
11 it was hurricane situation.

12 MR. KING: And you weren't even provided that EL Class
13 minimum lashing requirements document when you prepared your
14 initial report, correct?

15 CAPT. ANDERSON: No, that's not correct. That document was
16 attached to, I believe, cargo securing manual for *El Yunque* and *El*
17 *Morro*. It was not part of cargo securing manual, but it was
18 provided to us along with that.

19 MR. KING: When you prepared your initial report, you did not
20 take that set of lashing requirements into account, even though
21 the testimony of the MBI had been that it was used. Is that
22 correct?

23 CAPT. ANDERSON: I can't comment on what the testimony had
24 been. But it is correct that we did not take that into account.

25 MR. KING: So you would agree that you essentially developed

1 your reports and came to your conclusions that you provided
2 yesterday and today in a factual vacuum, based on the assumptions
3 and some limited facts that were provided to you. Is that
4 correct?

5 CAPT. ANDERSON: Again, I would not comment on the existence
6 or not of any factual vacuum. I believe our report speaks for
7 itself in what we were reviewing, and what we did review.

8 MR. KING: Yesterday you mentioned a domino effect when
9 lashings fail. But let's be very clear on this. You have no
10 evidence, whatsoever, that there was, in fact, a domino effect
11 involving failure of lashings on the *El Faro*, correct?

12 CAPT. ANDERSON: That is correct.

13 MR. KING: And let's talk about some specific facts here.
14 The only evidence in the VDR of a trailer lashing failure is a
15 report at 04:36 on October 1 of a trailer leaning over on the
16 second deck in front of the house. Are you aware of that fact?

17 CAPT. ANDERSON: No, I was not.

18 MR. KING: And with respect to a trailer on second deck
19 that's leaning over at 04:36 in the morning, given the weather and
20 sea conditions they were encountering, you can't say whether that
21 leaning was caused by the wave strike, can you?

22 CAPT. ANDERSON: No, we cannot.

23 MR. KING: And would you agree the lashings are not designed
24 with a heavy wave strike in mind?

25 CAPT. ANDERSON: I'm not quite sure what you're implying by

1 that. Are you saying that if waves are coming over the side and
2 striking cargo that the lashings are not designed for that? I'm
3 not quite sure what you're saying.

4 MR. KING: Yeah, let me rephrase that.

5 A lashing can be perfectly satisfactory, that is it meets
6 all requirements, and yet it might still fail when confronted with
7 a wave strike, correct?

8 CAPT. ANDERSON: Any lashing can fail for a multitude of
9 reasons. That may be one. In the cargo securing code, there are
10 factors taken into account in Annex 13, location of the cargo, and
11 one of those factors does include an allowance for sloshing.

12 MR. KING: If there were a cascading failure, or domino
13 effect, in your experience, on the second deck of the *El Faro*, you
14 would expect that to be reported by crew members, or anyone who
15 observed it, and pick it up on the bridge recording, wouldn't you?

16 CAPT. ANDERSON: I can't speak to that.

17 MR. KING: Were you informed that no such discussions exist
18 on the VDR recording, and that the sole mention of the trailer
19 lashing issue is that one leaning trailer?

20 CAPT. ANDERSON: No, I was not.

21 MR. KING: And one trailer leaning over, that is not a domino
22 effect, is it?

23 CAPT. ANDERSON: At an initial stage, if that was the
24 situation, then I would say no.

25 MR. KING: Now, when a vessel such as the *El Faro* sinks, you

1 would expect extensive lashing failures as the vessel is going
2 down, correct?

3 CAPT. ANDERSON: I can't speak to that.

4 MR. KING: Yesterday, you provided some testimony. I'm going
5 to quote it for you, verbatim: "Depending upon circumstances,
6 cargo shift, if it occurred, may have contributed towards the
7 incident, or it may have occurred as a result of the incident.
8 And we do not make that determination."

9 So based on that statement you made yesterday, two questions
10 for you. First, you cannot say if a cargo shift actually
11 occurred, correct?

12 CAPT. ANDERSON: That is correct.

13 MR. KING: And second, if a cargo shift, in fact, occurred,
14 you can't say whether it contributed towards the incident or was a
15 result of the incident, correct?

16 CAPT. ANDERSON: That is correct.

17 MR. KING: Let's talk about the cargo securing manual for a
18 moment. The *El Faro* was operating under an approved cargo
19 securing manual, correct?

20 CAPT. ANDERSON: I'm sorry. Could you repeat that, please?

21 MR. KING: Sure. The *El Faro* was operating under an approved
22 cargo securing manual. Is that correct?

23 CAPT. ANDERSON: I would say no, that is not correct.

24 MR. KING: And you base that upon the comments you had
25 yesterday regarding what you determined to be, in sum, inadequate

1 securing points?

2 CAPT. ANDERSON: No, I base that on my comments that cargo
3 was not secured in accordance with Annex 13, whereas the cargo
4 securing manual requires that all cargo be secured in accordance
5 with Annex 13. So if that was not followed, then the vessel was
6 not operating under an approved cargo securing manual.

7 MR. KING: Okay. In a minute we'll get to your Annex 13
8 calculations. But let me just start with this. Was the cargo
9 securing manual an approved manual?

10 CAPT. ANDERSON: Yes.

11 MR. KING: And yesterday, I believe, in your presentation,
12 page 11, your comment was that any concerns you had with the cargo
13 securing manual were, quote, "insignificant," closed quote. Is
14 that correct?

15 CAPT. ANDERSON: What that was referring to was that any
16 concern we had with respect to the cargo securing manual and the
17 guidelines for preparation of the cargo securing manual, any
18 differences in there we considered inconsequential.

19 MR. KING: And as a result of that, you determined that they
20 were, quote, "unlikely to have contributed to the incident."
21 Correct?

22 CAPT. ANDERSON: Any differences being inconsequential would
23 be unlikely to contribute to the incident. And I think we said in
24 there that in our opinion, if cargo had been properly secured in
25 accordance with the cargo securing manual, we would have

1 considered it properly secured.

2 MR. KING: You did not see how the vessel was actually
3 secured on its final departure from Jacksonville, did you?

4 CAPT. ANDERSON: No, I did not.

5 MR. KING: So, in fact, you cannot say definitively that it
6 was not secured in accordance with the cargo securing manual,
7 correct?

8 CAPT. ANDERSON: On a factual basis, again, we're only going
9 with information provided to us. But information in the stowage
10 plan indicated, for instance, that some of the container stacks
11 were overweight. Whether marginally or not, any overweight does
12 not comply with the cargo securing manual. So in that respect, we
13 would say it's -- you know, what we were provided with certainly
14 indicated the cargo was not secured in accordance with cargo
15 securing manual.

16 MR. KING: So your only basis right now to say, as a matter
17 of fact, that the vessel did not follow the cargo securing manual
18 is a stack overweight issue. Is that correct?

19 CAPT. ANDERSON: In a definitive sense, yes. Although we
20 believe that is also indicated by the fact that there were no
21 Annex 13 calculations done.

22 MR. KING: In your reports, you've been very careful to point
23 out, as you must, that the calculations that are made, the Annex
24 13 calculations, contain a lot of variables, a lot of assumptions,
25 and it's very hard to make a perfectly accurate and complete

1 calculation determination. Would you agree with that?

2 CAPT. ANDERSON: I would.

3 MR. KING: Yet with those limitations and difficulties in
4 making the calculations, you stated some opinions yesterday
5 regarding likely lashing failures, correct?

6 CAPT. ANDERSON: That is correct.

7 MR. KING: All right. Some of the assumptions that go into
8 these calculations, any one of which could be changed and come out
9 with a different answer, they include cargo position, and by that,
10 the center of gravity is what we're talking about; cargo weight,
11 cargo stowage location on the vessel, information regarding the
12 specific securing points used, lash angles, material strength,
13 water properties, wind speed, sea state, ship motion, et cetera,
14 correct?

15 CAPT. ANDERSON: That is correct.

16 MR. KING: And a very important variable that greatly changes
17 the outcome of these calculations is the vessel's speed. Is that
18 accurate?

19 CAPT. ANDERSON: Greatly is a relative term. But it
20 certainly does affect it, yes.

21 MR. KING: You would agree that is a crucial variable in the
22 calculations that you made regarding the maximum weights that
23 could be stowed in any particular location on the ship, yes?

24 CAPT. ANDERSON: That is correct.

25 MR. KING: You assumed up to 24 knots. Were you told that

1 there was no evidence of the vessel achieving speeds of 21, 22, 23
2 or 24 knots on that voyage?

3 CAPT. ANDERSON: We were not told that. We addressed that
4 from the trim and stability booklet. Our initial report, I think
5 we factored it in at 24, following the response from TOTE. As we
6 are not intending to establish factual things like vessel speed
7 and so forth, what we then did was provide calculations covering a
8 range of variables and range of speeds. These were included in
9 our supplemental report.

10 MR. KING: Yes, and I see that. We've got a nice range of,
11 theoretical range of 19 to 24½ knots, and all sorts of variables
12 assessed. And it's all -- that's all good. However, let's start
13 with -- let's stick with the facts, the actual facts here.

14 Were you given the noon report, the September 30, 2015 noon
15 report that reported the vessel had made 19.3 knots in the
16 preceding 24 hours?

17 CAPT. ANDERSON: No, we were not.

18 MR. KING: Were you given the AIS data that reveals that
19 speeds started to slow down as of 0100 on October 1?

20 CAPT. ANDERSON: No, we were not.

21 MR. KING: Were you told that the VDR confirms that at 02:15
22 on October 1, the speed was down to 16 knots, and continued to
23 drop thereafter?

24 CAPT. ANDERSON: No, we were not.

25 MR. KING: As of 02:15 on that morning, there was no evidence

1 of any lashing failures at that time. Are you aware of that?

2 CAPT. ANDERSON: No, I'm not.

3 MR. KING: So would you agree using a speed of 24 knots has
4 no relationship to the reality of that vessel on October 1?

5 CAPT. ANDERSON: I think this is outside the scope of what we
6 were doing. And we are not trying to establish a speed. If you
7 want to say that this was the speed or that was the speed, I have
8 no objection to that. I think our report speaks for itself in
9 terms of the table that we prepared to cover that range of speeds.

10 MR. KING: I can appreciate that. And I will tell you
11 reading all these reports brought me back to school. So it was a
12 great tutorial. But we're in an MBI to look at the actual and
13 surrounding loss on October 1. So wouldn't you agree that the
14 actual facts, as they existed that day, would be important to your
15 testimony?

16 CAPT. ANDERSON: I can't address that. All I can go by is
17 what we were asked to do. What we were asked to do is contained
18 in the report, and was contained in the presentation yesterday.
19 Whether that is the right thing, that would be pure conjecture.

20 MR. KING: And, thank you. As I started, I realize you've
21 been put in a tough place here. So that's why I mentioned that
22 early on.

23 Did anyone ask you to run your calculations at 16 knots or
24 slower to see what the results would be?

25 CAPT. ANDERSON: No, they did not.

1 MR. KING: If we stick with your calculations alone, there's
2 a wide range of maximum weights that would be permitted in a given
3 location, correct?

4 CAPT. ANDERSON: That is correct.

5 MR. KING: For example, if I look at just one of these tables
6 here, if the vessel's going 24 knots, this is your supplemental,
7 Exhibit 291, page 21, it's just one of the tables you prepared.
8 And this is when you were trying to determine at a given set of
9 assumptions what's the maximum weight of a trailer that could be
10 put in a location in hold 2 Alpha.

11 Do you remember those tables?

12 CAPT. WALKER: We do.

13 MR. KING: And just for the benefit of everyone who's
14 listening here, they don't need to see the table, but this table
15 starts at 24.5 knots, and it says in this particular set of
16 assumptions the maximum mass would be 55,000 and change, pounds
17 that is. But if the vessel slows down to 20 knots, the maximum
18 weight goes up to 71,000 and change. And if it slows down to 16
19 knots, it goes up to 76,000, nearly 77,000. Do you agree?

20 CAPT. WALKER: I agree.

21 MR. KING: Is it safe to say that if we kept going down in
22 speed, those numbers would keep going up considerably?

23 CAPT. WALKER: They would.

24 MR. KING: Back to stack weights, you said that was the one
25 factual point where you believed there was a violation or

1 nonconformity with the cargo securing manual. There were 148
2 stacks, container stacks on the *El Faro* on October 1, correct?

3 CAPT. WALKER: I'd have to review the notes on that. I mean,
4 I'll take your word for it.

5 MR. KING: Fair enough. I mean, that point's not that
6 crucial here.

7 Your initial report listed that there were eight stack weight
8 exceedances. You later determined one was an error, and then you
9 focused on seven exceedances. Would you agree that the maximum
10 exceedance was 0.7 long tons?

11 CAPT. WALKER: Can I just review my report? Thank you.

12 MR. KING: Absolutely. Take your time.

13 CAPT NEUBAUER: We've been going for over an hour. Would
14 this be -- would you like to take a break? Or would you like to
15 keep going?

16 CAPT. ANDERSON: Keep going.

17 CAPT. WALKER: No, I'm fine.

18 CAPT NEUBAUER: We'll keep going.

19 CAPT. WALKER: I concur. The maximum overweight was .7

20 MR. KING: Long ton?

21 CAPT. WALKER: That's .7 long tons.

22 MR. KING: And, for that particular stack, that was 1.3
23 percent of that stack's weight, and 0.19 percent of that total
24 bay's weight. Do you agree?

25 CAPT. WALKER: I would accept those numbers.

1 MR. KING: Another thing that you did not consider in your
2 initial report, or any of your reports, is the fact that on the *El*
3 *Faro* there are transverse deck beams. Do you know what those are?

4 CAPT. WALKER: I am aware of those, yes.

5 MR. KING: The concept behind stack weight limitations is you
6 don't want a lot of weight concentrated at one location on the
7 deck of the ship, otherwise you might distort or damage the
8 structure, correct?

9 CAPT. WALKER: I would agree with that assumption.

10 MR. KING: And one of the benefits of using transverse deck
11 beams is that it spreads the weight of a particular stack
12 transversely over a larger square area of the deck, correct?

13 CAPT. WALKER: I would agree with that.

14 MR. KING: I'd like you to assume, for example, that one
15 stack is one long ton over the limit, but right next to it on both
16 sides each stack is 5 tons underneath the limit. Would you agree
17 with me that combined, those two or three stacks are fine?

18 CAPT. WALKER: No, because I looked at it from the point of
19 view of a master, and the master doesn't have the ability to do
20 that.

21 MR. KING: So you didn't look at it from the view of the
22 people who were loading the ship, who, in fact, did have the
23 ability to do that, and in fact, did take that into consideration
24 when they would see a .7 long ton exceedance, did you?

25 CAPT. ANDERSON: When we reviewed it, we did it in accordance

1 with the cargo securing manual. The cargo securing manual clearly
2 states, in a couple of different places, maximum stack weight
3 shall not be exceeded. Doesn't say maximum stack weight can be
4 exceeded by 1 or 2 percent if it extends across the rest of it.

5 MR. KING: Let's go back to the facts again. You have no
6 evidence that any of those slightly overweight stacks failed in
7 any way, correct?

8 CAPT. WALKER: Correct.

9 MR. KING: In fact, were you even told that the first mention
10 of a Lo-Lo or container lashing failure was at 07:29 on the
11 morning the vessel went down, when the containers were reported to
12 be in the water? Were you told that?

13 CAPT. WALKER: No.

14 MR. KING: All right. So that's the containers of Lo-Lo.
15 Let's go to the Ro-Ro side now.

16 You agree with reports that if a trailer is stowed on the
17 button, you agree that is adequately secured?

18 CAPT. WALKER: If the other two lashings at the rear of the
19 container are properly installed, yes, I agree with that.

20 MR. KING: There were 118 trailers on board, 66 of which were
21 on the second deck. Does that sound right?

22 CAPT. WALKER: I have to check the numbers again to agree
23 with those numbers.

24 MR. KING: It's not important. We'll keep going here.

25 When you did your initial report, you were told that a

1 certain percentage, large percentage of the Ro-Ro unit were stowed
2 off button, and that's what you used in your first report,
3 correct?

4 CAPT. ANDERSON: That is correct.

5 MR. KING: Who told you to use that assumption?

6 CAPT. ANDERSON: That figure was provided to us. In terms of
7 being told to use that assumption, we weren't told to use it, as
8 such. It was put in there simply as an indication that in our
9 view a significant amount of the cargo was off button. So in that
10 respect, whether it was 60 percent, whether it was 50 percent,
11 it's a significant amount, which is all that we were trying to get
12 across.

13 MR. KING: I guess my question is who provided you that
14 information?

15 CAPT. ANDERSON: That was provided by NTSB.

16 MR. KING: Was that your contact, the same contact with NTSB?

17 CAPT. ANDERSON: That's correct.

18 MR. KING: In your supplemental report, based simply on us
19 pointing out some of the testimony at the MBI, you used a reduced
20 number, down to 43 percent, or a total of 28 trailers on the
21 second deck off button, correct?

22 CAPT. ANDERSON: No, that is not correct. What we did there,
23 and what -- if it didn't come out as intended in the supplemental
24 report, then perhaps this will explain it a little. One of the
25 comments that was made in response to our initial was that the 60

1 percent was subject to interpretation. And an alternative
2 interpretation was provided, so that section that talks about 43
3 percent, that is what it comes to using the alternative
4 interpretation that was provided to us. It is not taking that as
5 fact. It is there purely to communicate that whether we went with
6 the initial figure that was provided to us or whether we went with
7 the alternative that was provided to us, a significant amount of
8 second deck trailer cargo was off button.

9 MR. KING: And, in fact, in your presentation yesterday, you
10 used the word significant. You can't say how many trailers on
11 second deck were off button, can you?

12 CAPT. ANDERSON: No. We can't put a number on it.

13 MR. KING: Okay. Now let's get back to the facts in the
14 case. In fact, Captain Ray Thompson, who has extensive experience
15 sailing on Ponce Class vessels, in particular as chief mate and
16 master of the *El Faro*, who has loaded that vessel many, many, many
17 times, testified just earlier this week that he reviewed an actual
18 stow plan for the voyage at issue, and compared it to his
19 knowledge of the deck fittings and his sketches of the standard
20 deck fitting locations on that vessel, and determined that a total
21 of four trailers on the entire vessel were off button. Three of
22 them were on second deck, and only one was in hold 2-A. Were you
23 made aware of those facts?

24 CAPT. ANDERSON: No, we were not.

25 MR. KING: So, with the best evidence we have now, that three

1 trailers on second deck were off button out of 66, that would not
2 be a significant number, correct?

3 CAPT. ANDERSON: It would depend on locations and weights.

4 MR. KING: And that's where I was going next, so thanks.

5 One of them was in 2-A. Would you agree that 2-Alpha is an
6 important location, because accelerations forward are greater than
7 the accelerations midship, correct?

8 CAPT. ANDERSON: That is correct.

9 MR. KING: And just to close out where the other off-button
10 stows were, two of them were in 2-Delta, and one was in 3-Bravo.

11 So would you agree, out of those four, the one that's, you
12 know, most sensitive would be the one in hold 2-Alpha?

13 CAPT. ANDERSON: That should be correct.

14 MR. KING: That trailer was 69,000 pounds. By the charts you
15 prepared, that only went from 19 to 24½ -- for example, on the
16 first chart, on page 21 of Exhibit 291, 69,000 pounds is fine,
17 given an off-button stow, as long as the vessel is going slower
18 than 20. -- oh, we'll just say 5 or so. Would you agree?

19 CAPT. ANDERSON: No, because it depends on what lashings were
20 applied and how they were applied.

21 MR. KING: But I'm playing in your sandbox here, on your
22 chart. If those assumptions on this chart are accurate, 45
23 degree, .3 coefficient for tires, .1 coefficient for Roloc box, et
24 cetera, et cetera, that trailer is perfectly fine lashed that way
25 at all speeds under 20.5. Yes?

1 CAPT. ANDERSON: Again, if the lashings are properly applied
2 and lashing angles are correct.

3 MR. KING: And for that particular trailer, stowed, on hold
4 2-Alpha, on October 1, you don't know what the angles of the
5 lashings were and whether it met this standard, 45 degrees, or
6 not, do you?

7 CAPT. ANDERSON: That is correct.

8 MR. KING: And if we drop the speed even further, that's
9 going to give you much more leeway in lashing angle and all these
10 other assumptions that are in there, correct?

11 CAPT. ANDERSON: I'm not quite sure what you mean by dropping
12 the speed. The lashing should be done for the intended speed for
13 the voyage. So if you -- let's say that it started off at 20, or
14 whatever the case may be, and then went down to 16, then the 16
15 shouldn't be factoring into it.

16 MR. KING: Did you run calculations at 16 knots or slower for
17 a trailer in hold 2-Alpha weighing 69,000 pounds to determine
18 whether that would meet the requirements?

19 CAPT. ANDERSON: No, we did not.

20 MR. KING: Let's talk about cars and chains. With respect to
21 the pictures of the cars that we saw yesterday that were being
22 lashed using auto lashings and chains, you state in your report,
23 and I'm going to quote, you were "unable to comment on the
24 efficacy or the likelihood of failure." Do you agree with that?

25 CAPT. ANDERSON: Yes, we do.

1 MR. KING: So even though you were unable to comment on that,
2 you were asked quite a few questions about that topic yesterday,
3 weren't you?

4 CAPT. ANDERSON: Yes, we were.

5 MR. KING: And yesterday you said you never saw this type of
6 lashing configuration. Is that correct?

7 CAPT. ANDERSON: That is correct.

8 MR. KING: And just by way of example, are you aware that
9 Atlantic Container Line and Bahri, which is the national shipping
10 company of Saudi Arabia, they lash their cars that way on their
11 Ro-Ros?

12 CAPT. ANDERSON: I am not aware of that, and I have not seen
13 their cargo securing manual.

14 MR. KING: And just by way of clarification, that's a method
15 that they have used in the past. And you're not aware of that?

16 CAPT. ANDERSON: I am not aware of that. And, in fact, as I
17 said yesterday, if I could review the cargo securing manual, we
18 would have no problem accepting it. But if it was not in the
19 cargo securing manual, had we been there, we would not approve it.

20 MR. KING: You also testified yesterday that you had seen
21 cargo securing manuals for Ro-Ro vessels that specifically allowed
22 automobiles to be stowed with no lashing at all, correct?

23 CAPT. WALKER: That is correct.

24 MR. KING: And I believe you mentioned Matson was an example
25 there, they have a Ro-Ro service in the Pacific, docks in Hawaii,

1 are you aware that Pasha also has cargo securing manuals that also
2 allow for cars to be stowed with no lashings?

3 CAPT. WALKER: I've never been on board a Pasha vessel, and
4 so I can't attest to that.

5 MR. KING: You would agree that lashing cars with auto
6 lashings and chains provides more restraint than no if lashings
7 are used at all? Yes?

8 CAPT. WALKER: Yes.

9 MR. KING: When you're assessing a lashing configuration, do
10 you agree that you need to focus on the weakest link, because
11 that's the item that, at least in theory, would fail first?

12 CAPT. WALKER: Yes. That's correct.

13 MR. KING: And the overall lashing is only as strong as the
14 weakest link. So here, you had some data on the breaking strength
15 of a half-inch chain in your first report, and I believe you
16 listed the breaking strength at 32,200 pounds. Does that sound
17 right?

18 CAPT. WALKER: I believe that was straight out of the cargo
19 securing manual for the *El Faro*.

20 MR. KING: Did you also see that the auto lashings have a
21 breaking strength of 1,700 pounds?

22 CAPT. WALKER: That is correct.

23 MR. KING: It's pretty clear that 1,700, when compared to
24 32,200, would make the auto lashing the weak link?

25 CAPT. WALKER: I mean, in this situation, it depends on how

1 many cars were actually lashed to that chain. And, also, the
2 chain is not working in the direction of the other lashes. So, I
3 mean, it would require pretty detailed understanding. I mean, the
4 chain really isn't a fixed point in that situation.

5 MR. KING: I thought you said yesterday, or one of you
6 testified yesterday, that a chain can be a fixed securing point
7 depending on circumstances.

8 CAPT. ANDERSON: If the chain was secured in, I suppose,
9 adequate positions and referencing the cargo securing manual for
10 that purpose, then yes.

11 MR. KING: Regardless of whether these car lashings, the auto
12 lash, is tied to a D-ring on a deck or the chain, we would want to
13 focus on the weak link as being the likely first item to fail,
14 correct?

15 CAPT. ANDERSON: In terms of failure, that is correct.

16 MR. KING: Well, and that's what we're talking about here,
17 isn't it, you know, the loss of a vessel? You've been testifying
18 as to lashing failures. That's what we're here for, right?

19 CAPT. ANDERSON: I was -- our primary emphasis was review of
20 the cargo securing manual. The type of securing, the manner of
21 securing that you are referencing does not appear in the cargo
22 securing manual.

23 MR. KING: Let's talk about the few last points here. And,
24 again, I think you really have been put in a difficult position,
25 because you just didn't have access to a lot of the facts that

1 were actually in play. And that's probably why you said in your
2 initial report that you have no specific evidence that any
3 excessive lashing angles or inadequate securing points had been
4 used in this case, correct?

5 CAPT. ANDERSON: That is correct.

6 MR. KING: And for the same reason you also stated in your
7 report that precise breaking or failure points for lashings could
8 not be determined, correct?

9 CAPT. ANDERSON: That also is correct.

10 MR. KING: Thank you, gentlemen.

11 Captain, I have nothing further.

12 CAPT NEUBAUER: Mrs. Davidson?

13 MR. BENNETT: I have a few questions.

14 Captain Anderson, when was the last time you sailed in a
15 deep-draft oceangoing vessel as an officer?

16 CAPT. ANDERSON: That would have been 1993.

17 MR. BENNETT: And what type ship was that?

18 CAPT. ANDERSON: Sorry, in 1993, that was a bulk carrier, was
19 my last one.

20 MR. BENNETT: Have you ever sailed on a Ro-Ro ship?

21 CAPT. ANDERSON: Yes, I have.

22 MR. BENNETT: How long ago?

23 CAPT. ANDERSON: That was quite a long time ago. That would
24 have been back in the '80s, probably mid-'80s, was a car carrier
25 that I sailed on.

1 MR. BENNETT: Captain Walker, when was the last time you
2 sailed in a deep-draft oceangoing vessel as an officer?

3 CAPT. WALKER: 1994.

4 MR. BENNETT: I'm looking at your website, National Cargo
5 Bureau website, has, under services, five services. It says you
6 do grain vessel surveys. What percentage of your businesses is
7 that?

8 CAPT. WALKER: Fifty percent.

9 MR. BENNETT: Bulk cargo vessels, what's the percentage of
10 your business?

11 CAPT. WALKER: Outside grain vessels?

12 MR. BENNETT: Yes.

13 CAPT. WALKER: I would say about another 20 percent.

14 MR. BENNETT: Flag state inspections, what percentage of your
15 business is that?

16 CAPT. WALKER: Less than 5 percent.

17 MR. BENNETT: There's a section that says Container/Cargo
18 Inspections, which doesn't appear to include a vessel. Talks
19 about hazardous container, hazardous stowage, flat rack securing,
20 damage cargo service. What percent of your business is that?

21 CAPT. WALKER: Just for rough numbers, I mean, with regards
22 to outside the actual inspection of hazardous containers, I would
23 estimate it's somewhere around 15 percent are the actual container
24 vessels and other vessels such as Ro-Ro vessels or Ro-Con vessels
25 that we may board and issue.

1 MR. BENNETT: It says here -- again, I'm breaking down what
2 your website says, Container/Cargo Inspections. We'll just go
3 through that section. You also have a section about containers.
4 hazardous container/tank inspections, stowage and segregation of
5 hazardous cargo, container structural serviceability, flat rack
6 securing. It has nothing to do with vessels. What -- this is
7 before the cargo gets on vessel. What percentage of your business
8 is that?

9 CAPT. WALKER: I would say that -- I can't say the exact
10 percentage related to revenue or time spent. But what I can tell
11 you is last year we did about 30,000 inspections regarding
12 hazardous containers and about 8,000 inspections of oversized
13 cargo going on flat racks. And a very small number of
14 serviceability inspections for explosives.

15 MR. BENNETT: So you would agree with me that more than 80
16 percent, or 85 percent of your business has nothing to do with
17 inspecting ships like the *El Faro*?

18 CAPT. ANDERSON: I think you would need to clarify in more
19 depth what you mean by like the *El Faro* before we could really
20 answer that.

21 MR. BENNETT: I'm just adding up the numbers you gave me.
22 For example, a grain ship, that's not like the *El Faro*, correct?

23 CAPT. ANDERSON: This is what I'm asking you to clarify to
24 me. A grain ship is like the *El Faro* in a lot of respects, but in
25 other respects it is not. So this is what I'm asking that, if you

1 want us to answer that, you would have to be far more specific in
2 what you mean by like the *El Faro*.

3 MR. BENNETT: Well, why don't we talk about that, then, if we
4 want to tarry a little bit here. Do you need a grain certificate
5 of readiness for the *El Faro*?

6 CAPT. ANDERSON: Not if it's not going to load grain, no.

7 MR. BENNETT: Sir, more than 85 percent of the National Cargo
8 Bureau's business has nothing to do with inspecting ships like the
9 *El Faro*. True or false?

10 CAPT NEUBAUER: Sir, I think the witness said that he needs a
11 better description on what sort of vessels you're referring to.
12 Do you mean Ro-Con and Ro-Ro vessels?

13 MR. BENNETT: You're asking -- yes, let's do that.

14 CAPT. ANDERSON: Yes, I would agree with you.

15 MR. BENNETT: You have mentioned that you were on the *El*
16 *Yunque*. Can you explain to us what you were doing on the *El*
17 *Yunque*?

18 CAPT. ANDERSON: Yes. That was quite a few years ago when I
19 was doing far more surveying in the field. In that instance we
20 were testing and certifying the cargo elevators.

21 MR. BENNETT: Where are the cargo elevators located on the *El*
22 *Yunque*?

23 CAPT. ANDERSON: I don't recall precisely now. This is going
24 back a long time.

25 MR. BENNETT: Who was the master of the vessel at the time?

1 Do you recall?

2 CAPT. ANDERSON: No, I have no idea. This is going back, as
3 I say, into the '90s.

4 MR. BENNETT: Where was she located at the time?

5 CAPT. ANDERSON: Then it was Mobile, Alabama.

6 MR. BENNETT: How big were those cargo elevators?

7 CAPT. ANDERSON: I don't recall very many specifics of it.

8 MR. BENNETT: But you were sure it was the *El Yunque*?

9 CAPT. ANDERSON: That's correct.

10 MR. DAVIDSON: No further questions.

11 CAPT NEUBAUER: ABS.

12 BY MR. WHITE:

13 Q. Captain, with regard to the scope of your assignment, just to
14 be clear, you weren't asked by the NTSB to perform any dynamic
15 analysis of the facts of wind or sea on lashes on *El Faro*,
16 correct?

17 CAPT. ANDERSON: That is correct.

18 MR. WHITE: And have you ever been asked to do that before on
19 a Ro-Con, to determine a dynamic analysis in specific sea
20 conditions, the lashings on a Ro-Con?

21 CAPT. ANDERSON: No, I have not.

22 MR. WHITE: The cargo securing manual, I believe you said,
23 was properly approved by ABS, correct?

24 CAPT. ANDERSON: I cannot comment on the, how can we say, the
25 validity of all of the specific information contained in it.

1 However, it was approved by ABS. I saw nothing to indicate that
2 it was not proper. But, as I say, I cannot say for sure that it
3 was properly approved.

4 MR. WHITE: Do you know who prepared the cargo securing
5 manual for *El Faro*, what company?

6 CAPT. ANDERSON: It was prepared by Herbert Engineering.

7 MR. WHITE: And as far as the CargoMax computer program, did
8 you review the CargoMax computer program to compare the lashings
9 -- well, I guess the lashing assumptions in that program with the
10 cargo securing manual at all?

11 CAPT. WALKER: When I looked at the CargoMax program as far
12 as lashings, not for the containers, that provided the, you know,
13 requirements for each individual bay, and, but it was -- I wasn't
14 able to compare it directly to the cargo securing manual because
15 it was kind of separate item. And, really, the cargo securing
16 manual was only providing examples. And so in that particular
17 case, there was no example that coincided with the current loading
18 of the ship inside the cargo securing manual.

19 MR. WHITE: Okay. To the extent that any questions as far as
20 what lashings were, I guess lashing assumptions, relied upon by
21 the CargoMax program being contained in the cargo securing manual,
22 did you direct any question to Herbert Engineering?

23 CAPT. ANDERSON: I believe the cargo securing manual
24 specified that it was prepared in accordance with the ABS -- can't
25 remember the title of it, but container --

1 MR. WHITE: For fixed -- for the securing of fixed
2 containers?

3 CAPT. ANDERSON: Yeah, something -- it goes back to, I think,
4 1988, almost -- there's a section in the cargo securing manual
5 referencing it. We have no reason to believe that CargoMax
6 differed from that.

7 MR. WHITE: Well, did you ask anyone at Herbert Engineering
8 whether CargoMax was, in fact, different from any of the
9 assumptions in the cargo securing manual?

10 CAPT. ANDERSON: No, we did not.

11 MR. WHITE: And based on your experience, your collective
12 experience as licensed mariners, you know, typically the charge
13 and duty of the -- for cargo securing is given to what officer on
14 board the vessel?

15 CAPT. ANDERSON: It ultimately comes down to the
16 responsibility of the master. But it's usually overseen by the
17 chief officer.

18 MR. WHITE: And as far as licensing requirements, you know,
19 when you took the license for third mate, second mate, chief mate
20 and master, did this particular license requirements for each
21 grade of the license include different levels of calculations with
22 regard to cargo securing?

23 CAPT. ANDERSON: There may have been some, but in the
24 licensing, certainly, that I went through, mine completed in the
25 '90s. I'm not sure exactly what is contained in the STCW

1 requirements now. Specific calculations on securing for me, and
2 probably for the older generation, if you like, were minimum,
3 because this was well before the advent of the Code of Safe
4 Practice for Cargo Stowage and Securing, and generally there were
5 a number of different rules of thumb used by various, sometimes
6 various companies, other times by various administrations.

7 For instance, the standard that we used to use was three
8 times the weight of the cargo. But it's not a, as proven, if you
9 like, an approach as is taken now with the Code of Safe Practice
10 for Cargo Stowage and Securing.

11 So, specifically, I cannot talk to what STCW requires for
12 officers now. But in the past it was pretty minimal.

13 MR. WHITE: So sitting here today, based on your experience,
14 you're not sure whether the license requirements have gone past
15 those rules of thumb you mentioned?

16 CAPT. ANDERSON: The licensing requirements then didn't
17 really address those rules of thumb.

18 I'm fairly sure that they do address, to an extent --
19 you know, IMO recommendations such as the CSS Code. I do not know
20 to what extent.

21 MR. WHITE: Based on your experience when you sailed chief
22 mate, would you be expected to be familiar with the cargo securing
23 manual?

24 CAPT. ANDERSON: At that point there was no requirement for a
25 cargo securing manual.

1 MR. WHITE: Under the present requirements, would you expect
2 the chief mate to be familiar with the cargo securing manual?

3 CAPT. ANDERSON: I would expect the chief officer to have a
4 working knowledge of it, yes.

5 MR. WHITE: You mentioned hand calculations. To the extent
6 that Annex 13 in the cargo securing manual may call for hand
7 calculations, you're not suggesting that each time that the *El*
8 *Yunque* or the *El Faro* loaded cargo in the same position, whether,
9 you know, for trailers, for example, that they would have to do
10 by-hand calculations, providing that that position for that
11 particular cargo, those calculations had already been done and
12 been satisfied by the mate based on the cargo securing manual.

13 CAPT. ANDERSON: Yes, if the calculations had been done and
14 already were in existence and the parameters on which they were
15 based were not exceeded, then there should be no reason to be redo
16 them. Results should be the same.

17 MR. WHITE: Thank you Captain.

18 Captain Neubauer, I nothing further.

19 CAPT NEUBAUER: Herbert Engineering.

20 MR. SCHILLING: Yes, I do have a couple quick questions.

21 Good afternoon. I'd just like to clarify one of your
22 responses related to a question of Captain Neubauer about
23 container VCGs. And the question was what would be the normal
24 assumed vertical center of gravity for a filled container, or a
25 loaded container. And I believe the response was that you've seen

1 them, some containers, of your containers filled up to the top of
2 the container, in which case the VCG would be about 50 percent.

3 Is that correct?

4 CAPT. WALKER: That's correct.

5 MR. SCHILLING: And then in most other cases, if the
6 container's not filled up, the VCG would be less than 50 percent
7 of the container geometry. Is that correct?

8 CAPT. WALKER: That's correct.

9 MR. SCHILLING: So is it fair to say that the 50 percent
10 that's used for your stability calculations is a conservative
11 number?

12 CAPT. WALKER: I would agree with that.

13 MR. SCHILLING: And, therefore, using that conservative value
14 you would derive a VCG for your sailing condition for the ship
15 that was higher than probably it actually was due to the container
16 weights, and that your GM probably had a little bit extra margin
17 that you didn't --

18 CAPT. ANDERSON: It's quite possible. Whether you could look
19 at that in isolation, though, is kind of questionable. You're
20 also looking at the container weights, and assuming that they are
21 all accurate, then, yes, I would agree with you.

22 MR. SCHILLING: Are you aware of the standard assumption for
23 container VCGs other class societies apply?

24 CAPT. ANDERSON: No, I'm not aware of the specifics.

25 MR. SCHILLING: Would it surprise you if I said that other

1 clients, members use 40 percent as the standard for all -- for the
2 containers on the ship (indiscernible) gaps?

3 CAPT. ANDERSON: No, it would not surprise me.

4 MR. SCHILLING: Thanks. One of the questions involves your
5 testimony where you suggested, in one of your exhibits there was a
6 sketch -- I'll get, call up the appropriate exhibit. It's Exhibit
7 13, it's your summary from yesterday. I'm sorry, it's Exhibit
8 360, 3 6 0, it's page 13. And this is the one that shows a single
9 image from one of the CargoMax bays, Bay 17. It's a pretty high
10 stack, and then there's also, I think it's called EL Class minimum
11 lashing requirements. And there's a note here that says that
12 stack 08, which is a three-high stack, it's highlighted, required
13 to be single lashed according to CargoMax, and that this differs
14 from the EL Class minimum lashing requirements.

15 I believe you said this was the only example of a difference
16 between what CargoMax, and therefore CSM was saying, versus what
17 the EL Class minimum lashing requirements. Is that correct?

18 CAPT. WALKER: If the vessel was lashed in accordance with
19 the EL minimum lashing diagram, this would be the only existing
20 deficiency that would show up in the CargoMax program.

21 MR. SCHILLING: All right. And I noticed that the stack
22 that's lashed -- sorry -- that's highlighted, a three-high stack,
23 is adjacent to a two-high stack, which means there's one cell of
24 that three-high stack that's exposed to the weather, exposed to
25 wind. And that's the kind of thing that usually raises the loads

1 in the stack beyond the required lashings and (indiscernible).

2 For the EL Class minimum lashing requirements, there's
3 guidance there -- it's the second row of the sample stack loads --
4 that shows stacks that are adjacent to -- have stacks with one
5 cell exposed. And it says, two-high containers next to an open
6 cell located in the interior of a bay, they'll be treated as an
7 outer stack. And then they indicate those with the lashing on
8 them. And those sample stacks also said that they're going to be
9 two high or higher to be entered in that stack.

10 So does that seem to indicate that if we had a three-high
11 stack or a two-high stack with a single cell exposed, that you
12 would put a single lashing on it?

13 CAPT. WALKER: Can you --

14 CAPT. ANDERSON: We can't see the whole --

15 CAPT. WALKER: We can't see. Can you reduce the --

16 CAPT NEUBAUER: Can you zoom in on that?

17 CAPT. WALKER: Section on the right?

18 CAPT NEUBAUER: We're on Exhibit --

19 CAPT. WALKER: Or on the left. Sorry.

20 CAPT NEUBAUER: -- 360, page 13. Is that right?

21 CAPT. WALKER: I believe the left lower section.

22 CAPT NEUBAUER: Yeah, Mr. Schilling, can you specify where
23 you reading that?

24 MR. SCHILLING: Okay. On the left-hand side of several of
25 rows of sample stacks that are drawn in for the EL Class minimum

1 lash requirements. In the first row is all two-high stacks, or
2 two-high or higher stacks. And then there's another row of
3 containers if you will. Left-most one says one-high, and then
4 there's a two-high stack, and then there's a one-high stack, and
5 there's a one-high stack, and there's some two-high stacks, that
6 you can barely see were located.

7 And the text right above that says if there are two-high
8 containers next to an open cell located in an interior bay, they
9 will be treated as outer stacks, which means they're cross-lashed.
10 And that's what's shown in the sketch. And then in the sketch it
11 refers -- what's shown as two-high, but it also indicates that
12 that would be applicable to two-high and higher stacks, and three-
13 high stacks.

14 So it's defining, it's showing that there's wind exposure, I
15 mean, that there's one tier of containers that you would put a
16 cross-lash on.

17 And so the question is, if that is the case, and that's how
18 it's interpreted and used by TOTE, then is there a difference
19 between what that minimum lash requirement is showing and what
20 CargoMax is showing?

21 CAPT NEUBAUER: I recommend that -- we've been going for a
22 while. Can we recess and come back and discuss this question, and
23 give you some time to analyze that?

24 CAPT. WALKER: Sure.

25 CAPT NEUBAUER: The hearing will recess and reconvene at

1 4:20.

2 (Off the record at 4:09 p.m.)

3 (On the record at 4:26 p.m.)

4 CAPT NEUBAUER: The hearing is now back in session.

5 At this time, Mr. Fawcett has some questions.

6 I'm sorry. You were answering a question from --

7 Mr. Schilling, can you re-ask that question? Apologize.

8 MR. SCHILLING: No problem, sir.

9 This is in regard to the EL Class minimum lashing
10 requirements, and the interpretation of a three-high stack with a
11 single would be exposed, and if that would require a single cross-
12 lash or just --

13 CAPT. WALKER: I can see where -- what you're talking about,
14 exactly. However, the wording says if there are two-high
15 containers next to an open cell located in the interior of the bay
16 they will be treated as outer stacks. And that was what we were
17 talking about.

18 Initially, when I received this document, or applied this
19 document to the CargoMax, I kind of went through and checked
20 everything off, but I let the document drive me, what it was
21 telling me. And once I reviewed the CargoMax program, that other
22 cell, I had left written down as a twist lock, and it was still
23 showing as a deficiency. So that was my initial interpretation of
24 this particular document.

25 MR. SCHILLING: Okay. But you agree that the EL Class

1 minimum lashing requirements does seem to indicate that if there's
2 a single unexposed container, whether it's two high or three high,
3 with the sketch, that that would be a cross-lash?

4 CAPT. WALKER: If it's exposed, I can see your point. But
5 nowhere in the document does it say that -- any mention of -- it
6 says two or higher. But when it's opened, a completely open cell
7 to the left, I could see that, but not in this case, because all
8 the lower ones say one high.

9 If it's two high, nowhere does it say one high or two high
10 next to two or three high in the diagram.

11 MR. SCHILLING: Okay. I want to just follow up a little bit.
12 You mentioned that the sample stack configuration shown in the
13 cargo securing manual and just described a little bit, I think
14 there's couple pages or one page that shows different stack
15 configurations, different amounts of containers with different
16 stack weights and different amounts of wind exposure. And the
17 lashings that are typically applied to those would be required for
18 those based on the rules. You found it very confusing, hard to
19 read and that kind of thing, I understand.

20 Does it appear by looking at this document that maybe the
21 owner took it upon themselves to put together a summary guidance
22 based on cargo securing manual, and based on the calculations in
23 CargoMax to provide clear guidance to their stow plans and their
24 crews about how to secure the stacks and would be consistent with
25 the CSM was telling them to do, and then provided them guidance

1 that was catered more towards their CargoMax?

2 CAPT. ANDERSON: I think we touched on this earlier. If this
3 is a true representation calling out the same -- or showing the
4 same requirements that CargoMax would be, then we would consider
5 it essentially supplemental. There's nothing wrong with having a
6 cheat sheet or something along those lines.

7 We also see your point with respect to this representation
8 here. But it is ambiguous, so not readily able to get, you know,
9 to come to the conclusion that is valid in all situations.

10 MR. SCHILLING: As you say, if it did properly represent what
11 was in the cargo securing manual, in terms of the stack weights it
12 allowed and lash requirements that it required and was a
13 supplemental document, there would be real need to update the
14 cargo securing manual, essentially the fact that this was being
15 used. Is that correct?

16 CAPT. ANDERSON: That is correct, to -- as I said, it's,
17 would be along the lines of a cheat sheet. There's no need to
18 incorporate that anyway.

19 MR. SCHILLING: Okay. Thank you very much.

20 That's all.

21 CAPT NEUBAUER: Mr. Fawcett.

22 MR. FAWCETT: Good afternoon, gentlemen. Looking at the
23 approved cargo securing manual, which is Exhibit 40, page 15,
24 there's a section 5.3.2, inspection requirements for portable Ro-
25 Ro securing devices. And I'll just read some of that context.

1 "All portable cargo securing devices in use shall be inspected in
2 accordance with the following procedures. Lashing gear shall be
3 checked and inventoried at 2-month intervals. A lashing gear
4 inventory form, as provided at the end of this manual, shall be
5 prepared indicating count and condition of the fitting. Normal
6 scheduled maintenance of fittings, grease, et cetera, as
7 recommended by the manufacturer shall be accomplished at the time
8 of the inventory."

9 Continuing, "If cargo securing devices fail inspection, tag
10 and mark the item out of service. Segregate and place these
11 devices in a designated storage box or container for removal from
12 the ship to be repaired, maintained, or scrapped. Make an entry
13 on the lashing gear inventory form noting the lashing gear that is
14 in bad order and notify Sea Star Lines personnel regarding
15 disposition of the faulty securing devices."

16 Now, we've talked about lashing angle, we've talked about
17 placement on buttons, we've talked about the way a particular
18 piece of lashing equipment is made fast to an attachment point.

19 But what I'm asking you now, would your expectation be that a
20 company maintaining actual lashing devices, meaning the chains,
21 hooks, tensioners and so forth in such a condition that they
22 comply with the cargo securing manual?

23 CAPT. ANDERSON: Yes, that should be done.

24 MR. FAWCETT: If we walked the deck of the ship, how would I
25 be expected to know which devices have complied with the cargo

1 securing manual? Do they have a serial number of some kind of tag
2 indicating that I could identify that that device has been done,
3 inventoried, and the condition be inspected at the 2-month
4 intervals?

5 CAPT. ANDERSON: No, I don't believe that's the intent.
6 Essentially, when you are looking at the lashing gear, you're
7 looking for deformation, wastage, and damage to it. If you find
8 it, then that should be withdrawn from service.

9 MR. FAWCETT: So would the expectations be that the
10 dimensional properties of a critical hook, chain link of other
11 securing device would be available so that you could compare the
12 manufactured piece to the deformed piece so you could actually
13 know that it's deformed?

14 CAPT. ANDERSON: In practice, you're really not going to go
15 and measure the diameter to the millimeter or centimeter of a
16 hook. You're going to look at several of them. When you get
17 significant wastage, it does become obvious by comparison with
18 other ones that are, you know, newer, or undamaged, or whatever
19 the case may be. There are safety factors built in on the -- into
20 these, you know, strengths of these things. So for the
21 miscellaneous pieces such as the chains and the hooks and so
22 forth, I don't think the intent is for you to go and, as I say,
23 take physical measurements or test them as such. A visual
24 inspection is usually enough to show any significant shortcomings.

25 MR. FAWCETT: And with huggers and chains and fittings, does

1 that take a significant amount of time to take a look at those
2 actual lashing pieces to make sure they're suitable for use?

3 CAPT. ANDERSON: It can. A lot of it depends on how it's set
4 up. You know, the lashing equipment is usually stored in
5 dedicated locations. So it's not too huge a task to pull it all
6 out on a certain date, and in one location, lay it out, take a
7 look at it, pull out whatever doesn't look good, put the rest back
8 in.

9 But that, again, is only part of it. It's a continuous
10 process in that even if you miss something in that inspection, if
11 you're going to secure something and you see a piece is damaged,
12 you don't use it. You take it out of service.

13 MR. FAWCETT: Those individual pieces of lashing gear, when
14 they come with a certificate, when they're brand new, as soon as
15 you use a piece of that gear, does it degrade the information
16 provided on the certificate in terms of the working load, or the
17 safe working load, so when it's subjected to use, it degrades that
18 initial strength?

19 CAPT. ANDERSON: Not significantly, no. I mean, if, you
20 know, long service, you're getting wastage, then yes. But, again,
21 there are safety factors built into it. If there's not enough
22 wastage for you to be able to see and there's no damage that you
23 can see, it really should not be a concern.

24 MR. FAWCETT: And if you observed a particular tensioner or
25 something that had a stripped screw or something like that, would

1 that be required to be taken immediately out of service?

2 CAPT. ANDERSON: That is correct.

3 MR. FAWCETT: Thank you, gentlemen.

4 CAPT NEUBAUER: Matt Denning.

5 CDR DENNING: I have just a few quick questions.

6 Lieutenant Commander Yemma's going to put on your screen a
7 photo which is Exhibit 109, page 32. This particular photo was
8 taken on 1st of December 2015 on board the *El Yunque*. It shows a
9 vehicle, an automobile lashed, and just -- it's zoomed in on the
10 securing point. Do you see that on your screen?

11 CAPT. ANDERSON: We see it.

12 CDR DENNING: Could you describe what you see here and if, in
13 your opinion, it's in accordance with the cargo securing manual?

14 CAPT. ANDERSON: Okay. It looks as though the car lashing
15 has been secured around the spoke of, essentially, a hub cover for
16 the car. That would probably not be considered a valid securing
17 point.

18 CDR DENNING: And can you explain why that's not valid?

19 CAPT. ANDERSON: We have no strength assessment of that piece
20 that it's attached to. And any securing locations on the cargo
21 should be of equivalent strength of the lashing that it's being
22 attached to.

23 CDR DENNING: So what would be the more appropriate way to
24 secure a vehicle, a car?

25 CAPT. ANDERSON: For cars, it's generally quite

1 straightforward, as they have dedicated lashing points, usually
2 front and rear on the underside. I can't say for sure that that
3 is the case here. But if they exist, it would be more
4 appropriate.

5 CDR DENNING: Okay. Thank you.

6 Now I'd like to draw your attention to Exhibit 40, page 38.
7 Exhibit 40 is the approved cargo securing manual. We talked about
8 his particular paragraph with Captain Thompson, Captain Ray
9 Thompson the other day. Paragraph 4 on that page says "The
10 athwartship run or lead of the standard trailer lashing wire shall
11 be a minimum of 4 feet when lashed to a trailer or chassis. When
12 the lashing are led directly to strong securing points on the
13 cargo loaded on a flatbed, the angle between lashing and the deck
14 in athwartship direction shall be 45 degrees or less." Do you see
15 that?

16 CAPT. ANDERSON: Yes, we see that.

17 CDR DENNING: And then I'd like to compare that with Exhibit
18 354, which is standing orders for mates during cargo operations
19 signed by both chief mates on board the *El Faro* at the time it was
20 signed.

21 The very last sentence on page 1 of Exhibit 354 says
22 "Securing for All Trailers (minimum). All the Roloc boxes are to
23 be handled tight and on the button, and two chains on the after
24 end of the trailer, shortest lead possible, in a direction away
25 from the Roloc box."

1 So there it says shortest lead possible, whereas in the
2 approved cargo securing manual it says a minimum of 4 feet.

3 Does that guidance seem consistent? Does the guidance to the
4 mates, informal guidance in Exhibit 354, does that seem, is that
5 consistent with the cargo securing manual? Is it ambiguous? Or
6 is it contradictory or anywhere in between?

7 CAPT. ANDERSON: I would say in this case it's contradictory.

8 CDR DENNING: Okay. Thank you.

9 I don't have any further questions.

10 CAPT NEUBAUER: Mr. Stolzenberg.

11 MR. STOLZENBERG: Good afternoon, gentlemen.

12 I have a question regarding some of the underlying weather or
13 seas in the calculations.

14 It appears, if I look at Exhibit 290, which has some Appendix
15 3, Annex 13 calculations, that accelerations are a large component
16 of determining the maximum weight of the lashes. Is that correct?

17 CAPT. ANDERSON: That is correct.

18 MR. STOLZENBERG: When I look through the cargo securing
19 manual, some of the acceleration tables shown in the exhibit look
20 at -- that basic data is considered valid under the following
21 operational conditions. One of those is operations in
22 unrestricted areas during the whole year. I won't read the rest
23 of it.

24 But I'm just trying to understand is is there a given state
25 that this acceleration data comes from? And can we compare that

1 sea state to something that we might be able to generate or get
2 for the *El Faro*? What is this underlying sea state?

3 CAPT. ANDERSON: If I recall correctly, this is essentially
4 using the probabilistic approach. And from top of my head, I
5 believe you're looking at something like a 97 percent probability
6 that these forces will not be exceeded in a 25-day voyage over a
7 typical 20-year operating life of a vessel when using winter North
8 Atlantic significant wave information.

9 And I think it gave, off the top of my head -- this is
10 something that you probably need to confirm with a meteorologist,
11 I believe the significant wave height is something like the
12 average of the upper one-third of the waves for a given period.

13 So, to our mind, in this instance, the hurricane-force winds
14 probably outside that range anyway, which is why we included the
15 statement in our report that, in our opinion, with cargo not in
16 accordance with the cargo securing manual, that there was a
17 likelihood of lashing failure.

18 MR. STOLZENBERG: Thank you.

19 That's all I have, Captain.

20 CAPT NEUBAUER: Mr. Kucharski.

21 MR. KUCHARSKI: Yes, captain. Thank you.

22 MR. KUCHARSKI: Captains, thank you for being here.

23 First question is, is it practical to use rubber on the
24 bottom on Roloc boxes?

25 CAPT. ANDERSON: I can't specifically address that. I

1 suppose it would depend on circumstances. But I would say that it
2 is possible to either lay a rubber mat. If you had, you know,
3 rubber pads fitted, you would probably lose them, so not practical
4 in that respect, but possibly practical to use a rubber mat.

5 MR. KUCHARSKI: What is the effect of a wet deck as far as
6 the cargo lashings go with the computation?

7 CAPT. ANDERSON: Well, in terms of the calculations, a wet
8 deck would be likely to reduce any contributing power due to
9 friction.

10 MR. KUCHARSKI: Is there any quantity of wetness, is there
11 any thickness, is it a half an inch, centimeters, or is -- just
12 moisture, is there -- has anybody quantified that?

13 CAPT. ANDERSON: There's nothing specifically mentioned. But
14 it's -- I would say it's more than just a little bit of moisture.
15 Because the friction coefficients used in the Code, you know, the
16 CSS Code, they are already a little bit lower than would be seen
17 in possibly comparable situations ashore. And this is because in
18 a marine environment you normally have things like constant
19 vibration to some extent or another. You've normally got moisture
20 in the air, or certainly on the deck, possibly dust involved. So
21 as those things are already factored in on reducing the friction
22 coefficients, I would say that it would be more than just a little
23 bit of moisture, as such. It would need to be wet.

24 MR. KUCHARSKI: So do lashing calculations in the hold
25 account for any type of weather effect?

1 CAPT. ANDERSON: I'm not sure what you mean by that. If you
2 mean just in terms of friction, then no. But as far as weather
3 effect, everything accounts for weather effect to a certain
4 extent.

5 MR. KUCHARSKI: I guess, specifically, if it's in a hold, the
6 action from any waves and wind, you wouldn't expect any of that.
7 Is that correct?

8 CAPT. ANDERSON: That is correct for the Annex 13
9 calculations covers on deck up to a certain height would be
10 expected to be, or possibly subject to wave action. That would be
11 included. Cargo below deck would not.

12 MR. KUCHARSKI: And, Captain Anderson, just to be clear, I
13 mean, when you did the initial report, this pre-dated any of the
14 VDR audio or anything like that, that we've received. Is that
15 correct?

16 CAPT. ANDERSON: That is correct.

17 MR. KUCHARSKI: And you also assumed by the calculations, I
18 think it's on page 90 -- 290 of -- Exhibit 290, Section 6, page 10
19 of your report, which says you assumed that all lashes were
20 properly attached to appropriate points on the cargo pieces. Is
21 that correct? So, I mean, you assumed that everything was done
22 correctly?

23 CAPT. ANDERSON: That is correct.

24 MR. KUCHARSKI: And when you said that -- or this report went
25 out before the VDR, we received the transcript, so you're unaware

1 of any comments, specific comments of either the AB, the third
2 made or the chief mate about the actual lashes on board the
3 vessel. Is that correct?

4 CAPT. ANDERSON: That is correct.

5 MR. KUCHARSKI: Automobiles, according to the cargo securing
6 manual, they'd be considered semi-standardized cargo? Can we take
7 a look at the definitions in the cargo securing manual, or do you
8 remember that?

9 CAPT. ANDERSON: They're considered semi-standardized cargo,
10 but they had a -- what was referred to as a standard method of
11 securing.

12 MR. KUCHARSKI: So are there --

13 Can we look at Exhibit -- Commander Yemma, 377, page 8,
14 please?

15 And this is MSC Circular 1353. And I believe you cited that
16 in your report, that 1353, revised guidelines for the preparation
17 of the cargo securing manual. Is that correct?

18 CAPT. ANDERSON: I believe so.

19 MR. KUCHARSKI: Section 3.4 is supplementary requirement for
20 Ro-Ro vessels? Do you see that?

21 CAPT. ANDERSON: I see it.

22 MR. KUCHARSKI: And in Section 3.4.2 it talks about the
23 design, in designing securing arrangements for the cargo units, a
24 little bit further down, it says "forces due to the motion of the
25 ship, angle of heel after damage or flooding." Do you see that?

1 CAPT. ANDERSON: I do see that.

2 MR. KUCHARSKI: Do you know if, when you looked through the
3 cargo securing manual, there was any consideration in there as far
4 as angle of heel after damage or flooding and other
5 considerations?

6 CAPT. ANDERSON: I don't believe so. But, in all honesty,
7 it's not something that we often see.

8 MR. KUCHARSKI: And you were asked a line of questions about
9 the total percentage of the inspections that you do, the vessels
10 that you work, and most of it is in grain. That residual
11 percentage, what does that amount to in number of ships, if you
12 could -- if you have any idea?

13 CAPT. WALKER: I don't have exact numbers. But I can just
14 tell you one customer is about 250 inspections a year. And those
15 are all container vessels, doing lashings and stuff like that.

16 MR. KUCHARSKI: And so would you say the total number of that
17 15 percent is 250? 2,000? Is it over 1,000? How many of these
18 inspections, all told, in that 15 percent?

19 CAPT. WALKER: I can't say exactly, where the 15 percent is
20 20, or it's 12 or whatever, you know, without having the data
21 right in front of me.

22 CAPT. NEUBAUER: Sir, one clarification I want to make. I
23 think when -- the question, though, was how many Con-Ros and Ro-
24 Ros. Did you add container vessels into that 15 percent also?

25 CAPT. WALKER: That's affirmative.

1 CAPT NEUBAUER: Thank you.

2 MR. KUCHARSKI: Commander Yemma, would you please pull up
3 Exhibit 189? And that is entitled the Code of Safe Practice for
4 Cargo Stowage. And let's go to page 14, Section 2.4.

5 Captain, are we there?

6 CAPT. WALKER: Yes.

7 MR. KUCHARSKI: Okay. Now that talks about residual strength
8 after wear and tear. It says "Cargo securing arrangement and
9 equipment should have sufficient residual strength to allow for
10 normal wear and tear during their lifetime." And how would you
11 determine that? How would that be determined?

12 CAPT. ANDERSON: For the miscellaneous gear, the loose
13 pieces, it's essentially, as I was discussing with Mr. Fawcett,
14 it's a visual examination.

15 For the fixed pieces, it starts off more so that way. But if
16 there's any apparent, or any noticeable wear, any cracks,
17 deformity, then you would take it a stage further. That may get
18 to the stage where you're going to physically test or ultrasonics
19 to determine thicknesses, you know, things like this, for the
20 fixed equipment.

21 MR. KUCHARSKI: Do you have knowledge of that actually being
22 done on any vessels?

23 CAPT. WALKER: I do.

24 MR. KUCHARSKI: Commander Yemma, please, Exhibit 109. Let's
25 start with picture number 1. Actually, picture number 2.

1 Can you tell by that picture there there's enough residual
2 strength, by looking at that?

3 CAPT. ANDERSON: Looking at that, I would not consider it a
4 problem.

5 MR. KUCHARSKI: Take a look at picture number 5, please. I'm
6 -- page 5. Take a look at that button. Can you tell by looking
7 at that if there's enough residual strength in that?

8 CAPT. ANDERSON: Not purely by looking at it. No. This is
9 one of those where from looking at it, if you see that there is
10 some wastage, there is some scale, the first thing you do is put
11 your finger in there and see how thick that residual metal is. If
12 there's any question, then you would, you know, mark it down for
13 further action.

14 If you put your finger in there and it feels the same as the
15 rest, then you're going to accept it.

16 MR. KUCHARSKI: And I'd just like to note these are pictures
17 of the *El Yunque*. They're not from the *El Faro*. Questions there.

18 And back to Exhibit -- we're finished with Exhibit 109. Back
19 to Exhibit 189. And that's going to be somewhere around page 29,
20 please. And specifically, and the title of this is Annex -- the
21 top of this page, it says Annex 4, Safe Stowage and Securing of
22 Wheel-Based Rolling Cargos. And let's look at Section 2.4.

23 Do we see that, gentlemen, Section 2.4, where it talks about
24 -- little bit -- I guess I'm sort of confused, it says -- but
25 maybe you can clear it up -- "wheel-based cargos which are not

1 provided rubber wheels or tracks, friction increasing over surface
2 should always be stored on wooden dunnage or other friction-
3 increasing material such as soft boards, rubber mats..." et cetera.

4 I guess I'm a little bit confused. All the trailers on the
5 vessel have wheels at the end or they have a Roloc box, which is
6 steel. Does this not apply to the Roloc box, or --

7 CAPT. ANDERSON: It would not apply to the Roloc box fitted
8 on the button.

9 MR. KUCHARSKI: And why is that?

10 CAPT. ANDERSON: Well, the Roloc box on the button you have
11 adequate securing of that end of the unit. It is not free to
12 move, so friction is not a component really included in the
13 calculation.

14 MR. KUCHARSKI: And how about if it were off button?

15 CAPT. ANDERSON: If it were off button, then you're looking
16 at a different situation. The effects of friction would become
17 more important. That would need to be taken into account. And
18 friction increasing material would be beneficial.

19 MR. KUCHARSKI: And drop down a little bit further down to
20 Section 2.8 where it talks about cargo's not provided. And,
21 again, this is, you know, cargo's not provided with adequate
22 securing points, such cargo should be where practicable. Do you
23 see that there? It goes on to say it can be stowed close to the
24 ship's side and close to each other.

25 CAPT. ANDERSON: We see that.

1 MR. KUCHARSKI: Or be blocked up by other suitable cargo
2 units, such as loaded containers. Can you tell me when you talked
3 about the vessel, the Matson vessel that had no securing
4 arrangement, if you will, they weren't lashed. Are these
5 automobiles packed in really, really close together? Or what's
6 the spacing between them?

7 CAPT. WALKER: I mean, I'd have to review the cargo securing
8 manual again, and exactly what was happening on board the vessel.
9 But, I mean, some of the photographs I've seen, and several times
10 the cars are packed tightly, just like they would be on a PCC, or,
11 and in situations like that.

12 MR. KUCHARSKI: Okay. And, Captain, just for the record,
13 what's a PCC?

14 CAPT. WALKER: That's a pure car carrier.

15 MR. KUCHARSKI: Okay. Thank you for that clarification.

16 Exhibit 377 now, please. And what I'd like to look at is
17 page 5, and it's going to be 2.1. To be more specific, 2.1.1.

18 And you see where it says there, the very first point, it
19 says list and/or plan of the fixed cargo-securing devices, which
20 would be supplemental to (indiscernible). Have you seen any list
21 or plan of fixed securing devices, like all the D-rings and all
22 the buttons that were on *El Faro*, have you seen a list of that?

23 CAPT. ANDERSON: Well, we've seen a list showing what they
24 are. We have not seen a list showing numbers and specific
25 locations.

1 MR. KUCHARSKI: And that goes to both buttons and D-rings.
2 Is that correct?

3 CAPT. ANDERSON: That is correct.

4 MR. KUCHARSKI: Exhibit 290, please.

5 And that's your initial report. And this should be found on
6 page 11. And on page 11 you talk about the -- sorry, Section 8,
7 falls under.

8 In the middle of the second paragraph it says "There were
9 safety factors included. But significantly exceeding any of these
10 values, or exceeding them by even a small amount for a prolonged
11 period, would increase the risk of lashing failure."

12 Can you talk to us about that particular sentence? Where
13 does that come from? Was that your own feeling? Or does that
14 come out of the Code itself? Or, where is it?

15 CAPT. ANDERSON: No, that's our interpretation of it, that
16 sentence is, because as we mentioned before, it's ultimately a
17 probabilistic approach. Exceeding any of these factors does not
18 mean that cargo, or lashes have to fail. It just increases the
19 chances of that happening. Even coming close to them kind of
20 increases the chances. But it's acceptable level. As you get
21 higher and then do exceed them, then I would say you get to an
22 unacceptable level of risk.

23 There's always risk involved in a maritime endeavor. This
24 starts to take it to an unacceptable level. And that, I think, is
25 what we're trying to get at here. If you're dramatically

1 exceeding these, you're dramatically increasing the risk. If you
2 are increasing them by a smaller amount, it's a lower risk. But
3 the longer you do that, the greater that risk becomes.

4 MR. KUCHARSKI: Would having a list on for a long period of
5 time be something -- a prolonged period -- that's what I'm trying
6 to understand. Would it be -- would a list for a vessel, which is
7 more than a momentary thing, would that be something that would be
8 considered a prolonged period of --

9 CAPT. ANDERSON: I would say no, not just a list. If, along
10 with that list, you're still experiencing significant rolling,
11 then yes, because now along with the list we're going further over
12 on the one side. But just the presence of a list alone, no, I
13 would not consider that a major issue, as it's primarily
14 accelerations that we're concerned with, more than anything else.

15 MR. KUCHARSKI: So I have a clear understanding of the speed
16 of the vessel, okay, a vessel doesn't always constant speed
17 throughout a voyage. Is that fairly normal?

18 CAPT. ANDERSON: Speed is a difficult one to quantify. I
19 mean, if -- you know, since I've been sitting here, we've had
20 references to AIS and VDR and these kinds of things. Well, are
21 they accurate reflections of speed is my first question?

22 AIS data is going to give you speed over the ground. What
23 we're concerned with, with this is speed through the water; how
24 much was the vessel being slowed. I don't know the answers to any
25 of these things. So I don't know what the actual vessel speed

1 was. This is part of why we included this range.

2 But, you know, otherwise, yes, it would have an effect.

3 I've kind of lost track of what the actual question was.

4 MR. KUCHARSKI: So, but, to the voyage itself, I mean, you
5 wouldn't expect it to be -- any sea conditions would be a constant
6 speed for that whole voyage. Is that correct?

7 CAPT. ANDERSON: No, you would expect the speed to come down
8 in significant weather, both the speed through the water and the
9 speed over the ground, particularly if you started slamming into,
10 you know, oncoming waves, those kind of things, that's going to
11 drop your speed with the water.

12 If you're also getting set back under the influence of tides,
13 currents, or wind, that would drop your speed over ground.

14 MR. KUCHARSKI: So that sort of begs the question, then, is
15 it speed through the water or is it speed over the ground that the
16 calculations are based on?

17 CAPT. ANDERSON: It's speed through the water.

18 MR. KUCHARSKI: Do you know what the VDR and all the
19 parametric data we have, does that have speed over the ground or
20 speed through the water? Do you know?

21 CAPT. ANDERSON: No, I have no knowledge of that.

22 MR. KUCHARSKI: Thank you, captains.

23 I'm finished. Thank you.

24 CAPT NEUBAUER: Before we adjourn for this session, want to
25 see, are there any final questions for the parties in interest for

1 the NCB at this time?

2 UNIDENTIFIED PERSON: Captain, can we take a minute?

3 CAPT NEUBAUER: Yes.

4 The hearing will recess and reconvene at 5:15.

5 (Off the record at 5:11 p.m.)

6 (On the record at 5:20 p.m.)

7 CAPT NEUBAUER: The hearing is now back in session.

8 At this time, I'd like to go to the parties in interest for a
9 final round of questions.

10 Mr. King, for TOTE.

11 MR. KING: Yes. Thank you, captain.

12 Gentlemen, you were asked questions about the MSC circular,
13 which was Exhibit 377, in particular, Section 2.1.1, which calls
14 for a list or a plan of fixed cargo securing devices. And I
15 believe your response was you had not seen anything that would
16 satisfy that, or would be a guideline to fixed securing locations.
17 Is that correct?

18 CAPT. ANDERSON: That is correct. I don't recall seeing
19 anything that specified what D-rings, or how many there were,
20 precisely where they were located. And same with the buttons.

21 MR. KING: You did review, though, the cargo securing manual
22 for the *El Faro*, correct?

23 CAPT. ANDERSON: That is correct.

24 MR. KING: Commander, could you pull up Exhibit 40, page 76
25 of the cargo securing manual?

1 MR. KING: Gentlemen, is that on your screen?

2 CAPT. WALKER: Yes, it is.

3 MR. KING: Does that look like a diagram of fixed stow
4 locations, in particular, the Roloc boxes, sorry, the Roloc
5 buttons?

6 CAPT. ANDERSON: Yes, I stand corrected on the Roloc buttons.
7 It is the D-rings, I believe, I was talking more about.

8 MR. KING: Thank you, Captain. Nothing further.

9 CAPT NEUBAUER: Mrs. Davidson?

10 MR. BENNETT: No questions, Captain. Thank you.

11 CAPT NEUBAUER: ABS?

12 MR. WHITE: No questions now. Thank you.

13 CAPT NEUBAUER: And, I'll note for the record, that it
14 appears that Mr. Schilling has departed for HEC.

15 Mr. Kucharski?

16 MR. KUCHARSKI: Yes, captain.

17 Just a couple quick questions, Captain Anderson. Were you
18 aware of any changes, buttons added or removed to this particular
19 diagram? Were you aware of any of that?

20 CAPT. ANDERSON: No, I was not.

21 MR. KUCHARSKI: A question about accelerations. Do
22 accelerations increase as the sea decreases in heavy weather?

23 CAPT. WALKER: Usually with less speed the accelerations are
24 reduced.

25 MR. KUCHARSKI: Okay. So the accelerations are reduced as

1 speed decreases. Is that correct?

2 CAPT. WALKER: If that's the only factor changing, correct.

3 MR. KUCHARSKI: Thank you.

4 CAPT NEUBAUER: Are there any final questions for the NCB at
5 this time?

6 Seeing none, gentlemen, I want to say thank you for being
7 flexible over the last 2 days to provide the testimony, very
8 valuable to the MBI. You are now released as witnesses in this
9 Marine Board of Investigation. Thank you for your testimony and
10 cooperation. If I later determine that this Board needs
11 additional information from you, I will contact the NCB directly.

12 If you have any questions about this investigation, you may
13 contact the Marine Board Recorder, Lieutenant Commander Damian
14 Yemma.

15 (Witnesses excused.)

16 CAPT NEUBAUER: At this time, do any of the PIIs have any
17 issues with the testimony that we just received?

18 MR. KING: No concerns.

19 MR. BENNETT: No, sir.

20 MR. WHITE: No, sir.

21 CAPT NEUBAUER: The hearing will now recess and reconvene at
22 5:30.

23 (Off the record at 5:24 p.m.)

24 (On the record at 5:31).

25 CAPT NEUBAUER: The hearing is now back in session.

1 Q. Good afternoon, sir.

2 Mr. Berrios, we're going to break the testimony into two
3 broad topic areas. And the first one will be your service as
4 third and second mate aboard the *El Faro*, including your duties as
5 a port mate. We'll look at the management fatigue, STCW records
6 and cargo loading. The second topic will be your experience
7 regarding safety, your involvement with access to the designated
8 person ashore, bridge resource management, ship operations and
9 weather.

10 We thank you for appearing your second time before the Board.
11 And I just want to make sure, you've worked for TOTE since 2013.
12 Is that correct?

13 A. Correct.

14 Q. So we will be asking you some questions to determine what
15 might have -- what your experience aboard the *El Faro* have, may --
16 with the actual *El Faro* operations, and then looking at your
17 experience working for TOTE in general, and how it relates to the
18 loss of the *El Faro*.

19 So have you had the opportunity to read the VDR transcripts?

20 A. Correct.

21 Q. And just to verify, you worked on the *El Faro* from May 19th,
22 2015 until July 28, 2015. Also, you were on a short voyage that
23 ended on the 22nd of September 2015. Would that be correct?

24 A. Correct.

25 Q. So just to set the stage for subsequent questions, in your

1 role as third mate or second mate, did you move throughout the
2 ship's cargo holds and weather deck, cargo decks, including the
3 accommodation spaces, excluding the engine room? Did you move
4 freely about the vessel in all areas of the vessel?

5 A. What do you mean by moving freely?

6 Q. Well, by that I mean based on your time aboard, did you walk
7 around the holds? Did you -- all the holds? Did you go to the
8 forepeak? The bosun stores, the weather decks, the accommodation
9 decks? By move freely, I mean would you have seen all of those
10 spaces?

11 A. Correct.

12 Q. So the majority of the time on those two tours, based on the
13 records that we have, you sailed with Captain Davidson. Is that
14 correct?

15 A. Correct.

16 Q. During your time on board *El Faro*, they were determining
17 crews for the Marlins. Did you observe any conflict based on the
18 selection of crew personnel for the Marlins?

19 And by conflict, I mean anything where working relationships
20 might have been impaired or tension was created between certain
21 members of the crew?

22 A. Negative.

23 Q. Did the captain, at any time, treat you differently than
24 other members of the crew based on your selection for the Marlins?

25 A. Negative.

1 Q. Did any of the crew talk to you about issues that affected
2 the working relationships aboard the *El Faro*?

3 A. Negative.

4 Q. You received training while you were aboard the *El Faro*,
5 during your service. We've been provided with training records.
6 Did you ever receive "Whistleblower Make a Difference" training on
7 board the vessel?

8 A. Correct.

9 Q. Can you talk about that training?

10 A. During safety meetings or any gathering about meetings with
11 the crew, it has been addressed that it's always available for us,
12 a hotline that you can call and talk about any concerns that you
13 might have.

14 Q. And who provided the training?

15 A. I recall master, chief mate.

16 Q. Who would that have been?

17 A. I don't recall specifically a time frame, or I don't have the
18 picture of the person that might have mentioned that before. But
19 I do remember that that's been addressed on every safety meeting.

20 Q. So when you're at sea, and you want to exercise the
21 whistleblower protection, how do you do that?

22 A. At sea, I have no information about how to do it at sea. But
23 in port, you can pick up your own phone. And perhaps at sea you
24 can use the email from the ship that is available to the crew
25 member. And you could use the sat phone, but that wouldn't be

1 alone, making that phone call. Somebody probably would be on
2 bridge when you made that phone call at sea, so --

3 CAPT NEUBAUER: Mr. Berrios, a follow-up question on that
4 topic.

5 Were you free, as the third mate, to make phone calls on the
6 satellite phone? Or did you need permission from anybody at work?

7 THE WITNESS: I never had to make a phone call.

8 CAPT NEUBAUER: Was it your understanding, if you did need to
9 make a phone call, that you would need to obtain permission, or
10 could, were officers free to use that communication?

11 THE WITNESS: I don't know the answer to that.

12 CAPT NEUBAUER: Thank you.

13 Mr. Fawcett.

14 BY MR. FAWCETT:

15 Q. Mr. Berrios, during that training, did the person providing
16 the training tell you that a means would be provided if you have
17 concerns about the safety of the operation of the vessel, for you
18 to be able to reach out to the designated person, or call the
19 whistleblower that had been provided in this "Make a Difference"
20 training?

21 A. Can you please repeat your question?

22 Q. Yes. As part of the training, did they tell you that you
23 were freely allowed to use the ship's communication to communicate
24 with the 1-800 number -- did they have an email address where you
25 could send whistleblower information? And was that provided to

1 you?

2 A. Correct.

3 Q. So in the training, did they tell you you could communicate
4 at sea with the whistleblower protection or the designated person
5 as part of the training?

6 A. Correct.

7 Q. We asked Chief Mate Thompson -- who you served with, is that
8 correct?

9 A. Correct.

10 Q. We asked him about a divide and conquer plan, and we also
11 asked him about drama aboard the vessel. Shortly after you left
12 the vessel, Captain Axelsson resigned. Is that correct?

13 UNIDENTIFIED PERSON: Can we have a quick break?

14 CAPT NEUBAUER: Yes. The hearing will recess and reconvene
15 at 5:50.

16 UNIDENTIFIED PERSON: Thank you.

17 (Off the record at 5:43 p.m.)

18 (On the record at 5:47 p.m.)

19 CAPT NEUBAUER: The hearing is now back in session.

20 During the line of questioning for Mr. Berrios, there was a
21 statement made by Mr. Fawcett that Captain Axelsson resigned due
22 to drama on the ship. It was phrased in the question.

23 Captain Axelsson has previously testified here before the MBI
24 that he resigned for a variety of reasons. So I think it's --
25 want to get that on the record that his testimony stated that.

1 At this time, I think we're at a good place to stop for the
2 day. And we will resume tomorrow morning, Mr. Berrios, if you're
3 available to testify.

4 MR. BERRIOS: Correct. Correct.

5 CAPT NEUBAUER: At this time the hearing will adjourn for the
6 today. But before we do, I have a statement for tomorrow morning.
7 Tomorrow morning we will finish with Mr. Berrios' testimony, and
8 then we will hear from Mr. O'Donnell following him.

9 Mr. Matthews will be moved to Tuesday, the 14th, in place of
10 Mr. Brennan. Mr. Donald will testify on Friday, February 17th.
11 We will post an updated version of our intended schedule this
12 evening.

13 The hearing is now adjourned and will reconvene at 9 a.m.
14 tomorrow morning.

15 (Whereupon, at 5:49 p.m., the hearing was recessed, to
16 reconvene, Friday, February 10, 2017, at 9:00 a.m.)

CERTIFICATE

This is to certify that the attached proceeding before the

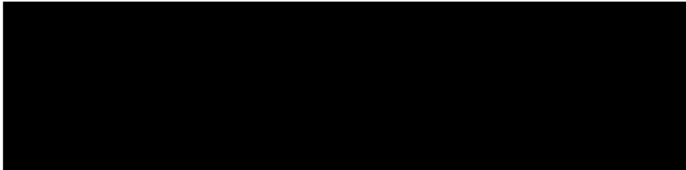
NATIONAL TRANSPORTATION SAFETY BOARD

IN THE MATTER OF: MARINE BOARD OF INVESTIGATION
INTO THE SINKING OF THE EL FARO
ON OCTOBER 1, 2015


PLACE: Jacksonville, Florida

DATE: February 9, 2017

was held according to the record, and that this is the original,
complete, true and accurate transcript which has been compared to
the recording accomplished at the hearing.



U.S. Coast Guard
Official Reporter



Transcriber