UNITED STATES OF AMERICA

NATIONAL TRANSPORTATION SAFETY BOARD

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In the matter of: *

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MARINE BOARD OF INVESTIGATION *

INTO THE SINKING THE *EL FARO* *

ON OCTOBER 1, 2015 *

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Prime F. Osborn III Convention Center
Jacksonville, Florida

Tuesday,
February 7, 2017

APPEARANCES:

Marine Board of Investigation

CAPT JASON NEUBAUER, Chairman
KEITH FAWCETT, Member
CDR MATTHEW J. DENNING, Member
LCDR DAMIAN YEMMA, Recorder
CDR JEFF R. BRAY, Legal Counsel

Technical Advisors

CDR MICHAEL ODOM
CDR MICHAEL VENTURELLA
LT MICHAEL COMERFORD
JEFFREY STETTLER, Ph.D.
PAUL WEBB

National Transportation Safety Board

BRIAN YOUNG, Investigator in Charge
MICHAEL J. KUCHARSKI, Marine Accident Investigator
ERIC STOLZEBERG, Marine Accident Investigator
MICHAEL RICHARDS, Marine Accident Investigator

Parties in Interest

LUKE M. REID, Esq.
TOTE Services

GERARD W. WHITE, Esq.
American Bureau of Shipping (ABS)

SPENCER A. SCHILLING, P.E.
Herbert Engineering Corporation

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

Also Present

LT TRAVIS NOYES
(On behalf of the witnesses)

I N D E X

I N D E X (cont.)

P R O C E E D I N G S

(9:03 a.m.)

CAPT. NEUBAUER: Good morning. This hearing will come to order. Today is Tuesday, February 7th, and the time is 9:03. We are here 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's Office of Investigation and Analysis in Washington, D.C. I am the Chairman of the Coast Guard Marine Board of Investigation 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 1, 2015, while transiting east of the Bahamas.

I am conducting the investigation under the rule 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 is evidence that any act of misconduct, inattention to duty, negligence or willful violation of the law on the part of any licensed or certificated person contributed to this casualty; and whether there is evidence that any Coast Guard

personnel or any representative or employee of any other government agency or any other person caused or contributed to the casualty.

I have previously determined that the following organizations or individuals are parties in interest to this investigation: TOTE Incorporated, represented by Mr. Luke Reid; ABS, represented by Mr. Gerard White; Herbert Engineering Corporation, represented by Mr. Spencer Schilling; and Mrs. Theresa Davidson as next of kin for Captain Michael Davidson, master of the SS *El Faro,* represented by Mr. William Bennett.

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

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

These proceedings are open to the public and to the media. I ask for the cooperation of all persons present to minimize any

disruptive influence on the proceedings in general and on the witnesses in particular. Please turn your cell phones or other electronic devices off or to silent or vibrate mode. Photography will be permitted during this opening statement and during recess periods.

The members of the press are welcome, and an area has been set aside for your use during the proceedings. The news media may question witnesses concerning the testimony that they have given after I have released them from these proceedings. I ask that such interviews be conducted outside this room.

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

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

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

MR. YOUNG: Yes. Good morning, Captain. Good morning, all.

I'm Brian Young, the Investigator in Charge for the National Transportation Safety Board's investigation of this accident. The NTSB has joined this hearing to avoid duplicating the development of facts. Nevertheless, I do wish to point out that this does not preclude the NTSB from developing additional information separately from this proceeding if that becomes necessary.

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

Thank you, Captain.

CAPT NEUBAUER: Thank you, Mr. Young. We will now call our first witness of the day, Mr. Jaideep Sirkar, from the Office of Design and Engineering Standards at Coast Guard Headquarters.

LCDR YEMMA: Please stand and raise your right hand, sir.

(Witness sworn.)

LCDR YEMMA: Thank you. Be seated, sir.

Could you please start by stating and spelling your full name?

THE WITNESS: My first name is Jaideep, spelled with seven letters, J-a-i-d, delta, e, echo, e, echo, p, pompom; last name, Sirkar, spelled with six letters, S, sierra, i-r-k-a-r, Sirkar.

LCDR YEMMA: Thank you.

Counsel.

LT NOYES: Lieutenant Travis Noyes, N-o-y-e-s.

LCDR YEMMA: Sir, can you please tell the Board where you are currently employed and what your position is?

THE WITNESS: I am currently employed as a civilian at the U.S. Coast Guard Headquarters. My position is I am the chief of the Naval Architecture Division, which is one of five divisions within the Office of Design and Engineering Standards headed by Captain Ben Hawkins who has testified earlier. The Office of Design and Engineering Standards, through the Director of Commercial Standards, reports to the Coast Guard Admiral who is the Assistant Commandant of Prevention. I just wanted to give you the context of where I fit within that part of the Coast Guard.

CDR YEMMA: Thank you, sir. Can you also describe for the Board some of your prior relevant work experience, please?

THE WITNESS: Yes. My initial part of my career, I spent approximately 11 years in the private sector working for ship design firms in the areas of ship stability, ship structures, doing design and in-service engineering for various Navy and commercial customers.

Subsequently, for the last 26 years, I have been employed as a civilian at the U.S. Coast Guard. I have had several jobs at the Coast Guard. This is my third job. I was a senior naval architect in this same division, and then I was the regulatory coordinator for all of the regulations that are published by the -- all of the federal regulations that are published by the U.S.

Coast Guard for about 8 years, and then for the past 8 years or so, I have been the chief of the Naval Architecture Division. I came back to the division.

LCDR YEMMA: And, sir, what is your highest level of education?

THE WITNESS: I have three master's degrees. I have a master's degree in naval architecture and engineering. I have a master's degree in computer science, and I have a master's degree in national security studies at the senior service school.

LCDR YEMMA: And do you hold any professional licenses or certifications?

THE WITNESS: No, I do not.

LCDR YEMMA: Thank you, sir. Dr. Stettler will have questions for you now.

DR. STETTLER: Thank you.

(Whereupon,

JAIDEEP SIRKAR

was called as a witness and, having been duly sworn, was examined and testified as follows:)

EXAMINATION OF JAIDEEP SIRKAR

BY DR. STETTLER:

Q. Good morning, Mr. Sirkar.

A. Good morning.

Q. We will be asking you questions in two main topic areas. I will be asking you questions in the area of stability standards as

well as on-board stability, loading, and strength software applications. Commander Venturella will be asking you questions in the area of load line standards and application.

We will then take a break and come back and allow the NTSB, the Board, and Parties in Interest to ask follow-up questions. If you would like to take a break at any time, please let us know, and we'll consider that.

Mr. Sirkar, can you please describe in a little more detail, in general, the roles and responsibilities of the Naval Architecture Division of the Office of Design and Engineering Standards?

A. Yes. The Naval Architecture Division within the Office of Design and Engineering Standards is responsible for developing, maintaining, when appropriate interpreting rules, regulations related to ship stability, load lines and, as appropriate, ship structures.

We also represent the United States at various bodies within the International Maritime Organization, IMO. IMO is a specialized agency of the United Nations System of Specialized Agencies that provides the forum for developing international rules and regulations and standards for various aspects of ship design and operation.

Q. Thank you. Does your office have any responsibility for standards associated with cargo loading and securing, including cargo securing manuals?

A. No, not the securing. We do not.
Q. Do you know which Coast Guard office has responsibility for that, for those matters?
A. That would be -- for cargo loading manuals, that would be the Office of Operating and Environmental Standards, which is one of the sister offices, if you will, to the Office of Design and Engineering Standards.
Q. Thank you. I'd like to ask you --
A. Excuse me, Dr. Stettler. I misspoke. I meant to say cargo securing manuals, not cargo loading manuals. I misspoke.
Q. Thank you. I will now ask you some questions in the area of stability standards and criteria. I'd like to start, if you could please refer to MBI Exhibit 333, specifically on page 3 of the exhibit, which is shown in the bottom right-hand corner, which is page 96 of the actual exhibit in terms of the paging numbers.
This document is the 46 C.F.R. Section 170.170 referred to as the weather criteria, published I believe in October of 2015. I'd like to draw your attention to paragraph (d) which is on the -- in the right-hand column toward the bottom of the page. I'd like you, if you would, Mr. Sirkar, to discuss the origins of this paragraph. I believe this is the paragraph that was added to the criteria statement sometime within the last 10 years. Could you please discuss the origins and implications of the discussion in this paragraph?
A. Yes. Before I specifically talk about paragraph (d), this

whole section, 170.170, has a rather long history and goes back in the past, all the way back to 1928. The origins are back in the early 20th Century, the work done by the erstwhile American Marine Standards Committee and the subcommittee on stability established under that committee, under the auspices of the Department of Commerce.

Based on studies conducted by a stability subcommittee, the stability standards subcommittee on that particular committee, on studies of relatively small passenger vessels, the initial GM criterion in 170.170 was developed. Those are the origins of that.

This standard, this rule, this criterion in 170.170 of initial GM, has been applied successfully for many years now, for both -- for cargo ships. However, with time, the proportions of ships have been changing and ships that, while meeting the initial GM criteria, but for other reasons such as relatively low freeboard or perhaps other proportions, they would not have sufficient stability beyond the initial small angles of heel even though they met the criterion. So there was a rulemaking process to complement this initial GM criterion with additional criterion similar to what is contained in the 2008 Intact Stability Code of IMO. So the Coast Guard proposed additional standards within that Section 170.170.

As part of the rulemaking process, in the final rule stage, the Coast Guard determined that that proposal would be not

implemented. There were comments made and the Coast Guard generally agreed that while the stability standards in 170.170 could possibly be improved with additional criteria related to righting levers, in the final rule stage, the Coast Guard did not implement what was proposed, and it is all there in the record. However, in order to clarify some of the conditions for which this criteria or criterion should be applied, the Coast Guard introduced paragraph (d) in that final rule stage in order to clarify the application, the appropriate application of this criteria.

Q. Thank you. You mentioned a few parameters. Could you discuss what types of ships might this be important for?

A. I'm sorry. I did not understand your question.

Q. Could you just briefly describe the attributes of a vessel which might fall in this category where, you know, where this criteria -- or that this might be eliminating criteria and the vessel may not necessarily be well applied to the GM criteria?

A. Well, some of them are, I had mentioned, relatively low freeboard, where you might have deck immersion at relatively small angles of heel, thus losing or significantly reducing the range of stability for your righting lever, and you may not have -- while you may have an initial GM that is fairly high, but you may not have enough righting energy under your righting lever curve.

You could have other parameters like high sail areas, beam to draft ratios that are not appropriate for this range. Those are

some of --

Q. Thank you. Do you have something to add?

A. No.

Q. What happens in a case where a vessel maybe doesn't quite meet this criteria, and there's kind of a spelled-out equation in there basically that the righting arm at the angle T, which is derived in the criteria, if that is less than the quantity of GM times the sum of that angle T. What is expected to occur in a case when a naval architect, either a civilian naval architect or an approval authority recognizes that that vessel may fall under that limitation? What's expected in that case?

A. Well, there are some other options available. The 170.173 is an option for the application of the 2008 Code of Intact Stability in its entirety. When I say in its entirety, I mean Part A is another option. Part B of the 2008 Code of Intact Stability has recommended stability criteria for some types of container ships. That is another option. So there are other alternatives of it.

Q. Thank you. And who would make the decision on what those requirements might be for an alternative?

A. I believe that would be in consultation with the Marine Safety Center.

Q. Thank you. And just in general, what would -- so would that be the expectation in a case when the Marine Safety Center would not normally be involved in Plan B, for example, if an Alternate Compliance Program classification society was performing the

review on the Coast Guard's behalf? Would it be expected that that reviewing entity would actually make that decision or is the expectation that that decision would be referred to the Marine Safety Center for their decision?

A. In the specific instance of a vessel being enrolled in the Alternate Compliance Program, then the matter would be fairly clear, because to be enrolled in the Alternate Compliance Program, the vessel would have to be a SOLAS, a vessel with SOLAS certificates, international certificates, and cargo ships and passenger ships through SOLAS would be required to comply with the 2008 Intact Stability Code. So there'd be -- the way forward for what stability regulations to apply for a vessel -- for a new vessel to be enrolled in the Alternate Compliance Program would be clearer.

Q. Thank you. I'd like to extend that, though, and ask a question relating to existing vessels, and perhaps a vessel that has been operating under the 170.170 criteria for a number of years. What happens if it's discovered in review so that the owner, a vessel owner, for example, were to update the trim and stability booklet so perhaps the operating conditions and trim and stability might change; is it expected that that check for that criteria should be done? And then in the condition where it would fall under, what would be the responsibility of the submitter and the reviewing authority in that case?

A. Well, this is a slightly hypothetical question. For an

existing vessel that meets 170.170, we wouldn't be -- when the vessel was being enrolled in the Alternate Compliance Program, we wouldn't be requiring any new standards, but if there were some modifications made, if there were new loading conditions being developed, the vessel would still have to meet 170.170. And again in a hypothetical scenario, then that would -- the trim and stability booklet would have to be redone and -- if appropriate, and the required GM curve may look different for certain loading conditions after the modifications.

I'm assuming that -- it's a two-part question. It's enrollment in the Alternate Compliance Program -- the way I understood your question is enrollment in the Alternate Compliance Program in and of itself for an existing vessel is not triggering additional stability or different stability standards. If modifications are being made to the vessel, then the required GM as a result of those modifications may be different for certain loading conditions.

Q. Thank you. But just in a general case, not necessarily tied to the Alternate Compliance Program, if a modification were made, minor or major, and which changed the GM for a vessel in terms of the stability conditions defined in the trim and stability book, and it was discovered as part of that process that it falls underneath this criteria of paragraph (d), what would be expected in terms of the criteria? Would it be expected that that vessel would then have to comply with one of these alternative --

alternate criteria?
A. I don't believe I can answer that question. It would depend on the circumstances because one -- yeah, there are several possibilities. I cannot answer that.
Q. Okay. Thank you. I'd like to just ask a more general question about the 170.170, weather criteria. Do you know how many approximately, and I'll use the term deep-draft U.S. flag vessels there are that still have this 170.170 criteria as their primary intact stability criteria?
A. No, Dr. Stettler, I do not.
Q. Thank you. And are there any initiatives either within the U.S. Coast Guard about dealing with phasing out, perhaps, the applicability of this criteria to U.S. flag vessels?
A. So for U.S. vessels that go on international voyages that are, for the sake of brevity, I call it SOLAS vessels, they would have to comply with the 2008 IS Code, and we have in the regulations stated that if you wish to -- if you comply with the 2008 IS Code, then you would not have to comply with 170.170.
Having said that, right now to answer your question, there are no such plans. An alternative has been provided in relatively recent rulemaking. It's in the rules, but there are no initiatives to remove 170.170.
Q. Thank you. Please refer to Exhibit 334, page 26. This is Part B, Section 2.3 of the 2008 Intact Stability Code, and actually you just mentioned this. This specifically is a set of

recommended criteria for container ships greater than 100 meters.

Mr. Sirkar, as I stated in my briefing yesterday regarding the Marine Safety Center review, that this criteria, as you read it, is essentially a -- scales the criteria listed in Section 2.2, Part A, which is the mandatory part, in part by applying a form factor which is based on size and number of other parameters.

Has the U.S. Coast Guard considered requiring implementation of these recommended criteria for container ships or any other vessels, specifically container ships or combined container ships, Ro-Ro or other types of combined container ship vessels in the U.S.?

A. Yes. We did publish a notice in the *Federal Register*. I believe it was in 1992. That was prior to this code being promulgated, this was still being discussed at IMO.

At IMO, this was being discussed for some time for certain ships, container ships in particular, large container ships that have a lot of flare and a lot of sail area, where the application of 2.2, Part A, was -- appeared to be inappropriate.

And studies were conducted, primarily by Germany, that was debated and discussed at IMO and this alternative with the form factor correction was discussed, and the Coast Guard supported that. The United States Coast Guard, representing the United States, supported that at IMO and then, in 1992, we published a notice in the *Federal Register* recommending that this could be an acceptable alternate criteria for these types of large container

ships or ships of this ilk.

Q. Did anything come of that publication in terms of that it could be, but was it ever discussed as being made a requirement for certain types or sizes of container vessels?

A. There were no other *Federal Register* notices published in particular related to that -- related to this alternative. In time, as I mentioned earlier, in time, this was included in Part B of the 2008 IS Code, and that seemed at that time a seemingly satisfactory or perhaps intermediate step. There are no final actions that were taken after that *Federal Register* notice was published and there are none planned at this time.

Q. You mentioned that certain factors associated with container ships are -- were considered in this, such things as vessel hull flare, container deck heights or tier heights and wind area, that type of thing. Do you have a feel for, based on the development of those recommended criteria, what size of vessel under that -- in that kind of general configuration, where that -- a transition from the 2.2 criteria to this Part B recommended criteria might be of value in terms of a ship's safety?

A. To the best of my recollection, it was greater than 100 meters and less than 200 meters, the applicability of this alternate standard.

Q. So between 328 feet and 656 feet?

A. Yes.

Q. Thank you. I'd like to draw your attention to figure or

Exhibit 334, page 13. This is Section -- Part A, Section 2.3 of the 2008 Intact Stability Code, which you also mentioned specifically involves severe wind and rolling criteria.

As I stated yesterday, based on the Marine Safety Center analysis, it appears that the *El Faro* as loaded for the accident voyage would actually pass this severe wind and rolling criteria but not pass the Part A, Section 2.2, which was the general righting lever criteria; the latter not passing due to an insufficient area above 30 degrees.

Can you offer any insight as to why a container Con-Ro -- combined container roll-on, roll-off vessel such as *El Faro,* why that container load might pass the severe wind and roll criteria such as this but would not pass a general righting arm criteria?

A. I really cannot. I did not study that particular hull form. It was not a traditional container ship hull form. It didn't have container cells. It had containers on deck and Ro-Ro decks, and again, I haven't compared the hull form and the proportions of that particular hull. I cannot give any insights in that particular outcome.

Q. Thank you. And that's probably an unfair question given that you haven't had an opportunity to analyze that. I just wanted to see if you had any basic insight about it.

Could you, though, summarize, based on your experience and knowledge of these two, if these are two prior criteria that would applied to a vessel subject to the 2008 Intact Stability Code,

could you give us some basic differences between the criteria, at least? Because there is an attempt both criteria applied, is there -- are there certain types of vessels where one criteria might be eliminating and the other not eliminating, based on your knowledge and experience?

A. Again, one has to look at the origins of 2.2 and 2.3. They came from fishing vessel studies conducted by Finnish researchers in the first case and Japanese passenger vessel studies in the second case. And again, the intent was to have robust and reasonably broad in scope as far as stability standards for all ships that the Code was intended to address.

And so we had the righting energy and the energy balance the 2.3 requirements as well as the righting lever requirements, that gave us sort of a quasi static feel for additional robustness. So the two together gives a complete package, if you will. I use the word complete a little broadly here. I mean, nothing's ever really complete.

Q. Thank you. In general though, for application of either of these two criteria, is there anything that can be said in terms of a vessel that maybe just meets -- you know, barely meets one or both of these criteria regarding the level of safety over the survivability or the likelihood of survivability in a given environmental condition? Is there anything that could be said about that in terms of that particular vessel -- any particular vessel?

A. It's difficult to extrapolate and get insights into survivability of a particular vessel based on the application of the regulatory standard.

What do I mean by that? The regulatory standard is based on a history of statistical behavior of ships in various sea winds and casualty information and ship characteristics of those ships that were studied. And generally based on those statistics, generally a derivation has been made in order to provide a certain, at some point, unquantified level of safety. So it is rather difficult based on the application of these two standards to predict or to quantify survivability characteristics of a particular vessel in a particular sea wind. All we can -- no, I'm done.

Q. Thank you. I'm sorry. There's one other matter I'd like to add. There are published explanatory notes for the 2008 Intact Stability Code that are not part of the exhibit, but in those explanatory notes, there is a discussion that the wind pressure that is applied as part of this severe wind and rolling criteria is based on a 50-knot wind.

And I'd like to ask, in light of the response that you just gave, in terms of the general, you know, what you can take away from a vessel that just meets the criteria. For a vessel in any knot winds, you know, is there any extrapolation that might -- that has been considered in terms of survivability of a vessel based on a different wind speed in these conditions, or is it

basically like you said in your previous response, that there's no way to quantify or extrapolate?

CAPT NEUBAUER: Mr. Sirkar, would you like to take a 5-minute break at this time?

THE WITNESS: Thank you. Captain. Let me try to speak, see if I'm able to. If I'm not, perhaps I will take up the offer. But for now, let me try to answer the question.

It is not -- in my opinion, the way the regulations have been developed, it is my opinion that one cannot and one should not extrapolate or predict the behavior of the vessel in an 80-knot wind because the requirement is for 50 knots, and using that requirement, extrapolate and try to predict.

Again this is a steady wind. In real life, there is no such as a steady wind. This is a surrogate, if you will. This is my word. It's a representation of -- it's a simple, simplified representation of a statistical distribution of wind speeds and gustiness of the wind and other characteristics of the wind. So it's a measure of -- it's a steady wind pressure. It's a measure of a certain -- a simplified measure of a certain set of conditions that are again statistically studied, as explained in the explanatory notes that you just mentioned.

So I would be very hesitant to make any comment or extrapolate based on the fact that this is a regulatory standard for 50 knots, and that if that ship sails into a 51-knot wind she will capsize. I do not believe we can make those statements.

BY DR. STETTLER:

Q. Thank you. I'd like to move on to discussing stability, loading and strength software, if you're willing to continue.

Okay. I'd like to call your attention to Exhibit 340 please. This is a short document of just a few pages. This is the IMO Marine Safety Center Circular 1229 entitled Guidelines for Approval of Stability Instruments. Could you please just in a few sentences describe how this document applies to U.S. flag deep-draft cargo vessels, including Ro-Ro, Con-Ro, you know, combined container -- roll-on/roll-off vessels and container ships?

A. Yes. For U.S. vessels, our regulations require that trim and stability booklets be prepared and carried on board and that stability instruments or stability computers may be carried as an adjunct or supplement that may be used by the master to supplement the trim and stability booklet.

In order to do so -- if the master did so, if the master were to use a stability instrument in addition to the trim and stability booklet, or as an adjunct, the stability instrument or the stability computer would have to be approved. And this provides -- this document provides some guidance on how the stability instrument, the stability computer may be approved by providing tolerances and other guidance and standards for what the stability computer ought -- how the stability computer ought to perform as compared to the approved trim and stability booklet.

Q. Thank you. One of the things that's not in this document is

a discussion of who reviews and approves stability software. Recognizing that this is a guidance document offered by the IMO, is there any implementation of this that the criteria described here in the CFR for U.S. flag vessels?

A. This would be -- approval of the stability instruments would be conducted by the recognized organizations, the classification societies who would approve these stability instruments on behalf of the Coast Guard.

Q. Are there any documents or statements in the CFR or elsewhere that define that relationship in terms -- specifically in terms of stability software and what the responsibilities of the various parties are?

A. I do not recall that there is. I could be wrong, but I don't recall that there is.

Q. Does the U.S. Coast Guard -- this IMO document refers to administrations. Does the U.S. Coast Guard as an administration have any responsibilities for stability software oversight, review, approval, anything like that?

A. Again, this is -- the software review and approval is conducted on behalf of the U.S. Coast Guard. As far as what oversight authorities may have been exercised, I don't know.

Q. Thank you. What other -- there's -- just a couple more questions regarding -- specifically regarding this document. There's a discussion here about established tolerance values for hydrostatic properties and tank volumes, center of gravity,

service inertia, that type of thing. Did you know from you work with them how these -- the values in this and that are listed in the table here, how they were developed and what the basis of these criteria are?

A. Yes, I am aware of the basis. There's an organization called the International Association of Classification Societies, IACS. It is my understanding that IACS, who is a NGO, a non-governmental organization recognized by IMO, proposed these tolerances at a meeting of the stability load lines subcommittee at IMO several years ago. That is the basis of that. It was based on recommendations from IACS, which in turn came from their experience in approving or developing such software or approving such software.

Q. Mr. Sirkar, could you discuss the approval of stability software that is based on so-called pre-approved data as described within this document? For example, it's typical to approve a stability software based on tabular look-ups of values, tables and data in the trim and stability book. Could you discuss basically the implementation of that, specifically in terms of are there any considerations or requirements for verification of that pre-approved data after its initial approval before or prior to its implementation in the stability software?

A. I'm not quite sure I understand the question.

Q. The implication is, in this document, that if a vessel has pre-approved hydrostatic and tank data from a document -- and it

doesn't say what documents, I don't believe, but such as a trim and stability book, that the values in that document would be considered sufficient for approval of that stability software in any case. Is that the correct interpretation?

A. I do not know. I cannot comment on that. If it was an approved trim and stability booklet, I suppose so. I do not believe additional approvals would be necessary, but I really cannot state from a position of personal knowledge about that.

Q. Thank you. One last -- a couple of questions. If I could ask a little bit about on-board software for loading and strength assessment. Could you describe what international standards exist for loading manuals and software for loading and strength analysis, and are there any corresponding U.S. regulatory requirements?

A. Both the Load Line Convention, the International Load Line Convention as well as the Code of Intact Stability -- well, it primarily is the International Load Line Convention, has implemented through our domestic regulations in 46 C.F.R., as implemented, they require that information be provided regarding the safe loading of vessels that are subject to the Load Line Convention.

The guidance on the -- there is international guidance on that, that was issued in 1999, on Model Loading and Stability Manual. And there is an IMO document, MSC Circular 920 that has the guidance on what such a loading manual ought to contain.

Q. Is there any corresponding documentation regarding application of strength or loading and strength analysis software for vessels that do or do not have requirements for loading manuals?

A. Not to my knowledge.

Q. Are there any types of vessels specifically that require loading manuals? And in general if you could just, you know, specify whether or not Ro-Ro, Con-Ro, container vessels have any either international or U.S. requirements for loading manuals?

A. I believe bulk carriers require loading manuals by SOLAS and, as I had mentioned earlier, through the Load Line Convention, loading manuals are required for those vessels subject to the Load Line Convention.

Q. Are you familiar with the load line requirements for the *El Faro*?

A. Generally, yes.

Q. Would you expect for a vessel like the *El Faro* that it would have a requirement for a loading manual?

A. I don't know. I can only speculate. I don't know for sure.

Q. Okay. Thank you. It may be a year thing or based on the date of construction, but I was just curious if you knew that off the top of your head.

DR. STETTLER: At this time, I will pass the questioning to Commander Venturella. I don't know if this would be a good time for a short recess.

CAPT NEUBAUER: Let's take a short recess. The Board will reconvene at 10:15.

(Off the record at 10:03 a.m.)

(On the record 10:21 a.m.)

CAPT NEUBAUER: The hearing is now back in session.

Mr. Sirkar, Captain Venturella will ask the next round of questions.

BY CDR VENTURELLA:

Q. Good morning, Mr. Sirkar. This portion of the interview will focus on the International Load Line Conventions as they apply to *El Faro*. Specifically this line of questioning will focus on the load line related regulations and policy that governed the design of the hold ventilators on the *El Faro*.

Sir, to start out, please turn your attention to Exhibit 260. Exhibit 260 is the most recent International Load Line Certificate issued to *El Faro* dated January 29, 2011. Please note the top of the certificate states the following: "Issued under the provisions of the International Convention on Load Lines 1966, as modified by the protocol of 1988." This certificate was by ABS on behalf of the U.S. flag and the U.S. Coast Guard.

Sir, with that in mind, can you comment on the loading manual question you got in the last set of questions, on whether this set of criteria this certificate was issued to would require a loading manual?

A. Both the 1966 Convention as well as the 1988 Protocol has

reference to a loading manual. There are some provisions in the regulation, in both those instruments, that say that the administration may under certain conditions not specified in the regulation, may choose not to require a loading manual. But the requirement for a loading manual or information to be provided such that the ship is loaded safely for purposes of not introducing undue structural loads, the requirement is in both those instruments.

Now whether it would be applicable to this vessel or not, whether there were any discussions between the load line assigning authority and the U.S. Coast Guard regarding any possible waivers, I do not know, and I realize I'm going beyond answering your question but I felt I should add that, what I don't know.

Q. You mentioned the ability of the administration to allow that a loading manual doesn't need to be required. When you say administration, can you state, is that something only the Coast Guard can do or is that something the ABS can do as well on our behalf?

A. It is my understanding that ABS can do that on our behalf.

Q. Sir, please turn your attention to Exhibit 322, and we're going to look specifically at page 1. Exhibit 322 is an excerpt of select portions of the 1966 International Load Line Convention. Page 1 in particular provides an introduction. In Part 1, it states, "The International Convention on Load Lines 1966 was adopted by the International Conference on Load Lines on 5 April

1966 and entered into force on 21 July 1968."

Sir, is 21 July 1968, the correct date that the 1966 International Convention on Load Lines entered into force?

A. Yes.

Q. When was the Protocol of 1988 adopted and when did that enter into force?

A. The Protocol was adopted in 1988, 11 November 1988. It took many years for it to enter into force. I do not have the exact date but I believe it was about 11 years or so, 12 years, 11½ years, 3 February 2000.

Q. Please turn to page 3 of the exhibit. Page 3 includes a definition for a new ship, which includes all vessels whose keels were laid on or after the date the present convention enters into force. Would the determination of whether *El Faro* was a new ship with regards to the 1966 International Load Line Convention be based on her keel laid date being on or after 21 July 1968?

A. Yes.

Q. According to the best information the Board has at this point, *El Faro* had a keel laid date on or about 1974. Should she have been considered a new ship per the 1966 International Load Line Convention?

A. Yes, that is my understanding.

Q. Would the Protocol of 1988 be properly applied to *El Faro* based on a keel laid date in 1974?

A. I do not believe so.

Q. The first exhibit I showed you was Exhibit 260. As you stated, it says on there that ABS issued this certificate under the provisions of the 1966 International Load Line Convention and Protocol of 1988. Do you have an opinion on why they may have had that on their certificate?

A. That was just the full title of the new convention after the 1988 Protocol went into -- entered into force. It was just the name of the new convention, and only the applicable parts of the consolidated instrument would apply.

Q. On page 4 of the same exhibit, we have the application of the 1966 International Load Line Convention. Based on your reading of the text in Article 4, and your statement that the *El Faro* would likely be a new ship, would *El Faro* be expected to comply with the 1966 International Load Line Convention?

A. Yes.

Q. Please turn to page 6 of this exhibit. This page 6 is Regulation 13, position of hatchways, doorways and ventilators. This regulation continues onto page 7 with the definition of Positions 1 and 2. The *El Faro* had ventilation hold openings on an open second deck which is the vessel's freeboard deck. Would the ventilators that pass through the second deck on *El Faro* generally be considered to be in Position 1 or Position 2?

A. Positions 1 and Positions 2 refer to or use the word exposed. I have had no opportunity to discuss the load line assignment with the load line assigning authority. I do not know what

determinations were made by the load line assigning authority regarding whether those ventilators were considered Position 1 or Position 2, and again, it would be sheer conjecture on my part to try to second guess the decision of the assigning authority.

Q. Thank you. Please turn to page 8 of the exhibit, Regulation 19 for ventilators is shown here. Is this a regulation which would provide load line related design criteria for ventilators on *El Faro*?

A. I would give a similar answer to my previous answer. If the assigning authority had determined that the ventilators were indeed in Position 1 because the second deck was the bulkhead deck, and the position was such that it was exposed, then the answer would be yes. So it's a conditional answer which again is somewhat of a conjecture on my part. So it's not a definitive answer.

Q. Thank you. I understand. For the remainder of these questions, let's assume that Position 1 was determined for the rest of your answers.

A. Yes.

Q. Please describe the various coaming height requirements within this regulation and their impact on the need for a weathertight fitting.

A. If ventilators in Position 1 had coamings which extended more than 4.5 meters, 14.8 feet, above the deck, then they did not need to have closing arrangements.

Q. What if they did not have the 14.8 foot height?
A. I cannot answer that. There may have been other considerations given by the assigning authority regarding policies or exemptions. If there was no coaming that met that height, then there would have had to been weathertight closing appliances. Again, this is a conditional answer.
Q. Within Regulation 19, look at Part (4). It says ventilators in Position 1 shall have coamings of a height of at least 900 millimeters, 35½ inches, above the deck. Is that something that would be required as well if they didn't meet the 14.8 foot height?
A. Yes.
Q. Sir, please turn your attention to Exhibit 351. Exhibit 351 contains some plan excerpts from *El Faro's* validation drawings and some pictures taken upon her sister vessel, *El Yunque*. I'd like to focus our conversation for now on the excerpts on pages 1 through 3 of the exhibit which provides the general arrangement of the exhaust ventilators on *El Faro's* starboard side between racking bulkheads at frames 159 and 162, as well as its fire damper. Please note that this ventilator has a louver chamber and a fire damper chamber. There is a 12-foot baffle plate between the louver shelving and the hold opening, and the hold opening has an additional 39-inch plate coaming within the fire damper chamber protecting it from any water that may enter that chamber.
Have you had a chance to review these reference plans before?

A. Yes.
Q. Sir, in your professional opinion, were these plans in this specific ventilator reviewed to the 1966 International Load Line Convention?
A. An International Load Line Certificate was issued. Whether these plans were used -- whether these particular plans were used in issuing the Load Line Certificate I cannot say. I do not know.
Q. Please look specifically at page 3 of the exhibit. It depicts the non-watertight fire damper for the exhaust vent. It's specifically depicted on the plan as a NWT. For reference, the supply damper is shown later in the exhibit as a WT meaning watertight. Could you comment on if that marking itself may have some clue as to which Load Line Convention was used?
A. I have no insight as to that. I cannot tell you. I cannot say.
Q. Sir, the use of the word "weathertight" in the 1966 Load Line Convention, was that a word that was used in the 1930 Load Line Convention?
A. In the 1930 Load Line Convention, the term weathertight was used but not in the context of vents.
Q. But if they had used the '66 Load Line Convention, weathertight was something that would be a consideration for a closure in a ventilator. Is that correct?
A. Again, this is my conditional answer. If all the other conditions for the requirement for -- if all the other conditions

for the requirement of a weathertight closure in the vent were met, then yes.

Q. Please turn your attention to Exhibit 321. Exhibit 321 is an excerpt from the 1930 International Load Line Convention which provides load line requirements for ventilators in exposed positions.

Sir, can you elaborate on the differences between the requirements for ventilators in the 1930 International Load Line Convention versus those in the 1966 Convention? Please refer to this exhibit as necessary.

A. The primary difference is the use of the term deficient closing arrangements in the '30 Convention and the term weathertight in the '66 Convention.

Q. Can you please elaborate on if *El Faro's* ventilator arrangements were reviewed to the 1930 International Load Line Convention, how that -- how they would be seen at that point?

A. Again, these would reflect ventilator openings in exposed areas, and those are openings directly exposed to sea and weather conditions, potentially vulnerable to wave run-up or other transient submersion. Again, I really cannot answer that question. I do not know how they would be or would not be considered deficient means.

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

CAPT NEUBAUER: Yes. We'll take a recess and reconvene at

10:50.

(Off the record at 10:42 a.m.)

(On the record at 10:58 a.m.)

CAPT NEUBAUER: The hearing is now back in session. At this time, I'd like to go to the parties in interest for any questions.

TOTE, do you have any at this time?

MR. REID: No questions, sir.

CAPT NEUBAUER: Mrs. Davidson?

MR. BENNETT: No questions, sir.

CAPT NEUBAUER: ABS?

MR. WHITE: Yes, sir.

BY MR. WHITE:

Q. Mr. Sirkar, just on the subject of load lines, I have two follow-up questions. Based on your testimony, it's my understanding that you do not approve load lines and the issuing authority is ABS, right?

A. That is correct.

Q. And in addition, you don't have any specific knowledge of the *El Faro's* approval for a load line?

A. I do not.

Q. Getting back to the subject of stability for a moment, you indicated that in response to the question concerning survivability, you did not feel that you could render an opinion concerning 50-mile -- 50-knot winds or any winds in excess of that, in order to apply it to the specific conditions experienced

by *El Faro*, correct?
A. I wouldn't quite characterize it that way. My intent -- what I believe my intent in that answer was that it would be not appropriate to extrapolate or make any kind of predictions regarding survivability of a vessel in 80-knot winds based on that particular vessel satisfying a 50-knot stability criteria. It may seem a little strange when I say it that way, but the stability criteria is, again, a surrogate that represents a standard to be met in order to provide for a certain somewhat unquantifiable level of safety.

So to predict survivability of a particular vessel in a particular given seaway, one would need to conduct specific dynamic stability analysis using specific loading conditions and the specific hull form. So that was my intent. Perhaps I was not very clear.

Q. Thank you. You answered some questions with regard to Exhibit 333, Section 170.170, paragraph (d). Do you recall that?
A. I do.
Q. And just to be clear, assuming that the last modification and conversion to *El Faro* was made in 2006 and there were no modifications or major modifications since that date, would Section 170.170(d) have any applicability to *El Faro*?
A. I do not believe so because the final rule, if memory serves me correct, was in December of 2010, 14 December, perhaps.
Q. There was testimony yesterday from Dr. Stettler concerning

the scope of this investigation on behalf of the Marine Safety Center. Based on Dr. Stettler's testimony, he indicated that the vessel *El Faro* on this accident voyage sailed with the adequate GM for both intact and damage stability criteria. You were here for that testimony yesterday, correct?

A. That is correct.

Q. In prior hearings, there were discussions about a GM margin. Today you discussed or mentioned survivability and certain assumptions for safety. Assuming that the vessel *El Faro* sailed from Jacksonville with adequate GM for intact and damage stability criteria, can you tell us from a safety -- or from a statutory standpoint, what, if any, significance a GM margin has to safety?

A. The term GM margin which was used in our -- in the hearing yesterday, the term GM margin is not a regulatory term. It was used in the -- at the hearing yesterday in the context of for certain loading conditions, what additional GM the vessel may have had in addition to the minimum GM required for that particular loading condition based on whatever governing criteria there was for that particular condition.

So again, going back to my earlier, sort of matter of principle if you will, that one should not in this particular regulation -- this particular application of 170.170, one should not extrapolate to a particular vessel in a particular seaway, the same general comment would apply in the context of any GM margins.

From a physics point of view, to some extent, yes, a higher

GM means in general, in general, a safer vessel. Now, of course, there's a limit because if your GM is too high, then there are other things that go wrong. But beyond that, there is not really any context to GM margin and trying to predict survivability from a -- in a general sense without making any specific additional analyses.

Q. Would it be fair to say or accurate to say, from a regulatory standpoint, there is no requirement to sail within any specific GM margin, provided the intact and damage stability criteria are met during the course of the voyage?

A. That's correct. It would be correct to say that.

Q. There was some prior testimony this morning on the trim and stability book and the application or the use of the CargoMax software. Based on your testimony, does the Coast Guard approve CargoMax software or computer software for stability purposes?

A. The Coast Guard does not. The Coast Guard may, but the Coast Guard does not.

Q. Could you expound on that? I mean, when you use the word, the Coast Guard may approve software for stability, what do you mean? Or when may they approve it?

A. I believe the authority exists and there are guidance documents. I do not recall at this point in time, but I believe in some guidance document, perhaps in the Marine Safety Manual, there's some reference to that. So I believe the authority exists. The Coast Guard has, in my experience, has not exercised

that authority.

Q. And to the extent that the CargoMax software was used by TOTE on the *El Faro* and other vessels -- specifically for *El Faro,* to the extent that was used as an aid or supplement to the trim and stability book, would the requirements in the trim and stability book regarding GM need to be met by the software as far as its accuracy?

A. Yes.

Q. And to the extent that the program provides additional resources to provide or allow slack tanks and calculate the effect on GM, would that still be in compliance? For example, having slack tanks, would that still be in compliance with the trim and stability book?

A. The regulations for free surface in slack tanks is in Subchapter S. So I do not know exactly what additional tanks could be kept slack or how the regulations could be -- would not be met through the use of the CargoMax stability software. Additional capabilities would obviously be available because calculating free surface of slack tanks by hand is laborious and it's far easier to do it on a computer. And the trim and stability booklet would also have restrictions on how many tanks could be kept slack.

So I really cannot answer that question in a complete manner. How additional tanks could be slack while meeting the GM and computing the additional free surface correction in CargoMax, I'm

not quite sure I can reconcile the two. I'm not sure I can reconcile the two. I don't know really.

Q. Typically would you agree that the trim and stability book provides criteria or loading scenarios that are conservative?

A. Yes, absolutely.

Q. To the extent that the CargoMax program for *El Faro* was approved for stability purposes only, would there be any prohibition for TOTE or *El Faro* to use cargo software for loading and securing purposes?

A. I'm sorry. I have to sort of rephrase the question. Would there be a prohibition from whom? From the Coast Guard?

Q. Yes.

A. No, there wouldn't.

Q. Thank you, Mr. Sirkar.

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

CAPT NEUBAUER: Herbert Engineering, do you have any questions?

MR. SCHILLING: No questions, sir.

CAPT NEUBAUER: At this time, I'd like to go to the NTSB for questions. Mr. Stoltzenberg.

BY MR. STOLTZENBERG:

Q. Good morning, Mr. Sirkar. If I can take a step back, can you briefly describe why and for what operating conditions we have intact stability standards? Why do they exist?

A. Intact stability standards exist to provide for a certain

basic level of stability safety when the ship is in an intact condition under most conditions of -- that might be experienced in open waters under different conditions of loading -- under different conditions of loading. They exist to provide a minimal basic level of stability safety in the intact condition.

Q. Would those conditions -- or do they include a vessel with a loss of power in mean seas? Do they exist to provide a measure of robustness or margin for those conditions?

A. The severe wind and weather criterion, which I understand was not applicable to the *El Faro*, the basic weather criteria in 170.170, they all generally assume that the vessel is -- there is no power. It's a dead ship. It's in a dead ship condition and the attitude of the vessel relative to wind and the waves is the worst possible for purposes of stability or heeling. It is the worst attitude of the vessel to the wind and waves. So the short answer to your question is yes.

Q. Thank you. Yes, and it's not specific to the *El Faro*. I'm just trying to get a good understanding of why they exist and why we have them.

And I apologize. I'm going to move around a bit between all the other questions you've had. You mentioned earlier to Dr. Stettler, there are currently no plans to advance Part B of the 2008 IS Code for container ships greater than 100 meters or 324 feet. Am I correct?

A. I missed the first part. You said there are no plans -- I

missed the first part of your question. It was -- I didn't hear that clearly. Will you please repeat that?

Q. Yes. If I heard you correctly, earlier to Dr. Stettler, you said there are currently no plans to advance Part B of the 2008 IS Code, and that's the portion for container ships greater than 100 meters, and I just want to confirm that that's the case.

A. Currently there are no plans to change our domestic implementing regulations related to that item in Part B for container ships.

Q. Doesn't Part B, as related to larger ships, container ships, and maybe even other cargo ships, does it increase the robustness of the vessel? Is it a higher standard typically for intact stability?

A. For the container ships that were -- the recommended standards in Part B for the container ships greater than 100 meters, with the form factor correction, based on the studies -- the studies indicated that the regulations in Part A seem to be unnecessarily restrictive for some of those hull forms, and so the studies indicated that with the form factor correction, without compromising safety, that the cargo-carrying capacity could be increased for most of those types of hull forms.

Q. So if I understand that answer correctly, Part B allow larger ships to have a lower margin of stability?

A. I wouldn't characterize it as a lower margin of stability. For some ships, using the form factor, you would -- your required

GM or allowable -- your required GM could be lower. That does not translate necessarily -- it does not translate at all to a lower margin of stability.

Q. And so what I'm trying to decide is what standards might be available for future vessels. I know this standard's been brought up and earlier, yesterday, we learned that the *El Faro* wouldn't have passed this standard according to the MSC report. So I'm just trying to gather what standards exist that we might be able to think about for future vessels if we apply them. So I guess in this case, I'd ask your professional opinion whether we should be attempting to promulgate this standard or bring the U.S. fleet to it?

A. Well, the standard already exists as an acceptable alternative for certain ship types that meet some of those -- that meet those parameters in that section of Part B. So it's already available to be used as a standard.

Q. Is it your professional opinion that we should promulgate this standard or try to advance this standard, or are we okay where we are now? Would this increase the robustness of certain vessels?

A. I cannot -- I don't know. I cannot answer that. In my opinion, there are other initiatives underway with more sophisticated modes of calculating or methods of calculating intact stability in dynamic conditions with other modes of failure or other vulnerabilities, that have in my professional opinion

greater potential for examining existing safety levels using current stability standards and trying to advance that state of the art to more sophisticated dynamic stability standards.

Q. Are you referring to second generation intact stability efforts ongoing?

A. Yes.

Q. On to another topic area. If built today, can a U.S. flag cargo ship not operating internationally meet only the weather criteria in C.F.R. 170.170 and not the 2008 Intact Stability Code?

A. Yes.

Q. Does that allowance place the U.S. flag fleet in a less comprehensive or less robust stability regime than the oceangoing international fleet?

A. I really cannot answer that. I don't have any data. I don't have any comparisons that are statistically meaningful. I do not know.

Q. So there's -- to your knowledge, there isn't a comparison between the 2008 IS Code, the international one, Intact Stability Code versus the C.F.R. 170.170, where we could say apples to apples, say one is more robust than the other?

A. I know of individual ships that were studied, but I do not have -- 170.170 applies to many different kinds of ships, and so I don't have the data to make any meaningful sweeping or overarching generalizations about deleting 170.170. 170.170 has a very long history of application and experience.

Q. Thank you. I'll switch gears again, and I apologize for the extensive nature of moving around. Regarding the supply and exhaust ventilation dampers, would they have to be shut at sea to comply with stability criteria? And in this case I'll speak specifically to the *El Faro,* the dampers to the supply and exhaust we were earlier discussing, the weathertight dampers to the cargo hold, would they have to be shut at sea to meet the required CFR stability criteria and to comply with the load line?

A. Well, that's a two-part question, or I'll take it as a two-part question. For purposes of 170 -- complying with 170.170, no.

For purposes of complying with the Load Line Convention, I do not know. This was the load line assigning authority's -- these were decisions made by the load line assigning authority. The law has directed the Secretary to delegate these functions to the American Bureau of Shipping or other similarly recognized organizations. So they will conduct the -- so they would make those decisions.

Q. Okay. During previous testimony I think it was described that the downflooding point of a vessel is the first point that cannot be made weathertight. Is that correct?

A. Yes, the words for downflooding point or downflooding angle are just slightly different in the international regulation, in the Code of Intact Stability vice the definition in 46 C.F.R. Subchapter S, but functionally, essentially they mean the same. They mean the same. They have the same meaning along the lines of

what you said.

Q. With that in mind, what I'm trying to understand is the base code, the calculations, the assumptions that have gone into these load line calculations, and we've talked or you've talked that they start back in the '20s, the Load Line Convention in '30. Would the designers of these standards for load line stability, would they have anticipated that these weathertight openings are open at sea?

I'm not talking in a statutory requirement or specific to the *El Faro.* I'm just trying to understand if the engineers and naval architects who came up with these standards anticipated that these weathertight openings would not be closed underway at sea or were they thinking they were? And to simplify the question, are they required to be for the calculations, not for statutory reasons, just for the math for the margin?

A. So I can only answer that question partially and so that is what I will do. For purposes of regulation, for purpose of, as you've characterized it, the math -- for purposes of the math for intact stability, it is only when we apply the severe wind and weather intact stability criteria and look at those righting energies and look at the righting lever characteristics in 2.2 and 2.3. That is where the angle of -- the downflooding angle becomes relevant. So that's all I can say about stability, that that's where it's relevant when it comes to applying the regulation, the intent of the regulation and the basic standard, where you would

have to meet those standards based on where your -- what your downflooding angle is, your first point that that cannot closed weathertight.

As far as load line, I cannot say because again it's the load line assigning authority who makes those decisions about weather-tightness or otherwise of those vents.

Q. Thank you. Yes, I think we understand that the fact they could be weathertight meant, from previous testimony, meant that it met all requirements, statutory and the rules applicable.

In the case of the *El Faro,* we don't have guidance as to that the crew should had kept the openings weathertight, the crew should have closed them during heavy weather. So where I'm struggling to understand is maybe there's a hole in between what was intended and what happened, how we might patch that hole going forward if it indeed exists.

I noticed, and I don't think this is an exhibit, but more recently at a ship design and construction third session at IMO, there was a submission by IACS for a unified interpretation on ventilators fitted with weathertight closing appliances serving machinery spaces which are required to remain open and are therefore considered as a downflooding point. So I was basing some of my thoughts off of some recent classification society interpretations that if you have to leave one of these previously weathertight openings open, you now need to consider a downpoint for machinery spaces.

So I guess I don't have a question there, I'm just -- unless you can elaborate on this particular -- what the thinking was for this particular submission.

A. Yes, I'm generally aware of this submission. I do not recall the specific outcome as far as the decisions made by the IMO subcommittee. I don't recall. Of course, it's easily looked up. But again, on the face of it, it appears to be a most sensible interpretation on the face of it.

Q. I'd agree, and that's where I'm struggling to find that maybe the guidance, how it doesn't make it to the deck plates or the disconnect between the deep back office of a design world and the deck plates. Thank you.

I'd like to change gears to stability analysis. What would trigger a damage stability analysis to be required by the Coast Guard or the MSC?

A. It could be a range of reasons: major modification, significant change in flag ship characteristics. In the case of the *El Faro*, the significant change in draft because the different -- a deeper draft. There could be a number of reasons like that, and there are guidelines for what constitutes significant difference in lightship weight.

Q. Which division of the Coast Guard is responsible to determine if a ship alteration is a major conversion or major modification, as you just mentioned?

A. That would be the Marine Safety Center of the Coast Guard.

Q. Are you aware that the last conversion of the *El Faro* from a Ro-Ro to what I'll call a Ro-Con with the containers added on the upper deck was not determined to be a major conversion or major modification?

A. I'm generally aware of that outcome.

Q. With an increase of draft of 2 feet and ballast, fixed ballast to carry the higher container weight, should that have made it a major conversion in your opinion?

A. I do not have an opinion on that.

Q. Are you aware of Title 46, the four definitions applied to designate a major conversion? And I have them here: substantial changes to dimensions or carrying capacity of the vessel; change of the type of the vessel; substantially prolongs the life of the vessel or otherwise so changes the vessel that it is essentially a new vessel. One of the things I don't see there is draft, increase in draft.

Should we or would it be helpful to have an increase in draft to be more objective for a major marine conversion or a major conversion definition?

A. Okay. First of all, I have very limited knowledge and expertise regarding the application of the intent of those criteria for the purposes of determining major conversions. It is not a particularly straightforward task. It has precedent. It has many considerations that are given, and when Captain Mauger testified at the hearing earlier that there was extensive

discussion on the process by which those decisions are made.

So I would be extremely reluctant to comment on that specific question that you asked about changing the draft by 2 feet and whether or not it would trigger a major conversion determination. I would not comment on that.

Q. Dismissing it specific to the *El Faro*, are large draft changes to a vessel, are they substantial with regard to vessel system stability, lifesaving, other shipboard systems?

A. Can you help me out here? Can you ask me the question again perhaps with a little -- perhaps with a little context if you can?

Q. Should draft be included or substantial change of draft be included in the guidance to the Marine Safety Center and to the marine industry when they submit for an alteration, or is it not necessary? Let me strike that last point.

Is it a good idea to add an objective draft, increase in draft standard?

A. Again I would answer it the same way as I did earlier. I cannot comment. It would have to be considered with many other factors.

Q. Okay. If we -- regarding a major conversion, the way I understand the language is, if it is designated -- if an alteration is designated as a major conversion, that there is still a reasonable and practical standard that can be applied to meet current rules and regulations. Am I correct in that statement?

A. Yes.
Q. In the case of stability standards, intact and damage, who would make -- a vessel has been determined to be major conversion. Now who makes the determination whether stability standards, intact and damage, would be reasonable and practical?
A. Again, it would be the Marine Safety Center. Having said that, typically when a major conversion determination is made, if there are new stability standards that are applicable to new ships, typically stability standards that -- typically stability standards influence the design, the arrangements, the structure of the vessel to a great extent. So typically if there are new stability standards that exist, it would not be applicable in general to the existing vessel undergoing a major modification. It would still need to be made -- the determination would still be made by the MSC on a case-by-case basis.

So again I'm reluctant to generalize having said that. When we have new stability standards, we don't typically apply new standards to older vessels. Stability standards are generally incrementally modified, and existing vessels continue with whatever standards was applicable at the time the vessels was built.
Q. So is it a fair assumption then in the case of the conversion of the *El Faro* in 2005-2006, that even if it was designated as a major conversion by the Marine Safety Center, it would have still had its previous 170.170 stability standard as the requirement?

A. Yes.
Q. Thank you, Mr. Sirkar.
MR. STOLTZENBERG: That's all I have.
CAPT NEUBAUER: Mr. Kucharski.
MR. KUCHARSKI: Yes. Thank you, Captain.
BY MR. KUCHARSKI:
Q. Good morning, Mr. Sirkar. Hopefully I won't ask you too technical questions, because I don't know if I know all this technical stuff, but -- just as a little bit of background, do you attend the IMO committees, International Maritime Organization committees when they meet on stability type issues? Do you go over to London for that?
A. Yes, I do.
Q. How long have you been doing that? Has it been for quite some time? Can you give us an idea?
A. I've been going to IMO since 1993, almost continuously. In the middle, if you will, of that period, 1993 to the present time, for a period of about 7 years or so, 6 or 7 years, I was attending a different committee at IMO whose work was not directly related to ship stability. With that exception, I give you the rest of the answer.
Q. I believe you heard testimony yesterday by Dr. Stettler that the GM is not a good measure of stability for larger angles of heel. Would you agree with that statement?
A. For many ship types, the GM criteria alone has actually

served quite well for many, many, many years. With some new -- newer or change in hull forms, it may be inappropriate to apply the GM-only criteria, without consideration of other characteristics such as the righting lever or righting energies.

So I would be hesitant to make a broad sweeping statement like the one -- like the way you have characterized it. I would qualify it. I would put it in context.

Q. Thank you. Let's take a look at Exhibit 8, page 16, please. It's the trim and stability booklet for the vessel, if you pull it up. I think across the top it's a table that says minimum required GM curve.

A. Yes.

Q. Page 16.

A. Yes. Yes, sir, I see it.

Q. Have you reviewed this trim and stability booklet prior to your testimony today?

A. I would not characterize it as a review. I have seen it. I have looked at it.

Q. Do you know if there's any GZ curve, minimum required GZ curve in this trim and stability booklet?

A. Not to my knowledge.

Q. So how is a master supposed to understand all this about GZ and righting arm, clearly from a master's standpoint, how is he supposed to -- he or she supposed to look at this and say, okay, I need to weigh the factors, GZ -- looking at this trim and

stability booklet, or any of the operating instructions in here, we see a curve -- we see a minimum required GM curve and -- have you reviewed any of the CargoMax forms for the vessel?

A. I have not.

Q. Would you also look at that table? And there's a white box embedded in the table where it says minimum required GM values in this diagram must be maintained for all operating conditions to meet -- and this is the important wording to me -- weather criteria as specified by the U.S. Coast Guard. Do you see that?

A. Yes, I do.

Q. So this manual here, what weather criteria -- is it a wind -- is wind involved in this? Is sea state involved in this weather criteria that this manual was approved by ABS under -- I believe recommendations should be included in there for the Coast Guard, or we'll deal with that in a second. Can you elaborate on this weather criteria for us?

A. Yes, it's -- I believe the weather criteria in 46 C.F.R. Subchapter S, 170.170, where we have a notional steady wind, I believe in the order of -- or it translates to about 55 knots for open waters. The formula doesn't say 55 knots it's based on projected lateral area and length of the vessel, but essentially it is that. It is steady wind speed, and a minimum GM requirement based on that criteria.

Q. So it's not talking about GZ here. It's talking about GM -- minimum required GM for certain weather criteria. Is that

correct?

A. Yes.

Q. You also stated earlier, I believe, that you would not like to hypothesize or speculate on survivability at, say, 70 knots, 80 knots or some higher speed than what the weather criteria has embedded in it?

A. That is correct. There is -- I would hesitate to directly correlate or extrapolate.

Q. Okay. So let me get down to your definition of survivability. Would you be able to opine as to whether the vessel had sufficient GM, GZ, or something that the master could hang -- he or she can hang their hat on and say I at least have some kind of an idea what's going to happen to my ship at 70 knots?

A. The definition of survivability is a very difficult one. It is not a precise number. It will depend on several facts, professional experience of the master, the judgment, the loading condition, other factors that are somewhat intangible or unquantifiable, and that's why the -- that there is no precise, perfect definition of survivability. One has to take all of that information into consideration and, based upon their professional judgment, make decisions on what is -- what might be survivable and what might not be survivable.

This page in and of itself, just by itself -- that's the point I was trying to make -- by itself should not used to make a

conclusion that I can take my ship into a 70-knot wind and survive.

Q. Let me see if I can rephrase that. Would you be able to tell me at a static condition, static, what effect a 70-knot wind would have on a vessel? How much heel it would have at 80 knots? And would you be able to tell me what GM -- the GM it would have at that particular 100 knots or 70 knots or 80 knots? Would you be able to do that? Not survivability, but just tell me what the GM would be or what the wind heel effect would be? Would you be able to do that?

A. It is possible to calculate that. The pressure, as we all know, varies as the square of wind speed. So one could theoretically calculate the heeling angle for a steady wind of any knot.

Q. I'd like to specifically look now at -- I think we can start off with 46 C.F.R. 170 but 170.110, and that should be Exhibit 333, and it starts off at page 1, is 170.110. Are we all set?

A. Yes, sir.

Q. Great. Thank you. And I believe this section is the stability booklet, that talks about the contents of the stability booklet. Some are "must have" in there and some are "shall consider" language.

A. Yes.

Q. Thank you. So this stability booklet, who is it intended for? I can help you out with that. Section (c) says, each

stability booklet must contain sufficient information to enable the master -- is that correct? This is for the master?

A. That is correct.

Q. So at the top of that page that you have in your exhibit, top of page 1, the right-hand column, it says in developing the stability booklet, consideration must be given to including the following information. It says consideration. Do you see that?

A. Yes, sir, I do.

Q. Can you shed some light on why wording is using consideration. It's a -- it sounds like it's a may, but it doesn't need to be in there. So you could literally not have hydrostatic curves, capacity plan, tank sounding, everything in here that would be required to have, correct? Would that be your interpretation there? It says you need to consider it, you don't need to have it.

A. I wouldn't go so far. I would interpret the word just as it is. I would consider whether or not it is appropriate to have that information in the booklet. I wouldn't interpret that to mean anything other than that.

Q. So let's jump down to item number 11. It's general precautions for preventing unintentional flooding. So you've sort of danced around these ducts on the side of the hull. Would that be a source of unintentional flooding if those were left open?

A. Perhaps.

Q. Do you see any instructions in this book in the -- when you

look at trim and stability book of the *El Faro*, do you see any instructions in there anywhere for closing these vents?

A. I do not.

Q. And I know you sort of talked about load line regulations, maybe -- if I'm mischaracterizing this, please correct me -- some -- that load line regulations also encompass closures about the vessel. Is that correct?

A. That is correct.

Q. And you were aware that the load line certificate -- we can pull that up and everybody can look at it -- at the bottom right-hand corner of the first page it says trim and stability booklet, you need to follow the trim and stability booklet. Are you aware of that?

A. I am.

Q. The other section which I'd like you to look at is that same column, item number 15. It says, "Any other necessary guidance for safe operation of the vessel under normal and emergency conditions." Do you see that?

A. I do.

THE WITNESS: Excuse me, Captain Neubauer. Can I request a short recess, please?

CAPT NEUBAUER: Yes, sir. The MBI will recess and reconvene at 12:10.

THE WITNESS: Thank you, sir. That will be fine.

(Off the record at 12:02 p.m.)

(On the record at 12:13 p.m.)

CAPT NEUBAUER: The hearing is now back in session.

We're going to have one schedule change for the afternoon. We'll have Commander Michael Crider from U.S. Coast Guard Communications Command testify immediately after lunch, and to be followed by Captain David Flaherty from the Coast Guard's Traveling Inspector Office, Headquarters.

Now we will continue on with Mr. Sirkar's testimony and Mr. Kucharski.

MR. KUCHARSKI: Thank you, Captain.

BY MR. KUCHARSKI:

Q. Thank you again, Mr. Sirkar. Earlier this morning, you mentioned the term relatively low freeboard, relatively low freeboard when you were asked about types of vessels. I think you were talking about some of the stability calculations going back to the 1920s even and fishing vessels you were talking about, and it was Finland and Scandinavia and then you mentioned Japan, Japanese and about some of these. Do you recollect that?

A. Yes, I do.

Q. This is another one of those nebulous terms in my mind. What is relatively low freeboard? Is there a definition for that?

A. No. What I was pointing to was the freeboard is such that once the vessel starts to heel under this so-called steady wind, because of the freeboard and its value, we have relatively quickly deck edge immersion and thus losing stability fairly quickly, as

opposed to some other vessel where we could, say, go well past 20, 30 degrees and still not have deck edge immersion.

And so you could have an extended righting lever -- righting arm curve, but with a relatively low -- relative to some other vessel where you don't have deck edge immersion, if you have a vessel where you do have deck edge immersion at a fairly small angle, say, much less than 30, then you would lose that water-plane area and solely applying that criteria may be inappropriate. I mean, there could be other characteristics that make it inappropriate but this is one.

Q. Okay. I'm not sure what it's relative to, but to my mind, a rowboat -- let's take a rowboat. Okay. It has very little freeboarding and sheer numbers, maybe only 6 inches, and now we're talking about a large oceangoing vessel that may have many feet of freeboarding. Okay. So relative to what? Some kind of length, beam, relevant to other vessels have -- I mean, there are so many different types of vessels. I mean how do we quantify this? It seems like an nebulous term to be relatively low -- relatively low. Again, you know, a row boat has relatively low freeboard.

A. I wasn't trying to quantify or define it. All I'm saying was there's a range of freeboards. There's a range of ship characteristics, different types of hull forms. Some hull forms it may be inappropriate for some types of vessels to just solely have the initial GM 170.170 criteria.

Q. Okay. So we're back to that, what I was asking about before

in looking at the table. As a GM requirement then, so there are other things that need to be looked at. Is that what you're talking about?

A. Well, my comment was not related to the trim and stability booklet. My comment was related to what is -- what are the different ship types that may be appropriate for 170.170 and what types of ships we may need to consider other additional or alternative criteria because this may not paint the true picture.

Q. Okay. Thank you for that clarification.

So we've determined that the wind velocity was not in the trim and stability booklet. It just talked about weather criteria. There's no wave information also. Wave or sea state is part of the weather requirement in place for the *El Faro*; is that correct?

A. It's implicit. It's not explicit. But where there is a wind, there is generally waves.

Q. So was there a wave type associated with this weather criteria?

A. Explicitly, no. But again, it's derived from weather conditions where wind speed is the only descriptor that has been used for -- in the criteria for defining that particular weather condition. Yes, there is wave, but it's not in the formula. It's implicit.

Q. I see. So there's nothing anywhere in these calculations for the weather criteria that include the actual height of a wave,

period of a wave, or anything like that?
A. That's correct.
Q. Just some more points of clarification. The 100 meter container vessels stability rules or the recommendations to the more stringent recommendations for container vessels in excess of 100 meters, is there any reason that the Coast Guard didn't adopt those recommendations?
A. I have not found any explicit stated reasons on the record. So I do not have an answer.
Q. The instructions to the master in the trim and stability booklet, I think it's -- we know the reference, but I'll give it to you again, is 008, and in this particular case it's on page 8. It actually starts on page 6, called instructions for roll-on/roll-off vessel. I just need to include this -- understand this clearly.
What does the Coast Guard -- what type of a vessel does the Coast Guard think this is? Is it a roll-on/roll-off vessel? Is it a container vessel? What is it?
A. Well, it's a combination. It's a roll-on -- Ro-Con vessel.
Q. Is this your typical -- is this what's envisioned as a roll-on/roll-off vessel, typical type roll-on/roll-off vessel? Is this a special form, a trailer-type ship?
A. This would be one of the earlier designs of the Ro-Ro type ship, one of the earlier types of Ro-Ro. Modern day large roll-off vessels look somewhat different.

Q. Your modern day roll-on/roll-off vessels, the ventilation areas for the vessels, are they low to the water or do you generally see them up high?

A. Generally higher.

Q. I'm not sure if you were asked this. I know we talked about weathertight, the closures, these ventilation dampers to the cargo holds. What's the difference between weathertight and watertight? Either break it down to Coast Guard regulations, IMO regulations, SOLAS regulations. What's the difference between weathertight and watertight?

A. Watertight has a head, a specified head associated with that and must prevent passage of water through that particular closure in either direction under a specified head, whatever that specification is for a particular watertight closure. A weathertight is no passage of water under all conditions that would be experienced, that could possibly be experienced at that location.

Q. And just to clear it up for maybe some of the others in the room, the head you're talking about is hydrostatic, the weight of the water, a water head on top of it. Is that what we're talking about?

A. Yes.

Q. So if that vent -- the vessel had a particular list -- I mean, we were looking at angles of heel yesterday to where water would reach those vents, if those were closed and that angle of

heel had stayed at that angle of heel, would those prevent water from coming in if those were closed -- if they were closed?
A. I cannot say for certain. I cannot say for certain.
Q. Can you opine as to whether it would be safe to close those dampers at sea when you have automobiles and gasoline in tanks on the vessel on the -- in the cargo in the vessel? I think you're aware that they carry automobiles on the vessel. Could you safely close those dampers and leave them closed in heavy weather? Would there be any fear for possible explosion of a flammable mixture?
A. On the fact of it, yes. Fire dampers are there for that -- for a reason. But again, I'm not a fire protection engineer. You have to trade off one risk against another risk and maintain certain weathertight integrity while not compromising or not reintroducing some other risk.
Q. So if I understand that correctly, then you would have to weigh the possibilities of explosion compared to getting water or downflooding through those openings; is that what you're saying?
A. Yes.
Q. That's a tough answer. Back to 46 C.F.R. 170.110, and item number (c), at the bottom of that particular -- and that's the same exhibit that we had before. Would you like the exhibit number, Mr. Sirkar?
A. 333?
Q. Yes, sir. In the wording there, at the end of paragraph (c), which is that left-hand column, and it's on page 1, at the very

bottom it says, "Information must include an effective procedure for supervision and reporting of the opening and closing of all loading doors where applicable." Do you see that?

A. I do.

Q. What's a loading door?

A. A door for loading cargo, for Ro-Ro, for traffic to be loaded on board.

Q. And have you seen pictures of the *El Faro* and the doors -- some of the watertight doors on that vessel? Have you seen any of those pictures?

A. Yes.

Q. So the loading doors would be the large type ones where they can drive trailers in and out of; is that correct?

A. Yes.

Q. The loading doors on there, some of the loading doors had man-size, if you will, boarding-type closures on them, that you had a dock? Would that be part that also?

A. Yes.

Q. And just for the record, the scuttles that they talk about, I don't know if you looked at any of the scuttles, specifically the scuttle on the 3 hull?

A. I've seen a picture.

Q. That is not the loading door, correct?

A. That is correct.

Q. I'd like to get your opinion on this. Just in your mind,

container ships -- the *El Faro* carried containers on deck, on the main deck, and from all the information that we have, on the *El Faro's* final voyage they had three-high stack. Three high, not consistently but most areas they were three high.

So looking at the profile of the *El Faro*, would that profile be similar to other types of vessels like the roll-on/roll-off type car carriers or a passenger ship where they have a high profile to wind?

A. Generally, yes.

Q. Do you know if there are more stringent regulations for passenger vessels and the wind criteria, weather criteria, for passenger vessels? Has that changed recently in the last, say, 5 years as far as the requirements?

A. No. For passenger vessels?

Q. Yes. Is that a '99 criteria roughly? Used to be 26 meters per second, similar to what the *El Faro* was. But passenger vessels went to a -- to the new builds, to a new requirement. I say new builds, but in, say, around 2011. You're not aware of any change in the IMO regulation for the higher wind criteria?

A. I'd have to go back and review the Intact Stability Code.

Q. Thank you for that.

Could you look at MSC/Circular .456. That's Exhibit 332. And we're going to go I think it's the last page. Yes, it's on page 8. And let me just back up just a hair to page 7. The very last line says -- it's Section 5.2, and it says "Master's

instructions." And just for the record, page 1 says, MSC/ Circular .456, "Guidelines for the Preparation of Intact Stability Information," and parenthetically it says "(adopted on 13 October 1986)." Okay. So would this -- would these recommendations, will they hold for the *El Faro* or not?

A. Most likely. I am not sure about the applicability of this based on the date and other references to Regulation 22 in SOLAS 2-1.

Q. Let me kind of set the groundwork for this then. Does the -- the *El Faro* alternative compliance, it was supposed to abide by SOLAS regulations. Is that correct?

A. The Alternate Compliance Program is structured such that it would have international certificates.

Q. Okay. And this says adopted in 1986. So I just want to make sure. I don't want to waste everybody's time if these don't apply, since 1986, the vessel -- the trim and stability booklet I think it says 2007, but the incline was in 1993 when it was stretched. So it seems like these recommendations should apply. Would that be your --

MR. WHITE: Commander, can we take a short break please?

CAPT NEUBAUER: Yes, sir. The MBI will recess -- Mr. Sirkar, do you -- let me just -- Mr. Kucharski, we're looking at lunch. Do you know how much longer your line will be?

MR. KUCHARSKI: It's really the last question. It depends how long he takes to answer it.

CAPT NEUBAUER: Okay. I recommend that we try to get through this last question before lunch.

Mr. White, if this is the last question, is that acceptable? We will have a round for the PIIs.

MR. WHITE: Yes, that's fine.

CAPT NEUBAUER: Sir, I'd like to try to finish if we can. So can you rephrase that last question, Mr. Kucharski, or just reask it?

BY MR. KUCHARSKI:

Q. This guide -- well, I don't know if it's a guide, but it's called Guidelines for the Preparation of Intact Stability Information. Is it your opinion that these applies to the *El Faro* or no?

A. From the dates, it would seem to be applicable, but I need to look up the other references in SOLAS, not because of the dates, but I needed to look up the reference anyway, and there might be a more -- there might be other ties in here with SOLAS. So I couldn't give you a complete answer. From the dates it would seem so.

CAPT NEUBAUER: Well, sir, could we ask you to respond to the Board later in the hearing session or even later this week with an answer after you've had some time to research it?

THE WITNESS: Certainly.

MR. KUCHARSKI: Okay. Well, Captain, I'd like to ask a couple of questions related to this then. If it does apply, then

we won't have to --

CAPT NEUBAUER: So you're going to assume that it does apply in your question?

MR. KUCHARSKI: Yes.

CAPT NEUBAUER: Okay.

BY MR. KUCHARSKI:

Q. So on page 8 --

MR. WHITE: Excuse me, Captain. To the extent that we could discuss this before this line of question, it might be more time effective if we do that.

CAPT NEUBAUER: Okay. The hearing will recess and reconvene at 12:50.

(Off the record at 12:39 p.m.)

(On the record at 1:01 p.m.)

CAPT NEUBAUER: The hearing is now back in session.

We're going to at this time recess for lunch and come back at 1:45, and we'll continue on, sir, with your testimony at that time, if that's okay.

The hearing is in recess.

(Whereupon, at 1:02 p.m., a lunch recess was taken.)

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

(1:48 p.m.)

CAPT NEUBAUER: The hearing is now back in session.

We'll continue with testimony from Mr. Sirkar, and we're going to pick up and repeat the last question asked during the session before lunch. So, Mr. Kucharski.

MR. KUCHARSKI: Thank you, Captain.

BY MR. KUCHARSKI:

Q. Mr. Sirkar, my question was, does Exhibit 332, which is MSC/Circular .456, Guidelines for the Preparation of Intact Stability Information (adopted on 13 October 1986), did that apply to *El Faro*?

A. So thank you. I'm going to give you a multi-part answer. The bottom line is I don't think this would apply.

First of all, it is all tied up with when she enrolled -- when the vessel enrolled in ACP and what was the service before that? What was -- was it in domestic service before that and the international service after enrollment? And those types of issues are best addressed by our Office of Vessel Compliance, Office of Commercial Vessel Compliance that deals with enrollment issues.

From my perspective, the way I look at this particular circular, it is tied to the predecessor instruments to the Code of Intact Stability. The Code of Intact Stability, in the supplement that was used in -- the ACP supplement version that was used when *El Faro* enrolled in the Alternate Compliance Program, that version

of the supplement said that compliance with Subchapter -- for the intact stability section, it said, compliance with 46 C.F.R. Subchapter S is equivalent to the requirements in 2008 Code of Intact Stability. Therefore, that connection between this MSC circular and the predecessors to the Alternate Compliance Program, that connection does not exist. Hence, on the face of it, even though the dates are -- seem right, may seem applicable, but for that stability non-connection reason, my opinion is it would not apply because it talks about righting levers and curves of righting levers and such.

Q. Okay. Great. Thank you for that clarification.

Can you tell us if being -- if the vessel is in the Alternate Compliance Program, or any vessel is in the Alternate Compliance Program, does that change how the U.S. Coast Guard or MSC -- does that change your role in stability booklet review?

A. I would have to refer that question to the Marine Safety Center.

Q. Okay. Well, let me ask that a little bit different way. Who reviews the stability booklets for the ACP program? Do you review it?

A. I do not. It's my understanding that the recognized organization, the ACP class society, ABS, would review that.

Q. So then it really wouldn't matter if you're in the ACP or not. Do you review stability booklets for vessels not in the ACP program? You don't do that at all?

A. I do not do that at all.
Q. One last question. You mentioned that you've been to these IMO meetings -- I'm sorry. Were you finished?
A. I'm sorry, sir. I'm with you.
Q. I wanted to make sure I wasn't cutting you off. When you attend these meetings, IMO committee meetings, stability meetings, do they have any people with experience actually handling the vessel in heavy seas under conditions of anything like parametric rolling or synchronous rolling, or just handling a big vessel in heavy seas? Do they ever attend any of these committee meetings?
A. Yes.
Q. And they weigh in on some of these decisions or what it is that you're proposing coming up with?
A. Yes, they participate in discussions in these meetings.
Q. Thank you, Mr. Sirkar.
MR. KUCHARSKI: Captain, that's it. I don't have any further questions.
CAPT NEUBAUER: Thank you. I'd like to go to the PIIs at this time. TOTE, do you have any questions?
MR. REID: No questions, sir.
CAPT NEUBAUER: Mrs. Davidson?
MR. BENNETT: No questions.
CAPT NEUBAUER: ABS?
MR. WHITE: Yes, sir.
BY MR. WHITE:

Q. Mr. Sirkar, in the line of questioning from Mr. Stoltzenberg, he asked whether you had any input as to whether a major modification should include a change in draft. As a follow-up to that line of questioning, we understood that presently a change in draft would not constitute a major modification. But based on your experience, to the extent that a vessel, say, a tanker, might be issued multiple load lines, and to the extent it had multiple load lines and was required to comply or follow the statutory requirements of the deepest draft, based on that information, would you have any further comment as to whether a change in draft should be considered to be a major modification and what that -- what result that may have on a tanker that may have multiple load lines?

A. I wouldn't want to comment on that.

Q. To the extent a major modification or the description of a major modification for a vessel is decided by the Coast Guard, that could potentially mean the vessel may have to change its stability requirements for each load line that it's assigned, correct?

A. Potentially, correct. Yes.

Q. Thank you.

MR. WHITE: Nothing further.

CAPT NEUBAUER: Does Herbert Engineering have any questions?

MR. SCHILLING: No questions.

BY CAPT NEUBAUER:

Q. Mr. Sirkar, I just have one follow-up question from your earlier testimony. You -- we had discussed a little freeboard vessel, and if I understand your answer, it depends on some of the angles that could start to introduce flooding to the watertight deck. The *El Faro* starts to take water on the second deck at about 15 degrees heel. In your opinion, would that be considered a low freeboard vessel?

A. I was using the term in the context of deck edge immersion, not flooding on the deck, and thus loss of water-plane area and thus reduced range of stability and reduced righting energy. I was not referring to immersion of downflooding points.

Q. So understanding the *El Faro* beginning to take water on a deck at a 15-degree heel, do you have an opinion on the vessel as a low freeboard vessel, or no?

A. No.

CAPT NEUBAUER: Are there any final questions for Mr. Sirkar at this time?

MR. KUCHARSKI: Yes. Captain -- I'm sorry.

CAPT NEUBAUER: Mr. Kucharski.

BY MR. KUCHARSKI:

Q. Mr. Sirkar, so deck edge immersion, what deck are we talking about at deck edge immersion? The second deck was the watertight deck on the *El Faro*. Would that be the deck where, if the water comes on as it lists, is that at the point of deck edge immersion?

A. Yes. Yes.

CAPT NEUBAUER: Does that clarification change your opinion on if it was a low freeboard vessel?

THE WITNESS: I was thinking more along the lines of OSV type hull forms where deck edge immersion doesn't necessarily result in downflooding, but does result in loss of water-plane area and reduced righting energy. It's slightly different.

BY MR. KUCHARSKI:

Q. But at desk edge immersion, does -- on the *El Faro,* if the water is on the second deck, is it losing water-plane area?

A. Not necessarily. It might be a -- not necessarily. It might be a transient issue.

CAPT NEUBAUER: Are there any final questions for Mr. Sirkar at this time? Commander Denning.

BY CDR DENNING:

Q. Mr. Sirkar, I just have one question. You were asked a lot of questions today about the ventilation, cargo -- cargo holds and fire dampers and the ventilation system, specifically as it relates to load lines and stability.

I'm looking at on my screen 46 C.F.R. 92.15-10, ventilation for closed spaces, and this is -- this ties in with Mr. Kucharski's question earlier about the purpose for those fire dampers. I'm going to read you excerpts from this and then ask you a question. It says here these ventilations shall be -- vessel shall be properly vented or ventilated. Means shall be provided for closing those ventilators in case of fire. But then

later in paragraph (d)(1), it says areas below the weather deck shall be provided with continuous pressure-positive ventilation at each level on which vehicles are transported, which would be applicable to the *El Faro* since it's a Ro-Ro vessel, correct?

A. Correct.

Q. So my question is if the crew is required to maintain positive ventilation in those spaces, what might the rationale -- the only way to do that is to keep the fire dampers open, what might the rationale be to consider them weathertight or watertight when it comes to load line or stability related issues?

A. According to the Load Line Convention, other means would need to be provided, coaming heights or other alternatives would need to be considered in order to reduce the likelihood of downflooding.

Q. So coaming heights can help reduce the likelihood of downflooding, but the fire damper itself should not be considered as being either weathertight or watertight. That does not affect the ability -- that doesn't reduce the likelihood of water ingress through that opening, correct, if it's required to stay open?

A. Correct. But again, I'm not a fire protection engineer so I can't combine -- in my mind, I cannot combine the two risks and eliminate or mitigate both of them simultaneously. So I really can't give you a complete answer.

CDR DENNING: Thank you, sir.

CAPT NEUBAUER: Are there any final questions for Mr. Sirkar?

Okay. Mr. Sirkar, you are now released as a witness at this Marine Board of Investigation. Thank you for your testimony and cooperation. If I later determine that this Board needs additional information from you, I will contact you through your counsel. If you have any questions about this investigation, you may contact the Marine Board record, Lieutenant Commander Damian Yemma.

(Witness excused.)

CAPT NEUBAUER: Before we move on, do any of the PIIs have any issues with the testimony we just received?

MR. REID: No, sir.

MR. BENNETT: No, sir.

MR. WHITE: No, sir.

MR. SCHILLING: No, sir.

CAPT NEUBAUER: Thank you. The hearing will now recess and reconvene at 2:10.

(Off the record at 2:04 p.m.)

(On the record at 2:11 p.m.)

CAPT NEUBAUER: All right. The hearing is now back in session.

At this time, we're going to hear from Commander Michael Crider who is the commanding officer of the Coast Guard's Communication Command.

LCDR YEMMA: Please raise your right hand, Commander.

(Witness sworn.)

LCDR YEMMA: Thank you.

LCDR YEMMA: Commander, can you start by stating your full name and spelling your last name for the record?

THE WITNESS: Commander Michael Crider, C-r-i-d-e-r.

LT NOYES: And Lieutenant Travis Noyes, N-o-y-e-s.

LCDR YEMMA: Commander, can you tell the Board what your current assignment is in the Coast Guard?

THE WITNESS: I'm currently assigned as commanding officer of the U.S. Coast Guard Communications Command in Chesapeake, Virginia.

LCDR YEMMA: And can you please describe some of your responsibilities in that position?

THE WITNESS: The mission of Communications Command is to provide reliable communications, communications support and communications training to Coast Guard forces and other government agencies in support of Coast Guard operations, as well as communication services to the maritime public throughout the world, long range coms.

LCDR YEMMA: And can you also tell the Board about any of your prior Coast Guard experience related to your current position?

THE WITNESS: Absolutely. I've got -- as of tomorrow, I'll have 29 years active duty. I've been here at Communications Command for 6 months. I arrived in July 2016. I was stationed -- I went through radioman school shortly after enlisting in the

Coast Guard. I was stationed at Communications Area Master Station Pacific out in Point Reyes, California. That unit has now folded underneath Communications Command and no longer exists. It's not operating facility of ours. I've done communications afloat, ashore. I was with Communications Station Kodiak, a chief there back in the day, as well as the XO there for one tour. For the past 25 of 29 years, I've either been operating, engineering, deploying, or sustaining radio communications equipment for the Coast Guard.

LCDR YEMMA: What is your highest level of education you completed?

THE WITNESS: It would be an associate's degree.

LCDR YEMMA: Thank you, Commander. Lieutenant Comerford will have questions for you now.

(Whereupon,

CDR MICHAEL CRIDER

was called as a witness and, having been duly sworn, was examined and testified, as follows:)

EXAMINATION OF CDR MICHAEL CRIDER

BY LT COMERFORD:

Q. Good morning, Commander. To start off, did you have a chance to review the NTSB weather factual report before appearing today?

A. I did. Not very in depth, but I did peruse it, yes.

Q. All right. Thanks Commander. We'll be referring to that later for some questions. But first, can you discuss specifically

COMMCOM's responsibility with weather messages that's broadcasted, and please touch on some important types of messages that are sent?

A. Absolutely. We're in a partnership with the National Weather Service and NOAA. It's actually an agreement signed by, I believe it's the Chief of Prevention, Admiral Cook last -- the agreement was signed, I believe, in 2010, and that's stood up, it's called UNCLOG, which is the U.S. Coast Guard and NOAA, National Weather Service Coordination Liaison Group. That's what UNCLOG, the acronym stands for. That allows or establishes a partnership that the Coast Guard will broadcast weather products on behalf of NOAA and National Weather Service. We do not generate them. We just broadcast them on their behalf. And we take those broadcasts and we receive them from the National Weather Service, and we send out anything from storm warnings to fax, broadcasts, to everything you can imagine. We at COMMCOM, Communications Command, we primarily focus on sea areas 2 and 3 which are further offshore and then --

Q. Try to go a little slower.

A. Sorry. I'm a fast talker. Anyway, so basically we focus on sea areas 2 and 3 which are offshore. The close-in VHF communications from the sector commands, they also broadcast weather from their facilities, primarily just voice. At Communications Command we broadcast text, voice, and weather fax.

Q. In your brief description there, you had said you receive messages directly from NOAA. During the fall of 2015, mainly

September and October, was COMMCOM receiving messages directly from NOAA for broadcasting?

A. No, we receive weather through what's called the C2OIX, Command and Control Operation Information Exchange, which is a DoD product or a Navy product. They actually pull the weather products off of the satellite. They convert it into a message that is digestible by C2OIX. They forward that down to us. It's converted into an email that is then sent through the system that the computer can pull that out and then put it in the queue for broadcast. So it’s not a direct feed. It actually works through the message exchange.

Q. If a mariner were to try to find a particular weather message, where -- what resources could they find the schedule for broadcasts?

A. Communications Command doesn't have any forward-facing products or documents that would provide that information. That information would all be found, whether it's on NAVCEN; NAVCEN has public facing -- the Navigation Center, has a public-facing website that has all of our broadcast schedules, frequencies, times, products, those kind of things. I believe NOAA also publishes that information, and I'm not sure what other documents that would be found there.

Q. Real briefly, I'd like to refer you to Exhibit 299. This exhibit shows a schedule of broadcast that was provided to the investigation previously from Communications Command specifically

for the Atlantic area. Does this schedule reflect the frequencies and times for the weather broadcast coming from the Atlantic area for September and October of 2015?

A. As far as I can tell, yes.

Q. Is this schedule the way it's displayed, provided to any of those sources that you talked about, NAVCEN or anything similar to a forward-facing website where a mariner might be able to download this schedule?

A. This schedule is not. This is actually a document used by the operators to quality control the broadcast, to watch when they're supposed to be going out, set up transmitters, those sorts of things.

Q. And on that schedule it describes windows, in a manner of speak, for broadcasts. Can a specific weather message be expected at a specific time in that window or any time in the window?

A. Normally -- the broadcasts are handled differently. So, for example, a NAVTEX broadcast, it's a textual broadcast that goes out. It's limited to 10 minutes, with not to exceed 20 minutes, for -- in accordance with international regulations. The Coast Guard, the U.S. Coast Guard is allowed to exceed that to 40 minutes because we own all the transmitters. They're in close proximity to each other in the U.S. So we're not going to step on other countries, so we're allowed to not exceed that 40-minute window.

The way that NAVTEX works, it will actually queue a

broadcast. It will go through a broadcast and then automatically prioritizes them kind of into a barrel. It will send those broadcasts in order of priority as they're queued or as they're requested. An urgent marine information broadcast would go to the top, those sorts of things.

It will actually look at -- it will actually look at what went out during the last schedule period, and it will change the priority based on when something went out last time, and it will bring it up earlier in the broadcast next time. So you wouldn't see the same broadcast at the same time in NAVTEX.

Now VOBRA, that's a different beast. VOBRA actually, it's the same order, the same broadcast for each time frame. They're actually fixed queues.

Q. Commander, you had mentioned your watchstanders use that standard for a situational awareness tool for checking the weather broadcasts. During their watch, can you briefly describe what their responsibilities are and if they're capable in real time of really checking if those messages are being sent out?

A. Absolutely. I'm going to speak to the processes and procedures in place since I've been a CO. What they're required to do is to -- quality control those broadcasts not only from a single perspective. There's multiple broadcasts that are going out and you look at multiple broadcasts on multiple frequencies. There's no way that they're going to be able to listen to every one of those frequencies at all times. We just simply don't have

the assets to do that.

Since we've centralized Communication Command, you can have broadcasts that are going out in California at the same time they're going out, you know, from this side, and all of our voice broadcasts out of Chesapeake and New Orleans, but it's the same feed; that same data feed has actually just fed the transmitters in both areas. So they can't listen to all those frequencies all the time.

So typically what they will do is they will go through and check each frequency to make sure that the signal is going out, that it's intelligible and there aren't no technical problems or equipment failures that are precluding a signal from going out. Then they will leave the receiver on one frequency where they can hear it going out and hear if it were to stop. They don't sit there and copy it down word for word and verify that against anything. They're just looking at the quality of the signal and if it's intelligible.

They will -- at the end of a broadcast, they will go back now and review the automatic log or the log server log and validate and ensure that every broadcast that was scheduled to go out in a time frame went out during that time frame; and if it did not, they log that and then do some forensics to figure out why that did not happen.

Q. For the schedule, and just for the record, it lists a few acronyms real quick; namely, NAVTEX, Weather Fax, and SITOR and

VOBRA. Can you just quickly define those four short names?
A. Absolutely. NAVTEX stands for naval textual. It's just a radio teletype broadcast that goes out on a MF frequency.

Weather Fax is actually a feed that goes out on high frequency, on HF on multiple frequencies. It's simply a key that we receive from the National Weather Service via a dedicated circuit and then we just turn that seal around and send it to the transmitter. We don't see what's coming in. There's no processing equipment on our end. It's just turned around and pointed directly to the transmitter, so we have no control of what goes over that. And I believe it's the same signal that's sent over SAT-C. That would be a question for the National Weather Service.

SITOR is a Simplex Teletype Over Radio. It's also a forward-error-correcting teletype signal just like NAVTEX. It's just sent out over HF and it's done with some multiple frequencies. 518 for NAVTEX is standard worldwide. This is -- there are multiple frequencies that are unique to the Coast Guard for SITOR.

VOBRA is voice broadcast, voice automated broadcast is all that is. Basically it's a computer-synthesized voice. Back in the day we used to read the weather over the radio. Now it's all queued automatically, sent from a computer, similar to your PC sitting on your desk, turned around and sent to the transmitter that way.

Q. Commander, could you take a moment to speak about the ranges,

the relative ranges that one might expect to see with NAVTEX or VOBRA?

A. Absolutely. NAVTEX typically, I think we advertise a range of about 200 nautical miles. That's just the generic range. It exceeds that, but that's the advertised range. You don't really have an advertised range for HF. HF -- just the nature of HF, you'll have what's called a ground wave. The ground wave leaves the antenna and goes out 100 miles or some amount around that, and it depends on things like the radiating characteristics of the antenna, the height of the antenna, the frequency. Typically in the HF range, the higher you go in frequency, the shorter that ground wave is going to go -- the shorter distance that ground wave is going to travel.

You have the -- the ionosphere would have -- the RF radiation goes up into the atmosphere and comes down. Basically between the ground wave and where that sky wave returns, is called the skip zone, and that skip zone will vary in size depending on the time of day and throughout the day, sunspot activity, those kind of things.

HF is very dynamic. From minute to minute, you're going to have different coverage but you have a general idea of what you're trying to hit, and that's primarily why we broadcast on multiple different frequencies so we've got a lower -- you know, more megas free. You've got 6, 8, 12. And so that you have frequencies that are standard throughout the day and in the evening. Sometimes

you'll see during the day, we'll broadcast in a very high frequency or a higher HF frequency in the 17 mega range, and that's just to kind of try and manage those changes and somewhat standardize our coverage.

Q. Now you had said you assumed command the summer after -- so the summer of 2016, correct?

A. Right.

Q. After -- at what point did you hear about the *El Faro* investigation and was there some -- any level of review conducted of COMMCOM's performance during the time period of *El Faro*?

A. I seem to recall the first interaction I had regarding COMMCOM, I knew that there had been some requests for information that predated my arrival, and I believe in October -- that date may be off a bit, but I want to say in October there was a teleconference that was my first participation and introduction to *El Faro* and all things, communications that were COMMCOM involved.

Q. Was there any review of COMMCOM's performance? And if there was, were there any results found on the performance of weather-related messages for 30 September and 1st of October 2015?

A. I reviewed -- I know that there were some products that they pointed out that the log server had logged as -- had not logged as having gone out. I understand there was some discussion about were those broadcasts missed, and on the NTSB report, it states that it believes those products were missed. I personally don't think we can make that conclusion, and that's simply because there

were -- we call them a COOP now, or a continuity of operations, where we transfer control of all of Communications Command assets from Chesapeake, from the operations deck in Chesapeake, over to Point Reyes, which used to be CAMSPAC, and then control them from there.

On the 29th and 30th, and perhaps the 28th, I think there were COOP exercises. Back then they were called CBUC, or Cams Backing Up Cams. There were multiple occurrences of training COOPs during that time frame.

The log server or ABS will continue to log those broadcasts as though they're going out unless the services are stopped or that server is secured. There's a separate server out of CAMSPAC or out at Point Reyes that would control the broadcasts. They have independent configurations. They mirror each other today. I'm not sure of their status back then. So I could not definitively say that a broadcast in that schedule would have been missed or sent during that time frame. We just don't have those logs.

Q. And the operators log they refer to for the COOPs, do you recall approximately what times those COOPs were logged as having occurred? Scheduled logs, the one that I saw was 1720 to 2134 on the 30th, Zulu Time. I didn't get a chance to finish scanning the log.

A. I can pull the logs back up if you want me to, but I do have -- we sent out what's called an ops stat message or an email to

the Command staff whenever they transition. I was there, of course, but I do have copies of those that show the initiation of a CBUC or a COOP on 30 September at 1:24 p.m., and that would be Eastern Time; so Zulu plus 4 back then would have been 1724. And then it was reversed back on the 30th at, it looks like, 2131 Zulu Time. On the 1st -- that was on the 30th.

On the 29th, they also did a CBUC for that one and it was completed at 1710 Zulu. I do not have the time in here for the -- for when that was started.

On the 1st, there was a COOP. On the 1st there was a COOP and I know they experienced some difficulty in the transition. It's not a Coast Guard operation in that the Coast Guard is in control of transition services. It's actually circuits that are owned or maintained. We lease the circuits from Verizon, and Verizon struggled in transitioning some of their -- some of those services back and forth. So they had to restart it and pull it back. So I know on the 1st of October, it took them quite a bit of time to transition from 1338 to 2357 Zulu. They COOP'd -- when they shifted it over, it took them about 5 hours and 45 minutes to go from Chesapeake to Point Reyes. And with the circuits back and forth, I do not know how long it took them to come back. But at 2357, all circuits were returned to Chesapeake.

Q. And the COMMCOM log time records, how long are those records maintained on file?

A. They're maintained by the system itself for 30 days. After

that, it deletes them.

Q. And 30 days is policy?

A. It is.

Q. In the log client records for the Atlantic area, with the understanding that we aren't sure what happened with the transition through the COOP, what types of messages were seen or not observed during that record for the 30th of September and the 1st of October?

A. A review of the logs show there were some tropical storm warnings that were not configured to go correctly during that time frame from VOBRA and I think -- I believe that's all of those that came from was VOBRA. They did go out correctly, the broadcasts, but there were so many broadcasts that there were some that were not configured correctly.

Q. Commander, do you have a list of the time windows that those messages were missed?

A. Again, this is simply on the Atlantic side. So as far as whether or not the configurations were correct and the messages were broadcast from Point Reyes, we simply don't know. So what I'm going to speak to is the configurations that were identified as being incorrectly configured to send a product at a specific time in the server in Chesapeake, and this is as of November 10th of this year. It was not -- there's no way to tell when these anomalies were entered, if they were ever entered correctly, if they were ever incorrect or manipulated.

So looking back at that, VOBRA, 0330 Zulu, we corrected -- that was not correctly configured to send the TC map broadcast. The 0430 Zulu VOBRA, and again VOBRA is the voice broadcast, and those are keyed simultaneously out of Chesapeake and New Orleans. The 0930 Zulu VOBRA, the 1115 Zulu VOBRA, and the 1530 and the 2130. Those broadcasts -- yeah. So that's it.

Q. With respect to the message that had been logged in the server as a missed DCST at 2215, can you speak to that message briefly?

A. And which one is --

Q. Absolutely. If you want refer to Exhibit 300, the log client server. Let me just get the page right for you. I believe it was page 102.

A. I'm sorry. What time are you looking at?

Q. It was at time stamp 23:24:21 Zulu. It should be about the 12th record from the top of the appropriate page.

A. And what's your question with regard to that?

Q. When it's logged as a missed -- two questions really. When it's logged as a missed DCST, what does that mean and do you -- can you identify what message was missed?

A. The way the system works, it will calculate how much time it has to send a broadcast, and if it cannot send a product during a time frame, it will -- it doesn't truncate the message. It just doesn't send it and it finds a message it can fit within that broadcast window, and when it does that, it will log it as a

missed broadcast.
Q. Any record in the message name that has H-S-F-A-T, HSFAT? Are you familiar with what that message contains just in general?
A. That's going to be -- I'm assuming it's a high seas forecast but that's something that's, you know, specific to NOAA.
Q. So since looking into the logs and the performance of Communications Command, other than the COOP that we discussed earlier, were there any other findings for problems that were discovered that might -- that may have caused issues for the system for the broadcasting of weather messages specifically?
A. During this particular time period, other than incorrect configuration and some processes for reviewing the logs and quality control of what actually went out for logging not correctly, nothing comes to mind.
Q. So after the review, did you look at current performance to see if this was just a short-term queue incident? And the real question is, are these weather messages now being broadcasted in accordance with the schedule?
A. The way I approached this was not to review the logs and see what was missing. I approached it from a requirements perspective and said what is required to go out, and had my technicians validate that all those queues were properly set up. And we adjusted the processes to ensure that the quality control services provided by the broadcast operator included that check and balance to ensure that what was supposed to be sent actually went out and

was logged in the log server.

MR. COMERFORD: Captain, at this time, that's all the questions I have.

BY CAPT NEUBAUER:

Q. Commander Crider, just a couple of follow-up questions from the outline. Is Chesapeake the closest point to the Bahamas for transmitting HF?

A. Captain, it is not. We've got sites down in Miami. We've got sites in Orlando -- I'm sorry -- not Orlando, in New Orleans. We've got sites up in Boston. But some of our best coverage for the Bahamas actually comes from those because of that previously mentioned ground wave as well as the skip zone sky and skyway, where it returns to the surface for reception. Boston and New Orleans -- I'm sorry -- Boston, New Orleans and Chesapeake are the best places to broadcast that stuff from.

Q. And I think you mentioned that even though the broadcast is listed as missed in a log, there's a possibility it still would have gone out. Is that correct?

A. Yes, Captain.

Q. Do you know which broadcast station would have done the makeup broadcast or is that all of them?

A. It's not really a makeup broadcast. They just assume control of the queue when we COOP. And there would have been broadcasts for VOBRA that had missed, specifically what was missed or conceptually missed, was VOBRA, and that would have gone out from

New Orleans and Chesapeake.

Q. Thank you.

CAPT NEUBAUER: At this time, I would like to go to the NTSB, Mr. Richards.

BY MR. RICHARDS:

Q. Good afternoon.

A. Good afternoon.

Q. Just a few questions. Who establishes COMMCOM's requirements for what products you shall broadcast and when these products shall be broadcast?

A. That comes from that previously mentioned UNCLOG meeting. That's -- that agreement, and they meet on some periodic basis, and I want to say it's sometimes monthly, but at least quarterly. And the policy folks at headquarters are the prime Coast Guard representatives on that. I do have a representative on my staff that attends those meetings, but the representative on my staff is really a technical representative to give them feedback on what's within the realm of the possible, and are they exceeding broadcast times, are they, you know -- can we key the frequencies that they're asking, those sorts of things.

Q. So it's an internal Coast Guard --

A. No, sir. It's a coordination between NOAA and the Coast Guard via that UNCLOG meeting.

Q. Just to clarify your testimony a little bit earlier, when you brought up the Navy, and the Navy -- I just wanted to clarify.

Going back to the time frame of the accident, did COMMCOM receive its weather products from the National Weather Service or did it receive weather products from the Navy directly?

A. They would have directly come from the Navy's system after injection from the National Weather Service.

Q. Is that still the case today?

A. It is.

Q. I'm just curious. Are there any plans to go back to receiving weather directly from the National Weather Service or does it plan to continue with the Navy?

A. The plan is to continue with the service as it stands today.

Q. Just a couple of other questions. Does the Coast Guard broadcast NAVTEX products on any frequency besides 518?

A. We do not. That’s the international frequency.

Q. Thank you.

BY CAPT NEUBAUER:

Q. Commander, I just have one follow-up question. Does the Coast Guard monitor HF communications for incoming communications?

A. Yes, Captain, we do. We have a -- we call it GMDSS, or global maritime distress monitoring. We monitor multiple frequencies in that booth. They are the corresponding frequencies to HFDSC voice frequencies. We also monitor HFDSC for automated distress, you know, the red button on a HF radio kind of stuff. And we receive those position reports when a vessel is in distress, and we forward those off to the RCC and we make callouts

on the associated voice frequency.

Q. Does your Command monitor all that? Is it in one centralized location?

A. Yes, Captain. We do that from Chesapeake now for -- let me correct that. We do that -- everything that was monitored at CAMSPAC and CAMSLANT previously is now monitored out of Chesapeake at Communications Command. I do still have a communications station in Kodiak. It was manned -- it's manned. It's now a communications detachment. It's no longer its own command, and it reports to me. We monitor DSC, Hanson weather broadcasts, and Notice to Mariners, those things from up there as well, as well as air to ground, all the same things we do in Chesapeake.

CAPT NEUBAUER: Thank you. Mr. Fawcett has a follow-up question.

BY MR. FAWCETT:

Q. Good afternoon, Commander.

A. Good afternoon.

Q. So the Chesapeake Communications Center, how many watchstanders are on duty on a particular watch?

A. There's a minimum of five folks on watch: a watch supervisor or a communications watch officer, there's a tech control position, there's the GMDSS booth, there is a -- the air to ground operator, and there's a broadcast operator and, if I didn't mention already, tech controls. That's a total of five.

Q. And the duration of the watches?

A. They stand 12-hour watches.
Q. So looking at Exhibit 300, which is the log of the Communications Command, what I see is a black and white page. If I'm a watchstander that's involved with monitoring the distributions of outgoing messages, what am I looking at? Do I sit at a console and do I see a monochromatic display or -- could you describe what I'm looking at?
A. Sir, you referenced Exhibit 300, correct?
Q. Right. That's a log, and what I'm asking is, if I'm sitting in the Communications Center and I'm monitoring the outgoing traffic, what type of display am I looking at?
A. My apologies. You're looking at the log server logs, not the individual's tech type log. The log server log, it is a color log. It does have warnings that will come up, alarms and such things, reminding the operator to configure their transmitter, make sure things are lined up, to broadcast properly, those sorts of things. It's not monochromatic. It's a standard display like something you would see in front of you right now.
Q. So if a message is a missed broadcast, is there some type of color coding so that it will draw the attention of the operator to the fact that that broadcast was missed so they have an opportunity to manually make sure that that broadcast goes out? You had mentioned the system automatically looks for the appropriate-sized message to fit into that spot. So how would I know as an operator that a particular message has been missed so I

can ensure that it goes out?
A. The broadcast operator is going to continuously review this document. I believe a missed broadcast comes up in yellow, and they will see those, but again that missed message, it was removed by the system because there's no room to broadcast it. So there's no method for the operator to override that. They cancel the -- they could send it manually if we had a reason to do so. We've got microphones that they can read the message over the air if they need to.
Q. But within the computerized queue, they might not know that a message has, in fact, been missed by having, for example, that message coded as red or yellow or orange, so that they could take action to send that missed broadcast. Is that correct?
A. If I'm understanding you correctly, the -- it does come up in a different color but they typically would not take action to correct it because there's no room in that broadcast to send that message. The broadcast is filled up with other things. Are we tracking?
Q. Yes, sir. And just my final question, does the Coast Guard have an active outreach to the maritime community so that they know the availability of the high seas weather broadcasts, for example, like *Prevention Magazine* or any other active outreach?
A. Not to my knowledge. As far as advertising our products to the maritime public beyond the forward facing NAVTEX -- I'm sorry -- the NAVCEN sites, I'm not aware of any advertising that is done

for those products that we have.

Q. Thank you, Commander.

CAPT NEUBAUER: Mr. Richards.

MR. RICHARDS: Thank you.

BY MR. RICHARDS:

Q. Just to clarify, the forward facing schedule that you discussed earlier for COMMCOM broadcasts, the times identified in that schedule that the public can see, am I correct to understand that those identify the beginning times of a broadcast window?

So the discussion began with Exhibit 299 and then you indicated that that schedule wasn't public.

A. There is a Nav Center website, and I think I have a copy of the printout from it here that -- it would be the start times of those broadcasts that would be published.

Q. So I guess my question is, Exhibit 299, if we look at 330 Zulu for VOBRA, and there are two lines, but if we take the first line, it looks like, if I'm reading this correctly, the broadcast window was for 90 minutes. Okay. And within that 90 minutes there are four separate products that are identified that will be broadcast within that 90-minute window.

A. Actually there's potentially more than four in there. You have TC Map 1 through 5. So there's multiple separate -- different products that could go out.

Q. Okay. As a user, as a mariner, how would I identify at what point in time in that broadcast window a specific product will be

broadcast in case I only wanted to tune in to hear one product?
A. I don't believe that's captured anywhere or standardized across.
Q. Okay. Thank you.
CAPT NEUBAUER: I'd like to go to the parties in interest at this time. Does TOTE have any questions?
MS. COLLAZO: No questions.
CAPT NEUBAUER: Mrs. Davidson.
MR. BENNETT: I have one or two questions.
BY MR. BENNETT:
Q. Sir, just to clarify for the public, VOBRA is a high frequency voice broadcast, correct?
A. Yes, sir, it is.
Q. And the purpose of voice broadcast is to assist mariners, correct?
A. The purpose of the voice broadcast, the VOBRA broadcast is to disseminate weather and information of value to the mariner. VOBRA is one way.
Q. It's a tool for mariners to use to assess weather, correct?
A. Absolutely.
Q. And based upon Exhibit 299, page 4 of 6, there's some red highlights. The red highlights indicate weather messages, not reported or missed, in log client, that contain information on Joaquin or the sea area of interest to the *El Faro*, correct?
A. Again I was not on board during that time frame, but that's

-- looking at the logs, with the log client logs and the schedule, that appears so.

Q. And at or about the time of September 30th, the evening and early morning of October 1, it indicates at 299, Exhibit 299, that there may have been voice broadcasts relating to weather in the vicinity of the *El Faro* that did not get broadcasted. Is that correct?

A. Again, I'm not sure that we can say that. They may have gone out from CAMSPAC out in Point Reyes, but we don't have those logs.

Q. But based upon 299 -- let me ask you this. Did you create Exhibit 299?

A. No, sir, I did not.

Q. Was it created before you took your duty?

A. Yes, sir, it was.

Q. So the way I'm reading it, with the red highlights, it indicates according to whoever made the log, red highlights indicate weather messages not reported or missed in log client which contained information on Joaquin in the area of *El Faro*.

A. I believe that information was actually compiled by the Board and I don't know that they were aware of the transition of services between Chesapeake and Point Reyes when they made that -- this particular exhibit.

Q. But you can agree with me that, based upon this log, there is a chance that weather messages, high frequency voice broadcast weather messages, were not sent out, correct?

A. That's definitely a possibility.

Q. Thank you, sir.

MR. BENNETT: No further questions.

CAPT NEUBAUER: Does ABS have any questions?

MR. WHITE: No, sir, no questions.

CAPT NEUBAUER: Herbert Engineering.

MR. SCHILLING: No questions.

CAPT NEUBAUER: Are there any final questions for Commander Crider?

Commander Crider, you are now released as a witness at this Marine Board of Investigation. Thank you for your testimony and cooperation. If I later determine that this Board needs additional information from you, I will contact you through your counsel. If you have any questions about this investigation, you may contact the Marine Board Recorder, LCDR Damian Yemma.

(Witness excused.)

CAPT NEUBAUER: At this time, do any of the PIIs have any issues with the testimony that we just received?

MS. COLLAZO: No, sir.

MR. BENNETT: No, sir. Thank you for your service.

MR. WHITE: No, sir.

MR. SCHILLING: No, sir.

CAPT NEUBAUER: The hearing will now recess, and reconvene at 3:05.

(Off the record at 3:00 p.m.)

(On the record at 3:09 p.m.)

CAPT NEUBAUER: The hearing is now back in session.

At this time, we will hear testimony from Captain David Flaherty. He's the Chief of the Office of Traveling Inspection, Coast Guard Headquarters.

LCDR YEMMA: Captain, will you stand and raise your right hand?

(Witness sworn.)

LCDR YEMMA: Thank you, Captain. Please be seated.

Sir, can you please state by stating your full name and spelling your last name?

THE WITNESS: David Michael Flaherty, F-l-a-h-e-r-t-y.

LT NOYES: Lieutenant Travis Noyes, N-o-y-e-s.

LCDR YEMMA: Captain, can you please describe to the Board some of your responsibilities in your current position as Chief of the Traveling Inspection?

THE WITNESS: I oversee the management and direction of the Traveling Inspection staff which is made up of the subject matter experts within the Coast Guard for commercial vessel inspections.

LCDR YEMMA: Can you also please describe for the Board some of your prior relevant Coast Guard assignments or work experience, please?

THE WITNESS: Prior to joining the Coast Guard, I sailed as a third engineer on commercial vessels acquiring a little year of 2 years of sea time on my license before I joined the Coast Guard in

1992. I have been a marine inspector, qualified marine inspector for 22 years, and a Coast Guard marine investigation for 20 years.

CDR YEMMA: And, Captain, what is your highest level of education completed?

THE WITNESS: In addition to a Bachelor of Science in marine engineering, I have a Master's in business administration and a Master of Science in fire protection engineering.

CDR YEMMA: And do you currently hold any professional licenses or certifications?

THE WITNESS: I'm a lead auditor and I also have -- am a type 2 incident commander.

CDR YEMMA: Thank you, Captain. Captain Neubauer will have questions for you now.

(Whereupon,

CAPT DAVID FLAHERTY

was called as a witness and, having been duly sworn, was examined and testified as follows:)

EXAMINATION OF CAPTAIN DAVID FLAHERTY

BY CAPT NEUBAUER:

Q. Good afternoon, Captain.

A. Good afternoon.

Q. We called you in today to discuss your observations of the Alternate Compliance Program and also observations that you had of TOTE Services in some of the vessels that they operate. There will be two lines of questioning. First, we'll go through a

broader perspective of you in your capacity in the ACP program. The second line, we'll go further into more detail on TOTE Services and the vessels under their command.

Can you start off by providing a description of your involvement with the ACP program in general?

A. Back in 1996, I was involved in, as a marine inspector, some of the initial inspections of U.S. flag vessels under the Alternate Compliance Program. And for the majority of my career, although I had some general interaction with them, I don't think I did any other vessel inspections of a vessel in Alternate Compliance until recently as a chief traveler. As a chief traveler, one of my responsibilities is to ensure the consistent application of the regulations that ensure commercial vessel safety and compliance.

In 2015, it was brought to my attention from my staff that they had discovered indications that there was some discrepancies with how the commercial vessel -- or the Alternate Compliance Program was being implemented, and then shortly after that, we initiated our investigation into it.

Q. Can you give some examples of issues that raised concern for your traveling inspectors?

A. Well, initially a unit requested assistance from the travelers with a vessel enrolled in ACP from a technical point of view because we deal with all types of construction, propulsion systems, and we're generally involved in just about every type of

vessel operation that's out there from a technical aspect from it, from providing assistance to both the units as well as the industry.

In this case, a unit requested our assistance. The travelers arrived. While assisting the unit, started to generally develop the opinion that there was some lack of understanding, both from the surveyor who was representing the approved class society as well as the Coast Guard, on the role and application and how an ACP exam was to be conducted.

Q. In that circumstance, how was the situation resolved?

A. We assisted the class society surveyor in the appropriate application of the supplements as well as the international and class society requirements, and we also assisted the unit with the technical side of it, I think resulting with the engineering system if I remember correctly. And so in that case, we came away from that. And then there was some phone calls we received later on from other units about the Alternate Compliance Program. And from that and our interaction with the class societies, the approved class societies, that we started to develop concerns that the implementation of the Alternate Compliance Program wasn't meeting with the expectations that were initially built for it.

Q. Can you describe any specific action you took to address or study the problem?

A. Well, we worked very closely with the class society to resolve the misunderstandings with the supplements or to ensure

that the supplements they were using were the correct ones. We also reviewed international requirements with them as it relates to the vessel, and we also worked with the local marine inspector to ensure that he had a better understanding of how the Alternate Compliance Program was supposed to be implemented.

Q. Did you take any actions at Headquarters for your staff?

A. Well, one of the responsibilities of the travelers is to -- if we see an issue with policy, training, procedure, we look to determine if it's a single incident or it's more broad based throughout the program, whatever that program may be. In this case, we determined that based on the initial findings we were having, that this required additional research either to confirm that it was just a localized issue with maybe a couple of units or it was a more broadband concern.

Q. Did you develop a strategy to address any ACP issue?

A. Yes. The way we plan our program is it's based on a fiscal year. So in May of 2015, I briefed Captain McAvoy, who is in charge of the Commercial Vessel Compliance Office; Captain Burton, who is in charge of the Prevention Compliance; and Admiral Thomas, who is the Assistant Commandant for the Prevention Policy, on our initial findings and that our intention was to further investigate this area to determine how -- if it was widespread or not, and if it was, what were the areas to be looked at and to develop our recommendations to resolve it.

Q. Did you ultimately come to any findings on that study that

you did?
A. Well, initially we sent our -- just to kind of further explain what we were looking at, previously the traveling marine inspector had gone out and participated in the vessel inspection side. We wanted to be a little bit more broader in our look into the Alternate Compliance Program. So we wanted to attend the document compliance audits, the safety management system audits, as well as participate in the audit of the alternate -- excuse me -- approved class societies in conjunction with CVC, to get a whole -- build up a whole understanding of how the process is being utilized across the board instead of just focusing only on the deck plate level.

So part of that required that we, the traveling marine inspectors, attend auditing courses so we could have a better -- a refresher course in some cases, and have a better understanding of the audit process when we were out there. And in addition, we started to -- working with the Commercial Vessel Compliance Office to develop a list based on what vessels we were going to go and look at based on their risk assessment list, and additionally we were going to go out and try to attend other vessels that may not have been on that list as well.
Q. I have reviewed a document that your office produced. It's the Chief Traveler's Report, Review and Evaluation of the Alternate Compliance Program. It's dated 06 September 2016. Is this report reporting out on what you found during those combined

audits and inspections?
A. That's correct.
Q. I'd like to discuss -- break down the report a bit and discuss some of the points.
CAPT NEUBAUER: LCDR Yemma, is this Traveler's Report an exhibit? And just for reference, it is Exhibit 329.
BY CAPT NEUBAUER:
Q. One of the points raised, and I want to get your opinion on this, and we've also heard during previous testimony that the Coast Guard removed the liaison, the ACS that was at Coast Guard Headquarters; it was called LORACS. Do you have an opinion on how that may have impacted the program?
A. The LORACS serves as a centralized point of contact for the approved class societies as well as the Coast Guard units out in the field. Following the removal of that position, that responsibility was essentially assigned to many different people within the Commercial Vessel Compliance Domestic Division.
Q. Has it also been your experience while working in the field units that they generally have ACP officers assigned if they handle ACP vessel inspection oversight?
A. We found on a few occasions that some units did not have an assigned ACP officer. It was in some cases a collateral duty or shared by many people within the unit.
Q. We've also heard testimony here at the MBI about the use of a supplement and the update of the supplement. In your experience

and that of your inspectors out in the field, is the supplement being used appropriately for ACP vessels in the field?

A. In some cases, we found that the marine surveyor for the approved class society was not aware of the supplement or how to apply it. We also found the same with some of the marine inspectors, that they weren't sure of the application. In a couple of cases, we did find supplements that were being utilized by an approved class society that was not approved by the Coast Guard.

Q. Can you expound on the supplement that was not approved? Was it a different version or was it something that was created and was not approved?

A. Our understanding from when we looked into that, it was something that was created but was never submitted or discussed between the approved class society and the Coast Guard for approval, but it somehow remained and was accepted and was being utilized.

Q. On the Coast Guard side, do you think the Coast Guard is doing enough to keep the supplements updated and also to receive feedback on changes that may need to be made?

A. Well, when the supplements were initially created, when the Alternate Compliance Program was implemented in 1996, essentially they were only dealing with one class society at the time. So maintaining the supplements at that moment was not a challenge. Currently with four approved class societies, with each of the

class society rules being slightly different in some areas or not another, I think the -- it has created a greater burden on the Coast Guard for continually updating and submitting and approving the supplements.

Q. From what you've seen in the field, are the supplements up to date and do they cover critical inspection items that you'd expect a compliance inspection to cover?

A. There have been a few occasions where they weren't up to date for whatever reason. The marine inspector, the approved class society surveyor was not utilizing the most up-to-date version. In some cases, the supplement stays consistent throughout the life of the vessel. In other cases, it's routinely updated with the new updates being sent out and, for whatever reason, they did not receive the most recent updates. In general, they do cover the critical systems that need to be examined.

Q. I'd like to move on to issues you found involving Coast Guard oversight. In your opinion, is there a lack of effectiveness of the Coast Guard oversight to compel compliance if problems arise in ACP surveys?

A. Well, if the officer in charge of marine inspections determines it's a vessel in an unsafe condition, the certificate of inspection can be removed. So that is an option that they do have. They still -- the Coast Guard marine inspectors, when on board, can issue 835s, but generally those 835s are submitted then to class, the approved class society for resolution as per the

memorandum of understanding as well as the guidance that the Coast Guard has via the Alternate Compliance Program.

Q. Your report, you raised one example of a vessel that operated or was inspected by the Coast Guard six times and ABS five times within the span of 1 year. I believe the vessel continued to operate until the traveling inspectors got involved. Is that -- was that your experience? Is that accurate?

A. We have that example. There also is another example, similar in the sense that both the Coast Guard marine inspectors and the approved class society marine surveyors were on board a vessel and there was communication between the two via Coast Guard by identifying issues and then sent to the class society for resolution as per the ACP, but for whatever reason there was never an engagement between the two entities on the bigger picture with that vessel.

For whatever reason, the condition of the vessel, especially with watertight integrity, some of the lifesaving equipment, continued to deteriorate to the point that when the vessel was detained overseas, and almost detained a second time overseas, is when the indications to the Coast Guard was that there was a much more serious situation with the vessel, and the travelers were requested to come in and provide support to the local unit who was involved in it.

The condition of the vessel included, you know, the compromise of watertight integrity with the hatch covers, some of

the stern tube bearing -- stern tube on the lifeboat was seized up. The rudder assembly was significantly rotted. One of the indications was that the ladder for the lifeboat, the ropes had become so rotted that they had pulled away from the hooks. So if you could kick the ladder over the side, it would have just gone right into the water.

Q. And I want to clarify a point. You mentioned a vessel being detained, and I believe by that you mean that under a foreign port state control administration the vessel was substandard and was detained for safety reasons in a foreign port. Is that correct?

A. That is correct.

Q. I'd like to discuss an issue that you raised and want to see if it's a concern about ACS surveyors being hesitant to convert Coast Guard requirements into conditions of class. Can you give background on that?

A. As we continued our inquiry into the Alternate Compliance Program and we engaged with the marine surveyors as they're conducting their job, there was expressed to the travelers their hesitation on issuing conditions of class for feeling that they would rather address it locally with the vessel owner/operator and not issue it as a condition of class but some other method, as an observation or something else instead of notifying -- if it becomes a condition of class, they're required to notify the Coast Guard.

Q. In your opinion, are the ACS often hesitant to issue the

condition of class because they're essentially working for the owner of the vessel?

A. Well, they shouldn't be hesitant if they are acting on behalf of the Coast Guard under the Alternate Compliance Program. They are -- there should be no sense of hesitation. For further clarifying that, we would have to address the approved class societies on that.

Q. Are you aware of instances where an ACS has been advised of a hazardous condition on a vessel or substandard condition and it does not get communicated to the Coast Guard?

A. We came across some indications of that. We've also come across indications where the vessel owner/operator was not notifying the Coast Guard or the approved class society of marine casualties. And then in certain circumstances, the -- in one incident, they were doing some lifesaving -- lifeboat exchanges and they were not utilizing the proper equipment nor did they notify the Coast Guard that that equipment was being exchanged out.

Q. When a situation like that arises, what kind of resolution is being sought either by the Coast Guard or the ACS?

A. In one circumstance we had, there was a disagreement on a boiler that was -- had some tubes that had failed, and we engaged the approved class society because they didn't feel it necessary to hydrostatically test the boiler after the repairs were done, where we felt it was much more of an important issue to do that as

a non-destructive means to ensure that the vessel -- excuse me -- that the boiler tubes were properly repaired and fit for service. In that case though, we engaged the approved class society and they agreed to hydrostatically test the boiler at I think it was 1 1/4 MAWP, maximum allowable working pressure.

Q. I'd like to talk a little bit now about the ACP oversight of companies. In particular, can you explain document compliance?

A. Part of -- for a company to enroll their vessels in the Alternate Compliance Program, they have to meet international standards. In meeting international standards, they have to receive documents under -- that would be associated with operating on an international voyage. They have to have a safety management system and a safety management certificate for their vessel.

The document compliance is a method for which an audit can be done of the vessel for ensuring it has policy/procedures within the company to ensure the safe operation of the vessel, maintain communications with all members of the crew if they raise any issues or concerns, and to ensure that any maintenance issues or any issues with the operation of the vessel are raised, documented, the documentation on how it was resolved is in there, and so that there's a continuing cycle of -- like a circular cycle of communication between the ship operations and the people that may accompany it.

Q. Has it been your experience that the Coast Guard participates in the DOC audits?

A. The Coast Guard may participate in the DOC, or document of compliance audits. Generally personnel from the Commercial Vessel Compliance Division attends. The travelers, at times, can attend. During our overview of the Alternate Compliance Program, we made a point of trying to attend as many of those document of compliance audits as possible.

Q. Can you describe the Coast Guard role if they do attend?

A. The Coast Guard role is as an observer. The audit is led by the approved class society that is conducting the audit or the class society that's conducting the audit. It doesn't necessarily have to be the class that the company is associated with. So the class society doing the audit comes up with the items that are going to be audited, comes up with the questions, does the -- basically the background check and determines what items they're going to be looking at.

Q. Does the Coast Guard have any authority to assign a finding between an observation, nonconformity or major nonconformity?

A. No, that's specifically the responsibility of the lead auditor conducting the document compliance audit.

Q. Are you aware of any circumstances where you had to go beyond that and assert the assignment of nonconformity or major nonconformity?

A. When we were doing the document compliance audit of TOTE, there were several discussions concerning the findings at the time. Although the lead auditor from the approved class society

agreed to proceed, but we did raise some concerns with some of the things they were finding.

Q. Okay. Thank you. I want to explore now from the second line of questioning. I'd like to go into now any of the corrective actions that the Coast Guard can take if a DOC is found to be substandard.

A. Generally if a document of compliance is found un-standard, the current procedures that the Coast Guard utilizes is to -- if the approved class society doing the audit recommends a 90-day extension of the document of compliance to provide time for the company to correct the nonconformities, we generally agree with those. The Coast Guard does have the authority to remove the document of compliance and from my understanding, we have done that once.

Q. I think you also mentioned that we have authority to deactivate or pull the seal on a certificate of inspection. Are you aware of that occurring on an ACP vessel?

A. It has happened on a few occasions recently. I think some awareness has recently been happening out in the field, that they've gained a better idea of what their role and responsibilities are. We did not do -- you know, due to the number of vessels enrolled in ACP, we did not do a check of former vessel history, but since we've engaged over the past year or so, there were two vessels that were brought out of service. There's a vessel in dry dock right now that's undergoing extensive

modifications due to things that were discovered during the Alternate Compliance Program exam.

Q. And just to clarify, during the ACP exam, was that strictly conducted by the ACS or were the traveling inspectors involved?

A. On those three occasions, the traveling inspectors were involved.

Q. In your opinion, did it take traveling inspector involvement to get to the point where there were enough problems identified that the vessel was either scraped or laid up indefinitely?

A. Well, I think in the one circumstance that we've discussed in the report, without the traveler involvement, I think the marine inspectors at the unit would have come up with the same conclusion.

The vessel that's in dry dock, in that circumstance, the approved class society was actually very cooperative with the travelers on that. So in that circumstance, while our presence there was appreciated from a technical point of view, but I think the approved class society was taking the appropriate actions in that case.

The third vessel that we questioned on, I think the vessel had been on the risk assessment target list for 2 or 3 years and it was still operating, and when we were on board the vessel, we found the condition of the vessel to be substandard. So I think in that case, I think there was a direct correlation between traveler involvement and the vessel being removed.

Q. I'd like to move on to some of the communication issues that have been identified. In your experience, are open lines of communication essential between the Coast Guard and ACS, essential to a successful ACP implementation?

A. I would say clear communication between the vessel owner/operator, the approved class society and the Coast Guard is key to the success of this program. I think that was the partnerships that were developed in this program. I think that's always been the key aspect of the success. So if one is not telling the other or we're not communicating well between the others, then we're not getting a full picture of the vessel's operation, the vessel's condition, the issues that might be affecting the safety of the vessel. So communication I have to emphasize is key.

Q. Have you found it frequently to be the case that Coast Guard field inspectors and ACS surveyors are not communicating?

A. We found several instances of that, and I even believe within the testimony during this Board, that was pointed out. In a lot of cases, I hate to say, people are using emails. In a lot of cases, the owner/operators of the vessel -- they're required to provide 14-day notification prior to an exam with the class society, approved class society, so the approved class society has time to notify the local unit to see if they need to or want to attend. In a lot of circumstances, the approved class society gets very short notice, like within a day or so of -- that the

vessel is available for exam. So by the time it reaches the Coast Guard for the marine inspection staff to look at the unit, they may not -- they already have other vessels scheduled and are not flexible enough to go out and attend the vessel enrolled in the Alternate Compliance Program.

Q. Another issue that was brought up during previous testimony is the ability of the ACS surveyor to properly research the vessel they're about to survey. A good example is Coast Guard requirements that may exist inside our Marine Information Safety and Law Enforcement System. In your opinion, does the ACS have proper access to research ahead of the surveys they conduct?

A. Currently they don't have direct access to MISLE, which is our program for documenting vessels and the activities, the outstanding requirements.

Q. Have you seen occasions where the ACS is not aware of requirements on a vessel that they were doing a statutory requirement on our behalf?

A. Yes. During our evaluation of a vessel -- it was actually a safety management system audit. The auditor from the ACS arrived and did not know that there were outstanding Coast Guard 835s for the vessel that had been outstanding. And the statement that the auditor gave to us, if I were aware of those, I would have modified the sampling I would have done for the audit.

Q. Now I'd like to touch on a few points on training for the Coast Guard. Do you think Coast Guard inspectors are properly

trained to conduct the oversight of the ACP exams that we have?
A. Well, when the Alternate Compliance Program was initiated back in 1996, the vision would be that marine inspectors who either have a hull examiner qualification or machinery examiner qualification would be directly involved.

Since then, the training program of the Coast Guard doesn't necessarily emphasize those qualifications as much as it used to. So your marine inspectors are essentially not required to get those two qualifications. Some still do, but it's not a -- not all do.

In this case, there is no Alternate Compliance Program training program at the marine inspector course. There is the 840 book which provides guidance to the marine inspector. A marine inspector who has -- in my opinion has the machinery or the engineering qualifications would be able to utilize what we call the 840 book, which is the inspection guide, would be able to utilize that to do a good overall assessment of the vessel during a walkthrough.

The current method of doing the Coast Guard assessment of the vessel is equivalent to a port state control, where we're just going on board, checking the documents that we're responsible for, conducting a walk around the vessel, and I would say if you don't have some of the experience with deep draft vessels, a level of knowledge base that is generally found in someone with a hull or machinery examiner's qualification, you may not be willing to

appreciate some of the condition of the vessel and appropriately assess it.

Q. And you mentioned that our oversight exam is equivalent to a port state control examination. In your experience, is the Coast Guard conducting that in conjunction with the ABS, or I'm sorry. Strike that. Are they doing -- is the Coast Guard conducting our port state control level, ACP oversight exam in conjunction with the ACS Service?

A. No, and generally -- and that's -- they're done separately. It goes back to some of the issues with the communication that, you know, there is never a joint meeting to discuss the overall condition of the vessel. And generally if the Coast Guard finds something on the vessel, it will issue the 835, which is then provided to class. Class approves that or, you know, it determines and oversees the resolution of that requirement, and then goes back to the Coast Guard usually via emails that it's been completed, but there is never a general overall assessment of the vessel when people are on board.

Q. And just to clarify, to your understanding there are no required ACS qualifications for a Coast Guard member conducting oversight?

A. No, there is not.

Q. I'd like to talk about issues that you identified for training of the ACS surveyors. Is it your understanding that there are no specific surveyor quals required for ACP?

A. Well, the memorandum of understanding and the memorandum of agreement between the Coast Guard and the approved class societies, the approved class societies have agreed to have surveyors that are knowledgeable and are able to conduct the exams, either the international class or the supplement.

We've become concerned that there is some knowledge-based deficiencies in some of the areas. As I noted during the Marine Board of Investigation for this, that the -- one of the surveyors who was on board the *El Faro*, if I remember correctly, was not knowledgeable of conducting hydrostatic tests, and again it gets back to not only just the technical aspect of doing the inspection or the exam, it's also understanding the applicability of the supplements and how to apply them to a certain vessel.

Q. And I just want to clarify on that last answer. You -- are you saying that from viewing prior MBI testimony for the *El Faro*, you made a determination or an opinion that an ABS surveyor was not qualified to do the hydro test?

A. I would say I found her answer to that question concerning the hydro very concerning. Someone with experience with hydro testing would understand the intent of the hydrostatic test and that it is to determine that the pressure vessel is capable of withstanding the pressure at regular operating pressures and conditions.

Q. That leads me to another question. Do you think it would be important for the Coast Guard to have the ability to track

specific surveyor performance since they are conducting inspections on our behalf?

A. Well, I think that gets back to the need for communication between the approved class societies and the Coast Guard for -- both at the local level -- the better communication, the better coordination of work at the local level would help facilitate that so we know the capability and the performance level of the approved class society surveyor.

In addition, again, the communication is to -- when we're meeting, discussing, we have some means of getting feedback from the class society itself if they have any concerns or issues with how the vessel is doing. But one of the roles when the Coast Guard does go on board, is to assess the vessel's overall condition. I would say if we continuously see a vessel that is not meeting minimum standards in accordance with whatever applicable regulations that it's supposed to meet, then there should be a means for the officer in charge of marine inspection or at the Commercial Vessel Compliance Office to engage with the class society to further discuss the -- what may have been missed and why is the vessel continually getting into a substandard condition.

Q. In your opinion, does the Coast Guard currently lack sufficient machinery and hull qualifications for their journeymen and advanced journeymen marine inspectors?

A. Well, I would say that because of the Alternate Compliance

Program it's allowed us to utilize the expertise of the approved class societies in those realms. So the -- to answer that question, I'm not aware of -- in one aspect, I'm not aware of a vessel that has not -- that's been held to the dock because there's not an approved hull or machinery examiner there to do the work.

I do think that it is important for the Coast Guard to maintain a pool of marine inspectors who have those qualifications so we can go engage with people who also have that level of experience so it's basically a good exchange of information and we have a better understanding of the technical aspects of a boiler, diesel engine, the hull, and whatever the other technical aspects are.

Q. In previous testimony, we briefly discussed the PR17 process with other witnesses. Can you describe what that is and how it works?

A. Well, I'm knowledgeable of it. I've never been directly involved in it, but it's basically the approved class society's ability to identify a nonconformity and have it addressed to the owner/operator of the vessel.

Q. And if I understand right, you previously testified that often the Coast Guard has to prompt the ACS to make that assignment. Is that correct?

A. Well, I -- I'll put it, when we submit a Coast Guard CG-835 for a vessel, the class society is supposed to convert that into a

condition of class. We have indications that that was not being done. We have done follow-up with them, or units have done follow-up with them, and then have -- at that moment they have done it or at that moment they might say, hey, it's already taken care of it, and then the item may be dropped.

Q. Since the sinking of the *El Faro*, has there been a concentrated effort by your office to identify potentially older vessels or older ACP vessels and participate in the examinations?

A. Well, we continue to do that. We've been working very closely with the Commercial Vessel Compliance Office. They come up with the risk matrix. We've been doing the risk matrix. We're still participating in doing compliance exams and safety management audits, or document of compliance audits and safety management audits. So it still is a current task for the travelers.

CAPT NEUBAUER: At this time, I'd like to pass the questioning to the NTSB. Are there any questions? Mr. Young.

MR. YOUNG: Thank you, Captain.

BY MR. YOUNG:

Q. Good afternoon, Captain Flaherty. Can you just briefly describe your traveling staff? How many travelers do you have?

A. Currently we have one detached traveler. His expertise is in steam. At the office, we have one vacancy right now. The individual just transferred to a new position. I have three military travelers and one civilian traveler currently.

Q. And has that number of travelers declined in your experience with the Coast Guard since you started?
A. No, it's pretty much remained the same. We've always had -- well, at least in the last 7 years, we've had three travelers civilian positions and three travelers military positions.
Q. And how does a traveling inspector become qualified for that position?
A. Well, basically it's an evaluation of the person's background. We're looking for people obviously who have extensive experience conducting exams on a variety of vessels. For myself, I have 11 qualifications for vessel inspections. So it's also specialty areas. One of the civilian traveling inspectors is highly knowledgeable with construction. The traveling inspector -- the other civilian traveling inspector is highly knowledgeable in steam. So we try to have a mixture of expertise in specialties within the traveling inspector staff. So one question from the field, either we have someone with the answer or we know how to acquire the answer to whatever their technical question is.
Q. Understood. Thank you. When it comes to being trained for ISM audits, are all the travelers trained for that?
A. Currently all of them are trained except one, and that's because his focus has been primarily on propulsion boilers.
Q. Now when it comes down to the marine inspectors on the field unit, what percentage of those marine inspectors dealing with the ACP program are qualified to be participating in the audits for

ISM?

A. Currently the ACP officers, there is no requirement for them to receive auditor training. Auditor training has been in the past available for -- and it was required at some point for what they used to call senior marine inspectors, but that -- it's currently my understanding that that was stopped and the focus of the auditing was moved primarily to the Commercial Vessel Compliance Division -- Domestic Division at Headquarters.

Q. So during an ACP oversight review by the Coast Guard, if there were some ISM issues to identify or review, would that be conducted by the local field unit marine inspector or would that be transferred up to either travelers or CVC?

A. If it's the inspection side, the physical exam of the vessel, that would still go to the local unit. If it's on the auditing side, most likely it would be either the travelers or the staff at the Commercial Vessel Compliance Division.

Q. And in your opinion, do you feel that the ISM reviews are being conducted properly and that the people at the field level are able to identify corrective actions and findings and handle them properly?

A. Well, generally the field units, as I understand, have not been directly engaged with the auditing process. Sometimes they do arrive, but we've -- when we've gone out to do oversight of an audit, safety management system audit, we've always encouraged the local unit to attend. In some cases they do. Sometimes they have

a workload that they're not able to attend, but the -- there's -- there is no requirement that the person attending has the audit experience. They're basically there -- I would say in most cases they're there to learn and get a better idea of how the vessel is.

Q. And that rolls into my next line of questioning, preparing for these surveys and inspections. If the ACS is unable to review MISLE, and the Coast Guard is not able to review the ACS' database, is there a requirement for this process to take place?

A. Well, the Coast Guard is supposed to have the ability to review any of the materials maintained by the approved class society. They do have links to them. So Coast Guard personnel going on a vessel should be aware that that stuff is available to them. In addition, the Coast Guard personnel, marine inspector conducting that type of exam should prep for it, identify any outstanding items, both from the approved class society as well as from the Coast Guard involvement with the vessel.

On the other side, currently the approved class societies don't necessarily have direct access, as I mentioned before, to the Coast Guard documentations.

Q. Thank you. I think just to be clear, I think you may have answered Captain Neubauer's question regarding ACP training. Is it correct that I understood there was no ACP training going on now at the Coast Guard?

A. The only training that is conducted is on-the-job training at the local unit. There's no formalized, what we call a C-school

training. The marine inspector course, which is the initial course that apprentice marine inspectors go through as they're starting to learn this profession, there is no -- outside of maybe potentially mentioning what the Alternate Compliance Program is, there is no specific training on what is expected or what is not.

Q. Had there been previously at the onset of ACP?

A. Initially when the Alternate Compliance Program went into effect, there was training but that was primarily with the approved class society surveyors so they would understand -- providing them training on what the Coast Guard was doing during its inspection of a vessel. It was done in 1996, and it's my understanding the last time it was done was in 1997.

Q. So in order for the marine inspectors to be qualified to do the ACP inspections, they do on-the-job training and they're using an inspection book called the CG-840. Is that correct?

A. That's correct. In addition --

Q. And --

A. Excuse me. In addition, there is the information within the *Marine Safety Manual* as well as the Navigation and Vessel Inspection Circular 295 Change 2.

Q. And as in the report, it's stated that the inspection book CG-840 hasn't been updated since 1999. Do you know of any plans for that to be renewed and updated?

A. I believe that's included in the overall review, and following the submission of the Traveler's Report, Admiral Thomas

directed the review and implementation of corrective measures to enhance the program. That's been ongoing, including meetings with the approved class societies.

Q. Regarding steam vessels that are enrolled in the ACP program, I understand that as of last September, there are only 39 active inspected steam vessels. Is the Coast Guard in your opinion equipped to support steam vessel inspections throughout the ACP, even with lack of a vintage vessel COE and based on the experience and the qualifications of these marine inspectors?

A. Well, even though the Vintage Vessel National Center of Expertise was disbanded, I believe, 4 years ago -- it might have been a little bit longer -- we did keep the specialty for the steam travelers, steam inspector. They do hold on-the-job training for steam inspections on an annual basis at Duluth, Sturgeon Bay, where there is -- although the vessels up there are not enrolled in ACP, we still have some steamships where we do training. It is still possible for a marine inspector to achieve steam qualifications. It's not as easy as it used to be since, you know, with the vessels, steam vessels going into Alternate Compliance, we generally don't have the availability to get on board like we used to in the old days, per se.

Q. Understood. Thank you. One of the items noted was the 14-day notification for the surveys and inspection. How is that enforced?

A. Currently that's one of the things we brought up with the

approved class societies. We have not issued, to my knowledge, any notice to the companies to comply with that. We do recognize that they do have very tight operating schedules, but we have emphasized when we have met with various companies one-on-one that the importance of that, it helps prepare the approved class society marine surveyor with enough time to evaluate the vessel, get different -- get the different background information on the vessel, and also, it provides the Coast Guard with the opportunity to go on board the vessel if needed.

So I'm not aware of any direct communication with companies, but any time the travelers or the units have been going out and engaging with companies, we have been reminding them of that important notification timeline.

MR. YOUNG: Thank you.

That's all I have, Captain.

BY CAPT NEUBAUER:

Q. Just a follow-up to that question. Is there any minimum timeline for the Coast Guard notification or is it expected that it would be immediate after the ACS is notified?

A. Generally what I've seen in the related guidance was within a couple of days, 2 or 3 days to notify the Coast Guard. It's my understanding, and generally a lot of times they do submit -- when receiving notification, they will on a routine basis notify the local unit via email just saying, hey -- and the travelers are also listed on those and, you know, we'll get notifications on a

regular basis via email.

Q. Have they received notice that there were some concerns relayed from Activities Europe and Far East Activities, in regards to ACP? Can you expound on that, any concerns you received from those commands?

A. I received direct -- I had a direct meeting with the current commanding officer of the Activities Europe. He had previously drafted a memo to the Commercial Vessel Compliance Office concerning some -- a lot of similar issues we've been discussing here today, about the vessels enrolled in the Alternate Compliance Program, communication with the approved class society, issues continuously being found on vessels, substandard conditions and, again, generally the same stuff we've been discussing today.

Q. Did the traveling inspectors generally get involved with ACP oversight exams overseas?

A. Yes, we do. We travel everywhere, wherever we're needed.

Q. During your increased oversight of the ACP program, can you give a percentage of the vessels you found to be in full compliance versus a general percentage of vessels you found with issues like watertight integrity or hull nonconformities? I guess I'm looking for the number of vessels in full compliance versus vessels you found with multiple deficiencies?

A. Well, we utilized the risk assessment to examine the vessels that were already listed with having previous concerns. So among those vessels, they were already -- you can say that they were

already having some issues before the travelers were directly involved. Due to -- we have been on board a few vessels in the Alternate Compliance Program and we found -- that were not on the list, that we found that those two or three vessels were in pretty good condition.

Q. How many vessels have you checked overall would you estimate?

A. As of today, I think 18.

Q. So out of the 18 vessels, 2 or 3 were not on your targeted list; is that correct?

A. That would be accurate.

Q. And those 15 or 16 other vessels, are you saying you did find serious safety deficiencies?

A. We found a variety of vessel issues, the worst being the two vessels that were eventually removed from service, the vessel that went into dry dock. We are -- you know, and again. these vessels were previously in some cases on the risk assessment list for 3, 4 years continuously. So that's one of the reasons we wanted to focus why these vessels kept ending up on that list.

Q. Now I want to clarify for the record, I think you said targeted list. Risk assessment list is the proper terminology; is that correct?

A. That's correct.

CAPT NEUBAUER: At this time I would like to go to the parties in interest. Mr. Fawcett, you have a question?

MR. FAWCETT: Yes, sir.

BY MR. FAWCETT:

Q. Good afternoon, Captain.

A. Good afternoon.

Q. Just a couple of questions to follow up your testimony. In addition to the Vintage Vessel NCOE that has gone out of existence, do you use the other NCOEs to facilitate the work of the traveling inspectors?

A. We have on occasion, yes.

Q. And turning to the consequences of a marine entity being issued Coast Guard 835s or no sails, if they get a record of no sails, can it affect their business bottom line in terms of the competitiveness of a vessel in service?

A. That's not a preview of what I look at. It's something I don't look into.

Q. And just finally, if an authorized class society asks the local OCMI or the officer in charge of marine inspection for information in the MISLE database, which is the marine safety database, do we have an obligation to share that information with the authorized class society?

A. To be honest, I'm not aware that we do, but I would have to double check with the -- it is public record, but I'm not aware that units regularly do that.

Q. Thank you very much, Captain.

CAPT NEUBAUER: At this time, I'd like to go to the parties in interest. TOTE?

MR. REID: No questions, sir.
CAPT NEUBAUER: Mrs. Davidson?
MR. BENNETT: No questions.
CAPT NEUBAUER: ABS?
BY MR. WHITE:
Q. Good afternoon, Captain. With regard to your report in Exhibit 329, isn't the purpose of the ACP program to eliminate redundancy in commercial inspections while maintaining an equivalent level of safety?
A. That is correct.
Q. And to the extent that you've examined vessels or 18 vessels under the oversight responsibilities of the Coast Guard, how many vessels are in the ACP program that are deep-draft ocean vessels, if you know?
A. I believe it's 149. It might be higher than that. I'd have to double check the records, but it's -- yeah, let me double check on that. I'm sorry. I'm not recalling it right now.
Q. And as far as your targets, in your report, at the end of your report, Exhibit 329, I understood that you had a target or recommendation trying to reach 2 percent of those vessels. Is that your target?
A. We were looking at going out and doing -- participating in exams of 2 percent of the vessels that were not on the risk assessment list.
Q. And can you tell us out of those 149 vessels that you

estimate that are in the ACP program, how many have the Coast Guard put on risk assessment -- the risk assessment list?

A. The CVC target list or the risk assessment list, that is developed by CVC based on their own internal criteria. So that list can change depending on the vessel's condition history or other aspects.

Q. As of the writing of the report in September of 2016, do you recall how many vessels were on the risk assessment list?

A. I'd have to go look at the list. It was just a list of vessels. I would have to go back and double check on that exact number, but it was definitely over 10.

Q. And to the extent that there was a matrix, is that something that CVC determines, whether a particular vessel meets the criteria under the matrix to be on the list or is that something the traveling inspectors determine?

A. As previously I think documented by Captain McAvoy, they're responsible for that. So you could reference his testimony.

Q. And do you think there would be any value in sharing that risk assessment list with the ACSes to assist them and to communicate with them as far as what the Coast Guard considers to be a risk?

A. Well, I would look at it as, again, under communication. Any time that the Coast Guard or an ACS encounter a vessel that they believe has some issues affecting its ability to meet compliance requirements, that direct engagement between the ACS, either the

local office or with the local Coast Guard unit, I think is the most efficient way of getting that identified and hopefully quickly resolved.

Q. So it's your understanding that the local Coast Guard office would share with the local class office or the class surveyors what vessel was coming into the port that was on the risk assessment list?

A. My understanding, the risk assessment list is FOIA. So it's something that's generally not shared outside the Coast Guard.

Q. Do you think it would be of value to share it with the local inspectors or the ACSes?

A. Well, the Coast Guard inspectors are copied on a message on the vessels. So they are informed of it. So they go out and do additional inspections. At this time, the way the current system is set up, I don't think that would be the best method to address the safety concerns. I would go back, and based on my recommendation on communication at the local level, between the local class society and the local unit, is if one or the other comes up with issues related to a vessel, they quickly engage the other more so than just emails, to meet, maybe do a complete evaluation of the vessel at the earliest opportunity and to resolve the issues either identified by the class society or identified by the Coast Guard as quickly as possible.

Q. You know, during the course of the hearings, there have been, you know, some questions or some communications concerning notice

of a class or statutory survey and how that's communicated with the local Coast Guard office. You've addressed that in your testimony this morning. Is it your suggestion this morning that email is not the best way to communicate that a vessel is due to arrive in a port so the Coast Guard could look at it?

A. I think email is an effective method, but if, as was documented in the previous testimony by one of the surveyors for ABS, he would send out an email and not get a response back. In my opinion, if you're sending an email out with important information and not getting a response back, maybe in that circumstance that may not be the most effective means of communication.

Q. Would you expect the Coast Guard personnel that received that notice, would you anticipate that they would call the surveyor to coordinate its efforts or ask whether the survey can be delayed or coordinate in that manner?

A. Again, it's depending on -- I'd have to engage with each one of the people who are receiving the email. Again, my whole emphasis has been on improving communication on both sides. So I would say if anyone is receiving information, the class society or the Coast Guard, and it's relevant to a vessel exam or vessel safety issues, that engagement after that should occur.

Q. And to the extent that the local Coast Guard office may not have the personnel either qualified or available to board a vessel under the ACP program, would you recommend or would you consider

it helpful if that risk assessment list was shared with the ACS so they could attend or make a potential or a focus or bring particular focus to an item on that list?

A. Well, the Coast Guard unit, if they need to, they can contact the travelers, and we routinely go out and, actually, that's one of our roles, to supplement, if needed, units that don't have the resources or the qualified person to do the work. So we would -- I would recommend to the unit to contact the travelers and, again, if our availability is there, we will go out and do the inspection or participate in the exam.

Q. On that same issue of notification, you know, based on discussions and meetings between the Coast Guard and ABS, I understand the notification at issue has been addressed, and that the notifications for both planned and in attendance have been significantly reduced. Is that correct?

A. Are you basically asking have we seen improvements within the communication?

Q. I'm asking, one, whether the communications have been improved and, two, have they met the target of 10 days or 2 weeks?

A. We have seen some improvements in the communication, but we still do see incidents where they're not meeting the target 14 days.

Q. You made reference to the supplement. To the extent that the supplement has been I guess in effect since the ACP program commenced in let's say 1996, how many revisions to the supplement

has the Coast Guard considered or approved?

A. Well, I would say that the supplement concerns are pretty much a recent evolution. I would say that the -- to further clarify, you would have to address your question to engineering standards office. I don't have the information to answer that question. That's not directly my specialty.

CAPT NEUBAUER: Mr. White, I just have a follow-up on a question. Do I take it that you said that you've seen some improvement in the supplement update recently? Is that accurate?

THE WITNESS: I think I was answering his question on communication. The -- I think as I previously mentioned, and it's documented in the report, when the Alternate Compliance Program started there was only one classification society approved. So maintaining the supplement back then, again, was not much of a challenge. Since the addition of additional class societies have occurred in the last 5 or 6 years, maintaining supplements for the different classification societies has become a burden.

CAPT NEUBAUER: Thank you. Mr. White.

BY MR. WHITE:

Q. Staying on the subject of the supplement and hydrostatic testing, I noted in your report, you make reference on page 5, in paragraph 9(a) to hydrostatic testing. In connection with what you have written there and our understanding, is it accurate to say that based on your review of the supplements, the various supplements in place with class societies, some class societies

have specific requirements for hydrostatic testing and some do not?

A. As stated in the report, that is correct. Some do and some do not.

Q. And to the extent that you referenced earlier testimony before the MBI, as far as the testing of the hydrostatic testing on *El Faro*, it was on the economizer and not the boiler, correct?

A. Well, the economizer is the pressure vessel that's connected to the operation of the boiler. The economizer is a -- I would consider the economizer part of the boiler.

Q. And to the extent that the attending surveyor indicated that it was subject to the surveyor's discretion according to ABS rules, whether to test -- hydrostatically test the boiler or economizer for that specific pressure, did you -- are you aware of that testimony?

A. I'm aware of that testimony, but I'm also -- the hydrostatic testing of any aspect, any pressure vessel related to the propulsion boiler has been an issue with ABS on other vessels.

Q. Okay. But again, that's not specifically addressed by the supplement but was addressed by ABS rules as far as the discretion of the surveyor to test it at a pressure she deemed acceptable?

A. Well, what I find concerning is the -- with her comments was her hesitation to do it based on the fact that it's a 45-year-old boiler. The -- if I remember -- and again, I don't have the transcripts in front of me, but she referenced that the boiler was

45 years old and she didn't feel comfortable doing the hydrostatic testing based on the age of the vessel or age of the boiler, indicating that she didn't fully understand what the purpose of a hydrostatic test was.

Q. But you're in agreement that CFR requirements for the testing of the boiler were not applicable on *El Faro*?

A. Well, due to the fact that under the Alternate Compliance Program the -- it's based on the international rules, class society, and then the supplements, that would be correct. But the Coast Guard has emphasized the need for hydrostatic testing as an appropriate means of determining if a boiler is fit for proper operation. But again, with that testimony, if my recollection is correct, it was her statements about why not, why she was not going to do a hydrostatic test that were concerning and the understanding or failure to understand the appropriate need to do it at times.

Q. Based on your CV or the background you described earlier this morning, you were the chief inspector in San Juan during the time frame from 2012 to 2014, correct?

A. No, I was what they call the Deputy Sector Commander.

Q. And what would be your responsibilities in that post in San Juan?

A. As the Deputy Sector Commander, I was in charge of ensuring the operation of all missions performed by that unit.

Q. And did that include any oversight of the ACP or the vessels

that visited the port?
A. That was one of the missions, that's correct.
Q. And are you familiar with Mr. McMillan from the San Juan Office?
A. Yes, I am.
Q. And can you tell us how Mr. McMillan's qualifications compare with what you would expect for a trained marine inspector?
A. If my recollection is correct, he has a hull qualification.
Q. And how many years has he been in the Coast Guard?
A. He's a -- if I remember correctly, he's a retired warrant officer, and a civilian marine inspector. So I would assume he -- and I'd have to double check, but I would assume he has probably close to 25 years of service, but I would have to admit I'm not directly knowledgeable of how much time he has in service.
Q. And do you consider the San Juan Office of the Coast Guard to be properly staffed to conduct its surveys in San Juan?
A. Under the guidance that's currently -- at the time and under the guidance of the Alternate Compliance Program, I feel that they are conducting the exam as appropriate.
Q. And as far as the relationship or the communications between the San Juan Office and ABS, did you confer with Mr. McMillan or anyone in that office concerning their acceptance or any complaints concerning the level of communication?
A. Well, I was never provided any information to -- or complaints as you put them. I know that the Coast Guard

inspectors were dealing directly with the vessel, but as I understand it, and there is mentioning that they have in their activity report, they did have some engagement with the class society, but I think the challenge at the time was ABS primarily was doing its Alternate Compliance Program exams up in Jacksonville and the Coast Guard at the time was doing it down in Puerto Rico, at least for two of the vessel exam periods, if I remember correctly.

Q. To the extent that Mr. McMillan indicated that his communications and relationship between his office and ABS in San Juan was a good one, do you have any information to contradict that?

A. I do not have any information that contradicts that relationship, but as I said, as we did our evaluation of the Alternate Compliance Program, we did find communication concerns in other areas.

Q. This morning, we had Mr. Sirkar from the Marine Safety Center testify and there was some discussions as far as stability. Based on your review of the ACP program, have you spoken to any of the MSC representatives or any representatives at the MBI concerning the computer programs that are used by the Coast Guard and used by ABS?

A. We, as part of our evaluation, looked into the computer programs for the trim and stability as an oversight because we were identifying that there was -- people were using the trim and

stability computer program and were no longer familiar with the trim and stability booklet.

Q. My question's a little different. My question is whether you spoke specifically to any individuals in the Marine Safety Center, with the office in San Juan, concerning computer programs that were utilized or audiolized for cargo securing or stability or the like?

A. I did not directly but my staff did, and they briefed me on the conclusions of those discussions.

Q. And did anyone on your staff indicate to you that the CargoMax program is approved by the Coast Guard?

A. The software?

Q. The software or the use of the program.

A. The Coast Guard does not approve the software for the trim and stability loading.

Q. So you've never seen any approval issued by the Coast Guard concerning the acceptance of CargoMax software?

A. I'm not aware of any.

Q. How about the other programs that are out there that are used by other class societies? Did anyone on your staff indicate to you what computer programs are used by other class societies?

A. Again, we were focused on the general oversight. I do not have that information directly, but I think that's something that would have to be redirected to Captain Mauger, who is in charge of the Marine Safety Center, for any other programs I may not be

aware of that are out there.
Q. Have you spoken with any members of the MBI or anyone at MSC concerning interaction with ABS during this casualty and the use of the RRDA program?
A. Since that was related directly to the marine casualty involved in the *El Faro*, we made the decision, since there's a Marine Board of Investigation, that that would be handled by the Marine Board of Investigation. While we do mention the *El Faro* incident in here, our findings and stuff are based on information that we gathered outside of the Marine Board of Investigation.
Q. To the extent that the report complains of a monopoly created by the use of approved software by the classification societies, to the extent that other classification societies and ABS accept submissions using other computer programs, would you still consider that to be a monopoly?
A. Well, I think it was -- the thing about the monopoly is that the association of a class society with a computer program and utilizing it on the ships that are under their -- are chartered by them or hired by them to do their compliance program.
Q. And is that your understanding, that they can only use the HECSALV software?
A. Well, it's my understanding that it is what it -- from what our gathering was, I mean, if there is additional information that is contrary to that, I would take that in the conclusion. But currently the systems are, as I would say, specific to a class

society.
Q. But sitting here today, you can't share with us what specific programs your staff presented to you and any analysis they provided concerning the use of computer programs by the Coast Guard or anybody else?
A. Well, the Coast Guard doesn't approve the computer programs. So that would be outside of our ability to evaluate.
Q. But the Coast Guard uses computer programs, don't they? Do they use GHS? Is that a monopoly because they use it?
A. Well, that's a contractor that we've reached out to, but -- and I'm not involved in the procurement of computer programs for the Coast Guard, so I don't know how the process directly involves. But when we're mentioning this, there are overall things, is we have a computer program that is utilized by ships that is taking the role of what was the trim and stability booklet, that people are utilizing and that the classification society that they hired are providing, and that the system -- and also I think we mentioned some other aspects of cyber security concerns and some other aspect of that computer program, that we don't have any venue as the Coast Guard over.
Q. So your complaint is twofold. The first complaint is you don't feel the CargoMax program should be used in place of the trim and stability booklet. Is that correct?
A. No, I think the goal of our information we provided in there was something that we found when we were doing the evaluation. If

the -- one of the things we identified is that that computer program is not approved by the Coast Guard. We don't do an evaluation of it, or at least I'm not aware that the Marine Safety Center does do approval, but we're engaged with them. But we do believe that it's something that raises concerns, if they are introducing new computer programs, that the Coast Guard is not keeping up with the progression of these new systems to facilitate the trim and stability of a vessel.

Q. Is that a technological problem faced by the Coast Guard, keeping up with the programs?

A. I would say it's something that we haven't previously addressed and we currently haven't looked into. That's why I was bringing it up in my report.

Q. Based on your recommendations, is one of your recommendations that there should be a separate ACS office or billet?

A. I may have related to that a few recommendations but that was essentially part of one of them, yes.

Q. Is your further recommendation that the attending marine inspectors in the local office visit the vessel under the ACP program at a certain percentage of the time?

A. We, you know, we didn't change any of the recommendations on when they have to attend. Our recommendation was for the travelers to try to do oversight of other vessels that are not on the risk assessment or targeted list.

Q. You mentioned steam qualifications. Out of the 149 vessels,

how many, if you know, still have steam plants?
A. I believe the number is 33 or around 30.
Q. You mention in the report that many of the vessels in the U.S. fleet were approaching or in excess of 30 years old, correct?
A. That's correct.
Q. And would you anticipate that the level of repairs or renewals for a vessel would increase as the vessel ages?
A. That is something that generally happens with the age of a vessel.
Q. So it's not a lineal relationship?
A. Well, in a lot of cases, that depends on how much care and maintenance that the owner/operator puts into a vessel. There are some vessels in operation now that date back to the end of the 19th Century and the boilers have been updated and refurbished on several occasions and they operate just like new.
MR. WHITE: Thank you, Captain. I have nothing further.
CAPT NEUBAUER: Herbert Engineering, do you have any questions?
MR. SCHILLING: Yes, sir, just a few.
BY MR. SCHILLING:
Q. Hello, Captain.
A. Hello.
Q. I'd just like to follow up on one of those points that ABS was just making on the loading instrument manufacturer and it's relationship with ABS. Are you aware that the manufacturer, that

CargoMax software was producing a loading instrument for 30 years before there was any relationship with ABS?

A. I do recall understanding that it was in existence before, yes.

Q. And after 35 years, up to the present day, it's produced for ships being constructed worldwide by all classification societies and being approved by all class -- all major class societies and flag administrations?

A. I'm aware that it is utilized in several different aspects but my focus when we looked at the thing was specifically to the vessels enrolled in the Alternate Compliance Program.

Q. And further, that ABS approves loading instruments from all different manufacturers, not just this particular one?

A. I'm aware that ABS is involved in others. I'm not aware of the extent of it, but I am aware.

Q. Is there any reason to believe there's any preference given to this particular product when we do the approvals?

A. I wouldn't be aware of that if there was.

MR. SCHILLING: Thank you very much.

CAPT NEUBAUER: The hearing will now recess and reconvene at 5:00 for the final round of questioning.

(Off the record at 4:46 p.m.)

(On the record 5:03 p.m.)

CAPT NEUBAUER: The hearing is now back in session.

BY CAPT NEUBAUER:

Q. Captain Flaherty, for this round of questioning, I want to focus on the ACP program as it relates to TOTE Services and your findings that you had over the course of time since the accident voyage. Let me start with, can you explain --

A. I'm sorry. I just want to clarify something that I said previously. I think I referenced to a question about the auditor qualifications in field units, and I said that there's some qualified auditors. What I should have said instead was there are marine inspectors who have attended auditor training, just to clarify that.

Q. Okay. Thank you. Any other clarifications?

A. No.

Q. All right. Then we'll move on to the second line of questioning. I'd like to discuss the Traveling Inspection Office's involvement with TOTE Services after the *El Faro* sinking, and the first thing I want to focus on is the document compliance audit that your traveling inspectors were involved with in early 2016. Do you recall that audit?

A. Yes, I do.

Q. Over the course of that audit, before -- actually strike that. What was the purpose or intention of the Coast Guard travelers that were on the audit team? Were they observers?

A. That is correct. They were observers.

Q. During the course of the DOC audit, did the traveling inspectors expand their examination?

A. Well, they were heavily engaged with the lead auditor and the other members of the audit team with -- due to the fact that this is an audit of a company that recently lost a vessel, that they were asking additional questions and engaging more with the audit team than normally would have been seen in other document compliance audits.

Q. Would you say their role went beyond observer? Were they active participants in the audit?

A. I would say that they were not specifically active participants in the audit. They did not change, in my opinion, any audit outcome, but they were communicating with the audit team some of their observations that they were making.

Q. At some point during that document compliance audit, did they do some investigative work on behalf of the Marine Board of Investigation?

A. I don't know if they necessarily did it on the Marine Board. They were observing what was done when they were interviewing the crew. Maybe that would include it, but it wasn't specifically for the Marine Board.

Q. And can you describe what actions the traveling inspectors took during the audit?

A. Well, basically -- and before -- let's see. The traveling inspectors were on board the *El Yunque* prior to that. So I want to make sure that that's not confused on the actions that they took at that moment versus the audit. But they were there with

the audit team as they were interviewing the crew members as part of the auditing process.

Q. At some point during the DOC process, did the traveling inspectors request to examine the *El Yunque* exhaust ventilation trunk?

A. That was done, yes. That's correct.

Q. I'd like to reference Exhibit 201. Exhibit 201 are photographs taken during that examination of the *El Yunque* hold, 3 hold starboard exhaust ventilation trunk. Does that look familiar to you?

A. Yes, it does.

Q. On the lower photograph on the first page, there's a picture of a finger going through what looks like a corroded bulkhead. Do you see that photo?

A. Yes, sir.

Q. Can you describe generally what the traveling inspectors found inside the exhaust ventilation trunk?

A. They discovered extensive wastage of the steel plating, basically side shell interior wastage. In essence, they found that the whole ventilation trunk itself had an extensive amount of wastage that had, from their opinion, had not been addressed in many years.

Q. Were there any additional concerns found that were not wastage related?

A. At this time, I don't recall anything outside of the wasted

stuff. I know there was -- from my recollection, there was a lot of discussion about how much wastage was in those trunks and that, again, it looked like the wastage or conditions of those trunks had been like that for a long period of time.

Q. If I could call your attention to page 2 of Exhibit 201. This was a photograph that was also taken inside the exhaust ventilation trunk, and it shows a longitudinal going through a bulkhead. Can you give a description of what's occurring there, sir?

A. Yeah. As I recall, it looks like the -- it's not connected where it's supposed to be connected across and it's actually going through the shell there. So there's an opening that, if I remember correctly, was not supposed to be there.

Q. Can you summarize the findings of the document of compliance, how it was done on TOTE Services?

A. If I recall correctly, there were five nonconformities and four observations. The nonconformities covered, for example, the knowledge of the chief mate with the trim and stability booklet; he was well aware of how to utilize the computer program but he was not knowledgeable of how to use the trim and stability booklet itself, but the two other officers on board had knowledge of that.

There was a port engineer, if I remember correctly, was not knowledgeable of trim and stability although he was also knowledgeable of how to utilize the computer program.

There was a question about some investigations that TOTE had

not completed as it relates to its responsibilities for the safety management system, investigations into casualties involving other vessels that are listed under the document of compliance, and I think, in general, that covered all the different areas.

Q. And for the record, was the *El Yunque* under the Coast Guard's ACP program?

A. The *El Yunque* is or was under the Coast Guard Alternate Compliance Program.

Q. After the traveling inspectors identified the issues inside this exhaust trunk, what actions were taken?

A. The local unit which, if I remember correctly, had a marine inspector there present, was notified. An evaluation was conducted on what to do next. It was recommended that the trunk itself be examined to see if any corrections, what they would do to it, as well as it was recommended that the class -- approved class society conduct an evaluation of the rest of the trunks on board the vessel to determine if their conditions were similar and if they needed to be addressed.

Q. Were there any Coast Guard 835s issued in regards to the vent trunk requirements?

A. I believe the Sector Jacksonville issued an 835 specifically for the -- to address the trunks.

Q. And to your knowledge, was that 835 and class concerns satisfied?

A. It's my understanding that the approved class society

surveyor communicated back to the unit that the other trunks -- I believe it's also listed in the testimony, that the other trunks were examined and were found satisfactory.

Q. Are you aware of any follow-up DOC audits on TOTE Services after that early 2016 audit?

A. Well, based on the findings from the audit team, they recommended the issuance of a 90-day document of compliance that allowed TOTE vessels to still operate while it also allowed them to address the other issues in addition to the ones I mentioned that were identified in the ABS audit report.

Q. Were there any downflooding concerns identified due to the wastage and the longitudinal penetrations found in the exhaust trunk on the *El Yunque*?

A. I think by default, the wastage, I think the concern was at the time when we were doing the investigation into the *El Faro* that the -- and this is before we had the transcripts from the vessel data recorder, we had concerns of potential downflooding through the ventilation ducts. So these findings where you had rust conditions, penetrations that weren't supposed to be there, and overall, you know, wastage conditions of the vent trunk, that there seemed to be a consensus that there could be a possibility for downflooding.

Q. What was the resolution after the 90-day assessment period?

A. The 90-day assessment period, TOTE addressed the outstanding -- the nonconformities to the satisfaction of class and class was

in communication with the Coast Guard. So the DOC was issued. Specifically for this, this was addressed basically once we received -- or at the time, once we received the indication back from the class society surveyor that the other trunks had been checked, we were at the time satisfied with the information.

Q. Are you aware if a Coast Guard inspector also checked those trunks to verify they were checked?

A. That was sent to -- and my understanding of how the events took place, the trunks were not looked at again by the Coast Guard until the vessel was up in Tacoma, Washington, where it was at the time going to be retrofitted and modified for service up in Alaska.

Q. As the vessel was preparing for service in Alaska, did the traveling inspectors have any involvement after that point?

A. After we received the initial notification from the local unit, they had discovered that the condition of the remaining vent trunks was substandard and had significant wastage, the traveling inspectors attended.

Q. And to clarify, that notification came from the Coast Guard?

A. That's correct. That notification came from the Prevention Department at Sector Puget Sound.

Q. I'd like to call your attention to MBI Exhibit 295. This exhibit is the Coast Guard activity summary report from the MISLE system, Activity ID Number 5836311. It's an inspection report done by Sector Puget Sound. Would you agree with that assessment?

A. I would agree.

Q. Looking at page 2 of that report, I want to read an entry that's dated 6 to 12 April 2016. "Boarded vessel as before to direct gauging of third-party surveyor, extensive gauging completed at multiple suspect locations on deck." It continues later, "Evidence of long-standing uncorrected wastage exists. For example, layers of paint around significantly wasted frames." It's signed by Mr. John Winters, who was a marine inspect at Puget Sound.

Looking at the next entry down from 20 April 2016, it says, "Received a 123 item work list based on gauge report, intended work." And then the next entry from 20 May 2016 says, "Boarded vessel as before, examined supply vents through the holds 1 through 3 port and starboard, 6 total. Observed gaskets missing, holes in vent ducts, gasket flanges wasted, holes in side shell in way of vent inlets. Required all to be added to work list."

The next entry is for 14 August 2016. It says, "The company has halted work on returning the vessel to service. Received request to place vessel in lay-up status and the vessel is to be scrapped."

Does that match what your travel inspectors observed during their time on *El Yunque*?

A. Yes, it would.

Q. Do you know what ultimately happened to the vessel?

A. It's currently down in Brownsville, Texas waiting -- or

currently being or waiting to be scrapped.
Q. In your opinion, the wastage and the deficiencies found in the exhaust and supply trunks of the *El Yunque*, were they longstanding, extending beyond a full survey cycle or inspection cycle for the vessel?
A. In my opinion, yes.
CAPT NEUBAUER: I'd like to pass the line of questioning to the NTSB at this time. Mr. Young.
MR. YOUNG: Thank you, Captain.
BY MR. YOUNG:
Q. Just two follow-up question, Captain Flaherty. At what point during inspection regimes do you think those ventilation trunk issues should have been identified?
A. Well, I think at the very least during the vessel's dry dock, depending on when they're doing it, examining the vessel from the outside, looking at rust areas, to follow up, or internally when you're looking around and you see indications of wastage, to examine them more extensively just to determine how extensive they are.
Q. And do you have any records of any inspections or documentation such as these inspections that would have happened on the *El Faro*?
A. The Coast Guard, as I understand it from Sector Miami, attended the *El Yunque* in dry dock in 2014. Indications are at the time they were on board, due to the fact that the vessel was

on the risk assessment list, they did attend the vessel. Their narrative does describe them entering tanks, and they do mention in their narrative that TOTE was looking at the vent ducts, doing some steel replacement around or near one of them, but it does not go into detail on that.

Q. And to clarify that, is that the *El Faro* or the *El Yunque*?

A. That was the *El Yunque*.

Q. Okay. And to clarify a previous statement, after the inspection of the *El Yunque* in Jacksonville, they found -- the Coast Guard found one ventilation duct to be deteriorated, and then inspected the remainder and all the others to be satisfactory. Then after the vessel went to the West Coast, the same ventilation ducts were further inspected by additional Coast Guard travelers and found those ducts to be wasted?

A. It's my understanding that after the initial duct was discovered, that the Coast Guard did not participate in any other inspections, but that was the 835 for that was passed to the marine surveyor for the class society, and that was the individual that did the further survey, but that's my understanding. I'm not aware of personnel from Sector Jacksonville doing anything in addition to that.

MR. YOUNG: Thank you for that clarification.

No further questions.

CAPT NEUBAUER: At this time I'd like to go to the parties in interest. TOTE?

MR. REID: Can we just take a quick break, sir?

CAPT NEUBAUER: The MBI will recess and reconvene at 5:35.

(Off the record at 5:24 p.m.)

(On the record at 5:35 p.m.)

CAPT NEUBAUER: The hearing is now back in session. Before we go to the parties in interest, I have one follow-up question.

BY CAPT NEUBAUER:

Q. In regards to the vent trunks issue, after the traveling inspectors identified the issues with the vent trunks on the *El Yunque*, did you or your staff do a review of the MISLE record to check for inspections on the *El Faro's* vent trunks, or the surveys that were done?

A. The last -- the *El Faro* was dry docked, if I remember correctly, in 2013. The Coast Guard did not attend that dry dock. The Coast Guard did attend the dry dock in 2011, and there was no mention in the review of the activity report of anything related to the vent trunks.

CAPT NEUBAUER: Thank you.

At this time, we'll go to the parties in interest. TOTE?

MR. REID: Thank you, Captain.

BY MR. REID:

Q. Thank you, Captain Flaherty. If you would, please refer to Exhibit 20 please, page 1, which is a photograph of the vent trunk. How was this -- when was this first shown to you?

A. When was I informed about the concerns with the vent trunk?

Q. When was the first time you saw this picture?
A. I think I saw this picture roughly a few days after the document of compliance audit. I don't recall seeing it before then.
Q. Did you know that the hole visible there was caused by a hammer used by one of the inspectors?
A. I'm aware of that, yes.
Q. Are you aware of when the last inspection of the *El Faro* was conducted by the Coast Guard?
A. Outside of just the annual inspection, as I previously mentioned, the vessel -- I think the last time the Coast Guard was on board for a dry dock for the *El Faro* was 2011.
Q. Okay. And the Coast Guard conducted an annual inspection in March of 2015. The inspectors actually came here to testify. Are you aware of that?
A. I'm aware of that, yes.
Q. And one of the inspectors was asked about if you had anything else to add to the report about the company and he said, "No, other than that the TOTE vessels, the ones that we've done in San Juan, they're actually better operators." And the witness goes on to state, "TOTE seemed to be a lot better in their safety management of their vessels just in general. The vessels I think were actually in a little better condition, too." Does that surprise you?
A. As I look at it, that's his opinion as a marine inspector.

Q. Another inspector testified -- another Coast Guard inspector testified. When asked about the safety culture at TOTE, he said, "Everything I've seen over the years, they have a very good safety culture. It seems like they really take pride in it. If there would have been a problem, if they had any issues, they would call us and let us know or they have scheduling of exams. They're always good about scheduling exams. We never really had any issues with them in that regard, and if there's a problem with them, they let us know." Does that surprise you?

A. Again that's the interaction of that marine inspector with the -- TOTE. Again, that's that person's opinion.

Q. Can you please refer to Exhibit 127 please? Captain, the testimony I just read to you, do you have any reason to -- of the inspectors that inspected the *El Faro,* do you have any reason to discredit that or not believe them?

A. It's not believing or not believing. They're expressing their own opinions of what they observed.

Q. Okay. Refer to Exhibit 127 please. When the annual inspection is conducted, Captain, what areas of the vessel does the Coast Guard inspect?

A. Well, it's firefighting, lifesaving equipment, general walkaround of the vessel to look for anything that might be -- you know, looks like it needs additional review or inquiry, checking the documents, safe manning certificate, make sure they're all up to date and valid.

Q. In fact, looking at the inspection report, the Coast Guard conducted an annual exam in March of 2015. Is that not right?
A. That's correct.
Q. If you would refer to page 121 please. Does the inspection report indicate that the inspectors inspected the accommodation and occupational safety aspects of the vessel?
A. According to the report, it looks like they check -- according to the report on the inspection results, it looks like they looked at all of the applicable parts of the vessel that they were supposed to and everything says satisfactory.
Q. So they looked at the communications aspects of the vessel, correct?
A. Well, that would be the general alarm, any of the other notification systems within the ship.
Q. And they looked at the construction, the load line aspects of the vessel, did they not?
A. Well, it's listed as inspected. As a general walkaround, yes, they did do that. Again, this is under the Alternate Compliance Program. The Coast Guard marine inspector during this type of an exam is looking around for anything that significantly raised questions or concerns. So it's not that they're conducting what would be equivalent to a dry dock where they're crawling tanks and doing a more substantial underneath -- under the hull walk or anything like that.
Q. And they inspected all of the vessel's documentation, did

they not, according to this report?
A. Yes, and that's to be expected during this type of an exam.
Q. And according to this report, they inspected the electrical aspects of the vessel. Is that not correct?
A. That is also listed here. Again, that would be a general walkaround, unless -- what is invisible -- visible to the marine inspector when he's doing a walkaround of the vessel, for this type of exam. So it doesn't indicate if anything was located maybe behind a post or any type of equipment that might not have been up to standard. Just anything that was visible.
Q. And they looked at the firefighting aspects of the vessel, did they not?
A. Again that would be a test of the fire system. I'd have to look at the narrative located above it to see if there's anything that they specifically looked at or did not look at. So without examining -- without being able to read the narrative, you'd have to look at this as more of a summary of the whole inspection without getting into particulars.
Q. Well, it says inspection results, does it not?
A. Well, it's part of the whole document for the inspection. An Activity Summary Report, as we referenced in this, can be -- have multiple inputs, multiple narratives. So if you could kindly just give me a chance to review the above information, I would be better able to address specifically what they might have looked at, firefighting, lifesaving or any of the others.

(Pause.)

THE WITNESS: As you note in the narrative there, the discussion about the type of bilge pumps in the system, and again something about that they're not rated for the class LASH point, and that they've amended the COI to properly address that, and then it was also contingent on the operation of the vapor and smoke detection. Let's see, they reviewed the ABS class surveyor report and the International Convention certificates were endorsed. Conditions -- yeah, there's two outstanding conditions of the vessel to be completed next dry dock. Vessel is scheduled to go out of service in October '15. So in there, I would have to reference what the two outstanding conditions of class were.

Q. But the bottom line is, Captain, this inspection was conducted by two Coast Guard inspectors and at the end of that inspection, they concluded that the vessel satisfied all laws and regulations of the United States. Is that not correct?

A. Well, based on the inspection and the information that was provided by the class report, that lists the two issues that still remain outstanding, they do mention the steering gear had some issues and again that was to be addressed by the attending surveyor, but, yes, based on the extent that this inspection covers for a vessel involved in the Alternate Compliance Program, they found that the vessel was fit for service.

Q. At the end of Mr. McMillan's report, he says, "In my opinion, the vessel was found fit for route and service as indicated on the

certificate of inspection at the time of the inspection." Do you have any reason to doubt that?

A. I have no reason to doubt it at the time he was inspecting the vessel, and the items that he saw during that inspection, that the vessel was fit for route and service, keeping in mind that the goal of doing an Alternate Compliance Program exam is to reduce the duplicity of the ABS, or in this case the approved class society surveyor, and the Coast Guard marine inspector. So a lot of the information he's basing this on is a walkthrough of the vessel and the fact that the approved class society conducted the exam prior to, as I understand it, and had found no other significant issues as well.

Q. Do you have doubt if the Coast Guard inspectors found some deficiency that was material to the condition of the vessel that would not have been corrected or identified by them and corrected?

A. It's the duty of all marine inspectors, once they come across an item that is not in compliance or raises the risk of safety to the vessel or crew, to identify it and make sure it's properly addressed either through utilizing the approved class society or, if not, through the 835 process.

Q. Thank you.

CAPT NEUBAUER: Any further questions, TOTE?

MR. REID: No further questions.

CAPT NEUBAUER: Mrs. Davidson?

MR. BENNETT: No, sir.

CAPT NEUBAUER: ABS?

MR. WHITE: Yes, sir.

BY MR. WHITE:

Q. While we're on the subject of notification concerning Mr. Reid's questions, the 14-day notification, that's the obligation of the owner, correct?

A. That is correct.

Q. And as far as oversight, in your report you indicated that, "The Coast Guard does not perform review, oversight or approval of equipment/software required by class rules." Just to revisit that, is that an accurate statement? Do you consider that to be an accurate statement that they don't perform review, oversight or approval?

A. Currently of the software that was previously discussed, it's my understanding that we do not.

Q. As far as corrosion, based on your experience as a surveyor, does the Coast Guard provide you with any specific training on corrosion?

A. As part of your qualification process to become a hull examiner, we do send people to -- in addition to on-the-job training, formalized training, Yorktown, we do send people to additional training in metallurgy and structure, aluminum, to a certain extent steel. Not all marine inspectors may go to that, but the goal is that if one marine inspector does, he comes back and trains the others. I would say just based on a photograph of

that hull area where the finger is sticking out, that that would indicate to me that that had been severely corroded for a while.

Q. Getting back to my question for a minute, Captain, as far as corrosion and the Coast Guard training marine inspectors for corrosion, would the inspectors at San Juan Office have that training that you just described?

A. They would have that training and -- but again, as I've reiterated, during an Alternate Compliance Program exam, the role is to walk around and look at items. Again, in this case, if -- as I understand, that would not include going around and hammering areas unless you specifically saw something related to a hole in the vessel or some other corrosion that would indicate significant wastage. Walking around the deck as a general walkthrough may not identify that.

Q. Okay. Getting back to my question, the surveyors in Seattle, would they have, those marine inspectors have the same training in corrosion?

A. I would assume they would have the same training in corrosion. But when they were there, the vessel was about to go into dry dock, so that would require them, as part of the evaluation of the vessel, to do a much more extensive review than you would during an annual ACP exam.

Q. And the Coast Guard inspectors that attended the *El Yunque* a the Grand Bahamas Shipyard, would they have the same training that you described for corrosion?

A. Again, the training that they receive, if they were -- and I don't know if they were specifically hull examiners or had a hull qualification, but I would assume if they did, they would have had the same level to identify the corrosion as I would expect a marine surveyor from the ACP.

Q. So just to be clear, the surveyors in Puerto Rico and the surveyors in Jacksonville -- excuse me -- the marine inspectors in Puerto Rico, the marine inspectors in Jacksonville, the marine inspectors in Seattle and the marine inspectors that attended the *El Yunque* in Grand Bahamas Shipyard, all had training in corrosion?

A. I would assume they would have had some training in how to evaluate the condition of steel and determine -- initially when there's identification of a spot that may have been corroded, a further examination would be validated, but I would also assume that the class surveyors who are attending from whatever the approved class society would have similar training, if not more, if they are conducting a similar type of exam.

Q. So moving back to the training for a minute, did any of your training on corrosion have any explanation as to localized corrosion or what areas of the vessel may be susceptible to localized corrosion?

A. Well, any -- essentially a vessel is operating in an environment that is, you know, that is corrosive. It's a saltwater environment. Outside of electrical issues or issues

related to a direct exposure -- continuous exposure to wind and weather in saltwater conditions, you know, a vessel would be susceptible to corrosion if not properly maintained and examined over time. So again, if I was to make a deck walk of a vessel, versus doing -- being in the dry dock, I think those are two different levels of exam right there that would be conducted.

Q. And, Captain, based on your training, your experience, as a traveling inspector, would an area of a vessel subject to saltwater exposure and humidity and heat be subject to localized corrosion?

A. Well, again this -- it looked like corrosion and it can be caused by the pocketing of water. If there was water retained in this area for a period of time and sitting stagnant at the lower level there, which I think that is the deck below, to me that would be a potential spot for a higher rate of corrosion. If I was aware that that was a pocketing area, hull areas, you know, they aren't protected by an anode system or any other system that prevents or helps mitigate corrosion activities, might be less, but again it would be -- anyone who is going on board the vessel and conducting a survey for the ship's structure, maybe even for the dry dock aspects, would be looking around and if they did see areas of severe corrosion or indications that there might be, that would require further examination.

Q. Getting back to my question, to the extent that a ventilator would be subject to saltwater, subject to heat, and subject to

fatigue, would that be an area in your opinion that might be subject to localized corrosion?

A. Well, localized corrosion, if you're defining it as the whole vessel, that whole vent trunk would be exposed to the humidity, the corrosion, everything else, and in addition to this area which was kind of unique for this vessel, the between deck area, as it was referred to, was an open area. It was below the main deck. So it was open to all the wind and weather that was accompanying the ship. But the indication here is that when looking at this from a general walk of the vessel, you see some rust stain, it may not catch your eye, but if you were there at the dry dock and you saw indications of rust, either from outside of the ship or from the inside of the ship, I would assume that during the dry dock exam that the -- anyone attending would examine below deck for it.

Getting back to my question, is it your opinion then that the ventilators on the *El Faro* and the *El Yunque* would be more subject to localized corrosion due to the fact they're subject to saltwater, they're subject to humidity and heat and fatigue?

A. Well, one of the things I discovered when I was reviewing the cases, and this is the activity report for the *El Faro* --

Q. Respectfully, Captain, I'm only looking based on your experience, based on your training in corrosion and based on your understanding of local corrosion, whether the ventilators are areas of the vessel that are subject to localized corrosion?

A. I would answer it this way, that any area of the vessel that

is directly exposed to wind, wave and sea conditions that the vessel is experiencing in a saltwater environment would be exposed to corrosion.

Q. And based on the pictures that we show in Exhibit 201, for hold number 3 on the *El Yunque*, the exhaust ventilation trunk, can you tell me the condition of the portside exhaust ventilation trunk at frame 159 and 162?

A. At the time -- currently I don't have a picture of it, but at the time when we received this information, it was just that they discovered that and had requested that it be further examined. Let's see. Yeah, it was -- when I went back, I was on board the vessel when it was in Brownsville, and it was the port side that we did look at, if I remember.

Q. I'm looking -- and my question, sir, respectfully, is that the time the picture was taken in Figure 1 -- okay, that's a year before you visited the vessel in Brownsville -- whether or not you know the condition of the port side number 3 ventilation trunk, at Exhibit 159?

CAPT NEUBAUER: Sir, you just referenced Exhibit 159?

MR. WHITE: No.

BY MR. WHITE:

Q. I'm looking at Exhibit 201, and there's a picture in Figure 1 of the number 3 starboard exhaust ventilation trunk. So the picture with the figure -- with the finger and the hammer is from the number 3 starboard side. My question -- that's at frame 159

and 162 according to the (indiscernible). My question is what can you tell us? What can the Coast Guard tell us about the condition of the portside ventilation trunk at frames 159 to 162?

A. On the port side?

Q. Yes.

A. Well, at --

CAPT NEUBAUER: I just want to clarify. Do you mean at the time of that survey?

MR. WHITE: Correct.

THE WITNESS: Well, sir, if I may -- if you recall, once we identified the issue on the starboard side and an 835 was required for the -- to the vessel to examine the rest of the potential -- or the other vents for potential corrosion, and we received a report back, which was also part of the testimony for this Marine Board, that a marine surveyor had looked at the rest of them at the time and had said that they were in satisfactory condition.

BY MR. WHITE:

Q. Did the Coast Guard inspect the ventilation trunks at that time and go back to you and say they were satisfactory?

A. I have no information related to -- I've got the activity report from that which covered the ventilation part. It also covers the issue related to the sprinkler system and the CO2 system. Now the sprinkler system, as noted in --

Q. My focus, sir, is just on the ventilation trunks.

A. Well, I think this information would help kind of clarify the

answer. The ventilation trunk under the Alternate Compliance Program, the Sector issued an 835 which was sent to the approved class society, ABS, for them to conduct an additional evaluation of the other trunks.

Q. So sitting here today, sir, you have no understanding as to what the condition of the trunks were found to be at the time of the survey in Exhibit 201?

A. Well, we were basing the further evaluation of that on the information that was going to be provided to us by the approved class society.

Q. And do you recall what Coast Guard inspectors were aboard the vessel at this point? Was one of the traveling inspectors aboard the vessel?

A. I believe there were two traveling inspectors on board at the time and one inspector from Sector Jacksonville.

Q. Okay. So they -- the only thing they looked at was the number 3 starboard exhaust ventilation trunk? Is that your understanding?

A. They were looking at that with the -- again, under the Alternate Compliance Program. The unit issued an 835 to the approved class society for them to examine it further and they would report it back to us.

Q. Okay. So they didn't survey anything further than this because they issued an 835? Or did they survey something and found nothing?

A. Well, if they surveyed -- if the -- are you talking about the Coast Guard or the marine surveyor?
Q. Coast Guard.
A. Well, if the Coast Guard came across this, that's what the current procedures are. You come across something like this, you identify it, you issue an 835 that goes to the approved class society, and the approved class society will review it in accordance with what the 835 states, and then depending on the findings, recommend additional actions to the owner/operator of the vessel.
Q. So sitting here today, sir, your testimony is that the two traveling inspectors that were placed upon the *El Yunque*, after the loss of the *El Faro,* saw this condition, issued an 835 and didn't inspect anything further?
A. Well, the traveling inspectors do not issue the 835. The 835 came from the officer in charge or marine inspector which was a Sector Jacksonville. The role in that was to, you know, that we came across something that was a concern and we were working with the approved class society with them to have it resolved in accordance with policy and procedures of the Alternate Compliance Program.
Q. So you don't know if they looked -- if your traveling inspectors looked at anything other than the number 3 starboard exhaust ventilation trunk, correct?
A. They were there for just a general walkaround, but if you

remember correctly, the primary reason why they were there was during the document of compliance audit.

Q. Do you recall whether or not anyone looked in the ballast tanks or the double bottom tanks? Would that be an area of localized corrosion?

A. The ballast and -- the bilge and ballast -- excuse me -- the ballast tanks were examined when the vessel, if I remember correctly, was down in Puerto Rico or at a later date.

Q. Do you recall whether the tanks were inspected in Jacksonville?

A. They might have been inspected in Jacksonville but right now I don't remember specifically, but Commander Venturella was -- did look into the ballast tanks at the time.

Q. Okay. And would the ballast tanks be areas where localized corrosion or be areas susceptible to corrosion through, again, the presence of saltwater?

A. Well, obviously any time steel is exposed to saltwater, there's a potential of corrosion.

Q. So it's an area that's subject to corrosion?

A. Well, again, any of the steel on board a vessel is subject to corrosion.

Q. Can you tell me as far as the 835 that you mentioned for the vent trunks on the *El Yunque*, can you tell us the date of that 835?

A. I'm looking to see if it's listed on the activity report from

Sector Jacksonville.

CAPT NEUBAUER: Do we not have the 835 available?

THE WITNESS: I'm currently just scanning it. I don't see it listed, but I remember it being mentioned.

CAPT NEUBAUER: Let's take a recess to locate the 835. The hearing will reconvene at 6:15.

(Off the record at 6:09 p.m.)

(On the record at 6:15 p.m.)

CAPT NEUBAUER: The hearing is now back in session.

Before we continue, Mr. White, I think Captain Flaherty wants to make a clarification on a point.

THE WITNESS: Yes, thank you. I just want to clarify my reading of the narrative for the vessel activity from Sector Jacksonville as it relates to the *El Yunque*. I mistook the 835 that was issued for the sprinkler system as it also being referenced for the vent ducts, but it is documented in there that the information was passed to a ABS concerning the vent trunk and concerns with the others, and that they had -- it was reported back. And again, communicating directly with the approved class society is an acceptable method in accordance with the policy and guidance currently in the NVIC and *Marine Safety Manual* for passing this information on.

But they did talk about the repairs that were done in accordance with the approved welding procedures with qualified welders and approved materials, and also the -- it is referenced

also during Commander Venturella's traveling inspection report.

So again, just to clarify, the 835 that I was referencing for the vent trunk was referencing the sprinkler system.

CAPT NEUBAUER: Mr. White, based on that clarification, do you have any additional questions?

MR. WHITE: I do.

BY MR. WHITE:

Q. As far as the inspection, sir, in Jacksonville in November 2015, can you tell us what Coast Guard inspectors were aboard the *El Yunque* at that time?

A. The one I have in front of me for the activity report is dated 15 December -- oh, okay. So it's the -- I think, again, this is the -- was focused on the vessel's stability, hull structure and cargo loading as it was related to part of the investigation for the Marine Board of Investigation.

Q. To the extent there was an inspection in Jacksonville in November of 2015, can you tell us the experience level and the qualifications of Lieutenant Commander Aaron Dino?

A. Aaron Dino currently is a traveling marine inspector. He's got a hull qualified if I remember correctly and he's a very knowledgeable and experienced marine inspector.

Q. And Commander Venturella, who is on the MBI, he's one of the traveling inspectors as well, correct?

A. That is correct.

Q. Chief Warrant Officer Duncan?

A. I don't know Chief Warrant Officer Duncan's background. I haven't reviewed it.

Q. Chief Warrant Officer Scott Gradel?

A. I have not reviewed his qualifications either. So I'm not -- I don't know what -- if they're journeymen or advanced journeymen.

Q. Lieutenant Commander Matthew Meskun?

A. I've worked with Lieutenant Commander Meskun. As I understand it, he is hull qualified but I don't know if he has any -- what his additional qualifications are.

Q. Juan Hernandez?

A. I do not know Juan Hernandez. So I'm not aware of what --

Q. I understand he's listed as a trainee, but aside from Mr. Hernandez, it looks like five other representatives of the Coast Guard were aboard the *El Yunque* in Jacksonville. So to the extent that they were no 835 issues issued on the ventilation trunks, is it your understanding that they walked through the vessel but didn't look at any areas that might be subject to localized corrosion, all six of them?

A. I think the focus of their exam on that day was to check the ballast tanks. So I don't know if they had walked by that area. I'm assuming they probably went on board and went down below decks.

Q. So do you think they went in the ballast tanks?

A. If I remember correctly, some of the ballast tanks had -- were dry tanks and you could not access them because they had --

what was that material? They had some material in there. They're permanent ballast tanks. So either concrete or some type of slurry or bricks. I don't recall. I'd have to read the report on that.

Q. And did Commander Meskun in Jacksonville indicate that the vessel was fit to proceed?

A. He was there from Sector San Juan. Again, I think he was participating as just evaluating the condition of the hull, especially within those tanks. He was not there to give a complete evaluation of the entire vessel.

Q. Was anyone there from the Coast Guard to give any complete evaluation of the vessel?

A. Again, they were specifically guided by Captain Neubauer, if I remember correctly, to conduct an internal exam as part of the Marine Board of Investigation of those specific tanks. I think it was related to the fact that there was another vessel that had -- a similar vessel in construction to the *El Yunque* and *El Faro* that had hull plating issues and maybe a hull of plate failure, and they were examining the structure. And again, it was part of the investigation to try to identify potential causes that resulted in the loss of the *El Faro.* So it mostly focused in the internal tanks, the saltwater ballast tanks. In here they've got a view of the 2A port and starboard. So that's some of the tanks that they went on board.

Q. Looking at Exhibit 201, do you know whether these pictures

were taken at the same time or different times on the *El Yunque*?
A. There is no -- again, there is no date associated with the above picture and the below picture, but I do know that Commander Odom was on board the vessel during the DOC audit and that that occurred during the DOC audit.
Q. And typically when the issue of corrosion or localized corrosion, does it get better in time if it's not addressed or does it get worse?
A. Well, anything related to corrosion, depending on how it's manifesting, usually gets worse over time.
Q. And sitting here today, sir, for the *El Yunque*, did you evaluate the condition of the trunks based on the special survey in Grand Bahamas in 2014 and subsequent passage of time until your own inspection or the Coast Guard's inspection in November of 2015 when these pictures were taken?
A. The marine inspectors from Miami who were on board the vessel, in reviewing their narrative, they conducted inspections of some tanks. They did note at the time that TOTE was replacing some steel area that had corroded in the vicinity of one of the vent trunks, but the detail within the activity report isn't very extensive.
Q. And while those surveyors -- while those marine inspectors that attended the vessel in Grand Bahamas Shipyard were trained in corrosion, sitting here today and looking at the narrative, you don't know if they looked at any of the ventilation trunks,

correct?
A. Well, again, I don't have that narrative in front of me. It was when I was reviewing it. Again, it would be that the circumstances related to the ventilation trunks when Commander Odom was on board was following potential downflooding spots and that the -- for him to request looking at the internal of the vent trunk I would say was more or less just kind of gathering an overall understanding of how the vessel was constructed.
Q. That's great. My question was with regard to the marine inspectors in the Grand Bahamas Shipyard, and the question is whether or not you know whether those marine inspectors inspected the ventilation trunks while they attended the vessel?
A. Again, based on the narrative, I do not know if they did or did not.
CAPT NEUBAUER: Mr. White, I'm starting to come up on the end of my time in the venue tonight. I'm just wondering if I should bring Captain Flaherty back tomorrow morning for further testimony?
MR. WHITE: Thank you.
CAPT NEUBAUER: Would you recommend that we do that?
MR. WHITE: Yes, sir.
CAPT NEUBAUER: Captain Flaherty, are you available to come back tomorrow morning first thing for testimony?
THE WITNESS: I am.
CAPT NEUBAUER: The hearing is now convened [sic], and we'll

reconvene with Captain Flaherty at 9:00 a.m. tomorrow morning.

(Whereupon, at 6:27 p.m., the hearing was recessed, to reconvene, Wednesday, February 8, 2017, at 9:00 a.m.)

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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 7, 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.

[redacted]

U.S. Coast Guard
Official Reporter

[redacted]

Transcriber