IN THE TRIAL COURTS FOR THE STATE OF ALASKA

THIRD JUDICIAL DISTRICT

AT ANCHORAGE

STATE OF ALASKA,

Plaintiff,

vs

JOSEPH HAZELWOOD,

Defendant.

No. 3AN 89-7217; 3AN 89-7218

TRIAL BY JURY

FEBRUARY 26, 1990

PAGES 5203 THROUGH 5389

VOLUME 28

Original

H & M Court Reporting
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BEFORE THE HONORABLE KARL JOHNSTONE
Superior Court Judge

Anchorage, Alaska
February 26, 1989
8:36 o'clock a.m.

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FEBRUARY 26, 1990

(Tape: C-3640)

(1232)

(Jury present)

THE CLERK: ...Judicial District, the Honorable Karl S. Johnstone presiding is now in session.

THE COURT: Thank you. You may be seated.

I really appreciate you folks being on time. that really assists us a lot. Thanks.

We'll resume with Captain Greiner's testimony. You're still under oath, sir.

GEORGE K. GREINER

recalled as a witness in behalf of the State of Alaska, having previously been sworn upon oath, testified as follows:

A Yes, sir.

MR. COLE: May he come forward again, Your Honor?

THE COURT: Yes.

DIRECT EXAMINATION OF CAPTAIN GREINER, CONTINUED, BY MR. COLE:

Q Now, Captain Greiner, we were talking. When we left off we left off at Plaintiff's Exhibit

131. Would you show the jury where that photograph was taken, again?

A That was taken right here near the center line of the vessel, looking aft.

Q Now, what are we observing in that photograph?

A This is part of the tunneling that we were talking about before. And these are the score marks that run down the length of the vessel. We're looking aft in this direction here.

Q And those score marks are an indication of what?

A Rock having passed -- the vessel having passed over rock, or some such substance.

Q And real briefly, just to real quickly explain how you got where that picture was taken?

A The picture numbers on the back, the last few digits R-8 means the roll and 19 is the negative number of that roll, and that matches the number here, 8-19.

Q Now, Exhibit 132, this is 8-15. This is a little further aft and is taken a little further outboard to starboard to the right hand side of the vessel, this, again, being the bow. And it's looking aft. And, again, you can see the score marks here. These bilge blocks, which I

mentioned to you before, which support the vessel -- the vessel rests on them -- go in a straight line, generally, from bow to the stern. There are a number of them across here, and so you can see the diagonal effect, the five degree diagonal effect that I had talked about earlier.

Q Now, at this point, would you point out what the light is in the back there, so that people can get an idea of that?

A Yeah. This is daylight. In other words, we're looking out from underneath the vessel, and this is all the way out beyond the vessel.

Q Now, one thing I'd like you to talk about is what this line right here represents on the diagram?

A Okay. May I use the model?

Q Sure.

A As we move aft on the bottom of the vessel we no longer have a square bottom, in other words, the top sides and the bottom here. It starts to flare out and you can see the shape of it there. And this represents the shape of the stern, which starts, actually, well forward of the deckhouse. That's what these lines represent in here.

Q Plaintiff's Exhibit 133, where was that

photograph taken?

A 133 is the aftermost photograph taken. And it is looking forward instead of aft. The light at the end is all the way is all the way at the bow this time. And this shows the scrapes coming out the other side of the bilge blocks that we had looked at in the previous drawing. I'm sorry. Photograph.

Q Now, you indicated that there had been some crushing effect from the tide going up and down?

A Yes, sir.

Q In the damage that you saw...

A Yes, sir.

Q ...in this area right in here?

A Yes.

Q Did you see any crushing effect where the bottom, the stern of the vessel was touching ground?

A No. It did not appear here that this portion of the vessel was touching bottom when the tide went out, and therefore as the vessel finally rested this part here would not have been touching bottom.

Q You would have expected to see some type of damage like that if it had been touching bottom?

A Yes. The weight of the vessel would have caused an indentation, a large indentation of the plate as well as the structural members behind it.

Q And was the damage right here characteristic of the type of damage that was observed in this aft portion?

A Yes, it was.

Q Now, Plaintiff's Exhibit 134?

A This is photograph 9-3 and it's taken up forward in this location right here. In other words the first areas of photographs took you down the center line and then off to the starboard side aft.

We're now starting further over, further to the right of the vessel and we're going to go back through the same thing.

This is again scoring, and it does not seem to have any crushing here. It's certainly indented and torn, but it doesn't have any of the crushing that we'll see further aft here.

Q Plaintiff's Exhibit 135?

A This is photograph 4-21. And it's taken right here. This is taken with quite a wide angle lens. Note that it is not facing exactly aft.

We're looking inboard. And here, for the first time, appears the rock in the left hand corner that you're going to see. This is outboard. When you're here, since it's on the left hand side it's over in this section here and we'll have other photographs of it later.

Q Now, these two photographs right here, 136 and 137, could you describe where those are?

A These two photographs show the rock right here and right here. And they are taken 23 and 25. They're these two photographs taken right here. 25, being the lower one, that being this one here. And 23 being a little further outboard, being this one here.

Q Why is there a ladder in that one?

A Well, they're taken at different times. I think the ladder on this one may be actually out of the picture to the left, but some of these were taken at different times. These are consecutive, or almost consecutive in the roll numbers. So, they would have been taken about the same time. I assume the ladder is out of the picture to the left.

Q Now, just discuss this 139 and give the jury a sense of how big this vessel is?

A Okay. This is Photograph 4-19. 4-19 is taken right here and is looking from the starboard side of the vessel to the port side of the vessel. It's not looking fore and aft. It's looking in this direction. And you can see the people here, gives you and idea of the size of the vessel.

You know, we're not even anywhere near the main deck on this in looking at it.

Q Now, 140, where was that taken?

A 140 is photograph 5-13 and that is taken here. Again, it is looking across the ship rather than fore and aft. It's looking from the right hand side of the ship to the left hand side of the ship.

This is scoring, tearing. Again, we don't see the large indents that you'll see later on from the rise and fall of the vessel when it was on the rock. This indicates that there was probably no rock here at the time when she came to rest.

When I say "no rock here", there's obviously rock below it, but no rock in contact with the vessel.

Q And that would be evidenced by the crushing if it was sitting on rock?

A If it was sitting on a rock. Yes, sir.

(1679)

Q Now, 141?

A This is 5-21. It's taken right here, looking aft. We're now starting to see the crushing effect.

This is the 2 -- in way of 2 Tank and this is D area in here, where I believe the vessel came to rest in contact with the rock.

Q 142?

A 142 is Photograph 9-32. And 9-32 is taken right at the side of the vessel looking down the side of the vessel. And here you can see the crushing of what's called the "turn of the bilge". The turn of the bilge is the rounded part of the hull which goes between the topside of the hull and the bottom. In other words, this portion right here is called the turn of the bilge. The bilge is the bottom of a vessel, inside where the water accumulates, or whatever, and this is called the turn of the bilge.

And this photograph shows the turn of the bilge, that's this area right along in here. You can see the crushing effect in there from having rested on the rock and the tide going out and the weight of the vessel coming down on it.

Along the side here is the side of the grading dock. You notice there isn't much clearance between the vessel and the side of the dock, just a few feet. And so, all the structure here is the wall, the side wall of the dock in which it sits.

Q And do Plaintiff's Exhibit 144 and 146 also show the image?

A These are photographs 9-34 and 39. I'm sorry. 34 and 37. They're taken side by side, right underneath the turn of the bilge and they show similar effect to what we saw in the last photographs. They're just taken a little further aft.

Q Are they showing the -- can you point out the damage, the structural damage to the underside, the bilge of the vessel?

A Yeah. This is, you can see the buckling in here along the turn of the bilge, and in here, the members are pushed upward, and this whole area in here is concave upward as a result of a contact with a rock after -- in my opinion after it had stopped.

Q 147?

A 147 is photo 7-20. And 7-20 is taken right

here. Now, this is taken near the midships, but it's looking outboard. It's looking towards the right hand side of the vessel. And you can see the crushing damage here. Now, I'm not talking about a tunnel fore and aft. I'm talking about looking from a center to the side of a vessel, and this is all set in there as it rested on the rock.

Q Now, when you were walking underneath this part of the vessel, about how high was the vessel above the ground?

A I think it's a little less than four feet. I know that. I got a sore back from walking hunched over all the time.

Q Give the jury an idea of what type of height it was in this area in here...

A In the area...

Q ...in the area of the bottom.

A In the area in which the photograph is taken I could stand up and walk under it. As a matter of fact, there's a ladder here, and normally ladders, the steps are one foot apart, so there's one, two, three, four, five, six there. And it's a little higher in here.

Q Now, 143, would you point out where that was

taken from and describe the damage that's seen in that?

A 5-26 is taken right here. It's further in towards the center. Again, it's looking aft into the area that's crushed. This is the side of the graving dock here. We're looking dead aft. You're missing plates here. You're actually looking up into the tank, itself.

The gray background here is the -- I guess it's the bulkhead between the 2 and the 3 Tanks.

No. I'm sorry. This is a web frame. The bulkhead is shown right in this area here. It's back further than this area here. But, you're missing your plate here. Here's the plate. It's torn off in this area here and you have crushing in there.

Q What is this? I mean, what type of metal are we talking?

A We're talking about heavy steel. These are -- these are the channels that make up the longitudinal frames here. And I don't know what the thickness of them is. I didn't measure them, but they're heavy.

Q And 145?

A 145 is Photograph 5-32. 5-32 is taken here.

Again, we're looking at the crushed area. You can see how the frames, the longitudinal frames -- longitudinal means fore and aft, in this direction.

The longitudinal frames are pushed upward.

Q And what are we seeing up in there, where the lights are?

A We're looking again up into the tank. There's ladders for the workmen to gain access from below into the tanks. This area right here where there's a light is a web frame, a very heavy frame that goes from left to right, athwartships on the vessel. It's called a transverse frame.

And this is a light inside the tank.

Q Now, the last three photographs, would you just briefly describe where those are taken and what they show?

A These last three photographs are Photographs 8-5 here, 8-9 here, and 5-36 here.

These are all looking aft from the area that's crushed. And as you can see -- I need another hand -- there is no crushing here. This is just scoring.

Q And do you have any opinion on how that scoring got there?

A Well, the vessel passed over a rock, but it did not sit on the rock in this area after it had stopped. Had it done that, it would have been crushed upwards. And, again, those photographs are taken -- I think 36 is -- what's that one?

Q 5-36.

A Yeah. That's taken here in the middle of the 3 Tank. And these other two were aft of it.

Q Thank you. You can resume your seat.

(Pause)

(2123)

Q Now, Captain Greiner, do you have an opinion as to, let's go back to the basics again. Do you have an opinion as to how the structural damage that you observed on the bottom of the Exxon Valdez occurred?

A Yes, I do.

MR. CHALOS: Your Honor, I'm going to object to any opinion that this witness may offer. He hasn't been qualified as a structural expert. He saw the damage. He can offer an opinion as to what he saw, but it would have to be a lay opinion, because as far as I remember from last Friday, Mr. Cole hasn't qualified Mr. Greiner as an expert in that area.

MR. COLE: I think that he's talked about his

background in the Coast Guard, working on tanker vessel damage investigation. He's qualified to give an opinion about that.

THE COURT: Objection overruled.

Q (Captain Greiner by Mr. Cole:) Again, do you have an opinion on how the damage occurred?

A Yes, sir.

Q Would you tell the jury, using your pointer there, what that opinion is?

A There are two substantial series of damages. One is where the vessel passed over a rock or series of rocks that caused damage in this area here. Those rocks were left astern of the vessel when it came to rest.

Q Wait a minute. What do you mean by "left astern of the vessel"?

A They were left. They passed and were back aft from the vessel, astern, behind the vessel when it finally stopped.

(2210)

There's a second series of rocks that it hit that it came to rest on. And they are in this area here, and I'm showing the 2 and 3 Tanks, and the reason that I believe that they came to rest there is because of the crushing effect which you

saw in the photographs that was created when the tide went out. There's a tide rise and fall of about 12 feet in this area.

Q Explain to the jury how the vessel was damaged by this tide going in and out?

A Well, the weight of the vessel is -- more of the weight of the vessel is supported by the rock, therefore it's crushed.

Q What happens when the tide goes out?

A The water level falls. You have shallower water over the rocks.

Q And what happens to the ship, to the vessel, when the water level falls?

A Well, the vessel will take a list. In this particular instance since the side that's supported by the rocks can't sink any further because it's supported by the rocks, but the other side, which is not supported by rocks can we will go from a list from one side to the other.

And as I understand from the testimony it went from a two degree port to a two degree starboard list.

When it was on the rock and you had high water it would have a port list, a list to the left.

And when -- I'm sorry. At low water it would be supported by the rock and you'd have a list to the left.

Q I'm showing you what's been marked for identification as Plaintiff's Exhibit 123 and 124. Do you recognize those exhibits?

A Yes, sir. I do.

Q Beginning with what's been identified as 123, would you tell the jury what that is? Without showing it, just tell them. What is that?

A This is a tide graph showing the rise and fall of the tide at Rocky Point.

Q Just a minute.

(Pause)

A This is Rocky Point right here. And I'm pointing to an exhibit which I guess is marked on the back. It's a chart of Prince William Sound. And this is where the vessel went aground. So, the difference is from here to here.

The Coast did a survey tide tables don't have the tide for every specific place in the United States. They only have them for specific places. And the closest one to where the vessel grounded is the one at Rocky Point. And that's why I use that one.

Q How are those graphs that you have in front of you made?

A The graphs are computer generated. They're generated by Tide Graph International, who is a colleague of mine, and who I furnished information to, and he prepared these on his computer.

Q And in the form that they're in in this graph, is that a form that you typically rely upon in doing your work in the field of reconstruction?

A Yes, sir. It is.

Q Do they -- 123, what's the difference between 123 and 124?

A 123 is on the 24th of March. Friday, the 24th of March. 124 is the previous day, which is the 23rd of March.

MR. COLE: I would move for the admission of what's been identified as Plaintiff's Exhibit 123 and 124.

MR. CHALOS: No objection.

EXHIBIT 123 & 124 ADMITTED

THE COURT: They're admitted.

Q (Captain Greiner by Mr. Cole:) Would you tell the jury what the tide was at 12 o'clock that evening?

A May I hold this up and show them?

Q Sure. You can show how it works.

A Yes. The graph represents zero -- the heavy line at the bottom is what's called datum. That corresponds to the tide level at which soundings on a chart are taken so that above and below zero the tide would be -- the soundings, or the depth of water indicated by the soundings would be changed by the amount of tide that you had.

At midnight it was plus 10 feet. So, in the area of Bligh Reef, if you had a sounding of 80 feet shown on the chart, it would actually have 90 feet of water there, because you'd have to add the 10 feet.

The tide continued to rise for approximately two hours, and at about 2 o'clock in the morning we had high tide. And that was a tide of 12.4 feet, approximately. The exact figures are -- I have elsewhere, but for our purposes that's good enough.

The tide doesn't actually follow these. These are predicted ones and it's as close as you can get for predicted.

Q When was the next low tide that morning?

A The next low tide was at oh, between 8:00 and

8:30, right here. And it was at zero tide. So, there's a difference of 12.4 feet down to zero. That's a difference of 12.4 feet.

(2517)

Q Okay. Now, back to the damage now. You've talked about the first contact that the vessel had with the ground. How would that have effected the vessel's speed at that point?

A It would have slowed it down considerably.

Q And why is that?

A It's friction on the bottom of a vessel. Energy is absorbed in the tearing of the plates, the deformation of the bottom.

Q Is there a way of telling exactly how long it took for the vessel to pass over that first, the first contact with the bottom?

A No. There is not a way of telling exactly. It can be estimated, but there is no way of telling exactly, because no one knows how much energy was absorbed by the contact with the rock.

Q Can a person give an estimate as to approximately the amount of time?

A Yes, sir.

Q Would you explain how that's done?

A The period of time to pass over the first rock

would be -- well, the first rock would make contact with the vessel somewhere in here and it would pass out from underneath the vessel about 800 feet aft of that, about in this area here. And so, we're dealing with the time it takes for the vessel to move forward 800 feet plus the length of whatever the rock was, itself, that was in contact with the bottom.

We know that the speed of the vessel before it started into the turn was about 12 knots, and as it starts into the turn to the right it slows down and I've estimated that it had a speed of about 11.4 knots when it first came in contact with the rock, because it was in a turn.

An estimate, a pure -- purely an estimate of the speed when it passed over, based on the slowing down of it is somewhere in the neighborhood of 6.6 knots.

Now, the manner in which I arrived at this was I didn't say it was 6.6 knots. I said, let's use an average of nine knots as the speed that it was doing during this transit for mathematical purposes.

And when you use an average of nine knots, then you come out with a 6.6 as the speed when it

passes over out from behind -- out behind the stern.

And then it's a simple calculation as to speed, distance and time.

Q Well, before we get into that, then, how did the damage get done to the starboard side. Do you have an opinion on that?

A Yes. After the vessel passed over the first rocks, or rock, it then hit a subsequent series of rocks and it came to rest with those rocks in this area here.

This is some 300 plus feet from the bow. So, again, we're talking about a minimum distance. The vessel would have had to have passed forward in order for the rocks to reach here.

Q You can tell, can you not, from the damage that was done on the starboard side that the initial contact did not cause this vessel to stop immediately?

MR. CHALOS: Objection, Your Honor. Leading.

THE COURT: Rephrase your question. Objection sustained.

Q (Captain Greiner by Mr. Chalos:) How can you tell that the vessel did not come to a dead stop after it passed over the first rock?

A Well, if it passed over the -- back here we just have light scoring. The first rock would not have been under the bow at that time because it would have raised the bow and back here we would have had much heavier scoring.

Q The first rock -- okay. Wouldn't have been under the stern?

A That's correct. The first rock would not have been under the stern here, because we had light scoring.

As the vessel moved forward that rock, the first rock could not have been under the stern in my opinion when it hit the second one, because had it done that, and it would have lifted the bow. That would have made heavier marks back aft. In other words it would have caused the stern, assuming this is the stern here, if the second rock came underneath the bow before the first one passed out from behind the stern, then the bow would have been lifted and this one would have -- and the stern would have gone down and you'd have had more scoring aft.

Q Well, how did this vessel go so far after hitting the second rock?

MR. CHALOS: Objection, Your Honor. No

foundation. Leading.

THE COURT: The form of the question is...

Q (Captain Greiner by Mr. Cole:) How did the vessel pass from the bow to the second tank after it hit the first rock?

A The vessel was not stopped after it hit the first rock. It still had weigh on and...

Q How can you tell that?

A Because the first rock wasn't underneath it and it came to rest with -- I'm sorry. Because the second rock wasn't underneath it, and it had not come to rest yet. It came to rest on the second rock, here. And if the second rock were underneath the bow we would have had more scoring astern.

Q Now, have you -- do you have an opinion on how far the vessel traveled after striking the first rock?

A After...

Q Coming in contact with the first rock. How far forward the vessel traveled?

A It traveled the 800 feet to pass over the first rock. And, then, an additional 300 and some feet to bring the second rock underneath it at this point.

Q That is a minimum, or a maximum, or what?

A That's a minimum.

Q Why do you say that?

A The distance, the first rock could have passed astern of the vessel and then there have been a time before it hit the second rock. However, if you'll look at the course recorder...

Q I don't want to go into that. I want you to show what you mean by drawing a diagram. Do you think you can do that?

A Sure.

Q Watch your cup of coffee.

A Thank you.

Let's assume we have two high points, or two rocks on the bottom here. This is the floor. The vessel is coming from left to right. And the bow of the vessel passes over this first rock...

Q I think you're standing in the way of some of the jurors. You may have to...

A I'm sorry.

Q ...move that thing over a little bit.

A Let me move to the side over here. I can use my pointer.

The bow of the vessel passes over the first rock. It has to proceed far enough so that this

rock is behind the vessel. If it were not we would find a crushing effect from this rock when the vessel was stopped.

So, we have passed 800 feet minimum to get from the bow of the vessel to the position where the score marks disappear on the bottom. That's 800 feet, approximately.

So, we now have a vessel which is somewhere in this position here.

Q Go ahead.

A Then the vessel has to move forward far enough for this rock to come underneath the area in the center of the vessel where we have the crush. And that's another 300 and some feet.

Now, you asked me about minimum or maximum. If this rock were just forward of the bow when this one was just aft of the stern, then that would be the minimum distance. We would have the length of the vessel, and I'm not talking about the total length. I'm just talking about the portion that was scored, 800 feet, plus the distance that it took the vessel to move forward onto that rock of 300 and some feet.

Q Maybe you could show this by -- assuming that this is the first rock right here and this is the

second rock, what would have happened as this vessel passed over?

A Okay. Let me have the model.

(3050)

MR. CHALOS: Judge, I thought the witness has already explained it. I think this is cumulative and this is the same question he just explained, or the answer he just gave.

THE COURT: Objection overruled.

A We have the vessel hitting the first rock. Photographs indicate that it hit it just on the bow. It passes over it and it -- the score marks disappear somewhere in this area here. And, so, we have now passed with this rock astern -- I'm going to back the vessel up a little. I don't have enough room -- before it contacts this one. And then it moves forward on this until it comes to rest in this area here, which is where the crushing effect is found on the bottom.

Q (Captain Greiner by Mr. Cole:) Now, if these rocks had been close enough for the vessel to come in contact with both, what would you have seen at the back of the vessel?

A Well, if it had -- if this one had contacted before that one -- if it had contacted the second

rock before it passed over the first rock, I think you would find heavier score marks and more damage back here because this would tend to lift the bow of the vessel up.

Q What would tend to lift this?

A The rock. This rock, the second rock.

Q Okay. Now, can you give the jury an idea of how long this whole process would have taken, an estimate of how long this would have taken to do something like this?

A Approximately two minutes.

Q How did you reach that result?

A Well, you can...

Q Based on speed and the distance traveled?

A Well, it's a simple calculation. If you're going to assume that it moved forward a total of 1100 feet, in other words, 800 plus 300, then you can figure out time. It comes out approximately two minutes.

We know that the speed at the end was zero. And we know the beginning speed, so we can use an average speed between the beginning speed and the ending speed.

Q Now, let's go to something else, then we'll come back to that.

You were asked to reconstruct the course of the Exxon Valdez on March 23rd and March 24th of 1989, is that correct?

A That's correct.

Q What information did you use in doing that reconstruction of the track taken that evening?

A I used a number of things. I, obviously, read testimony and such like that. The primary is the vessel's course recorder. This is an automated piece of equipment that records the heading of a vessel minute by minute as the vessel moves along.

The second thing is a bell book. The bell book is kept on the bridge. It is manually kept, and entries are made in it. They put things such as when they have a speed change. They put the new speed change in there. They may put positions in there, which, in fact, they did. In other words, that they passed abeam of a certain light, or a certain aid to navigation. The tide tables.

The vessel kept a chart. We used the chart, the positions that were charted.

There is a bell logger on the vessel, also. A bell logger is an automated record of the orders

to the engine room and the rpm that the vessel is going at any -- well, whenever an entry is made. This is automated. It's not done manually.

I also used the vessel's maneuvering characteristics. The vessel's maneuvering characteristics are posted on the bridge of the vessel. They're required by Coast Guard regulation. And they show the speed at various rpm under various load conditions. They also show the turning times for the vessel. In other words, if you put a rudder on, a full rudder on, how long it takes to turn and how far the vessel turns.

Q How about the drafts?

A Yes. The ship's log -- there were two places that the drafts were indicated. One was in the Coast Guard vessel data sheet and the other was the Caleb Brett, which is a independent company that takes the soundings of the tanks on the vessel to determine how much oil was loaded. When they do that, just before the vessel leaves they take the draft of the vessel and they record it.

Q I'm showing you what's been marked for identification as Plaintiff's Exhibit 2. Do you

recognize that document?

A Yes, sir. I do.

Q And is that the course recorder of the Exxon Valdez?

A This is a copy of the course recorder for the Exxon Valdez for 23rd, 24th at local time of March.

(3493)

Q Now, I'm showing you what's been identified as Plaintiff's Exhibit 16, marked for identification as Plaintiff's Exhibit 16. Do you recognize that diagram?

A Yes, sir. I do. That's a section, or a portion of the course recorder in Exhibit 2.

Q And that -- is that in blown up form an accurate reproduction of the Exhibit 2 that's previously been admitted?

A It is with certain information added to that.

Q Is it of the whole -- is this...

A No, sir. It is not.

Q ...reproduction...

A It's a reproduction of a portion of Exhibit 2.

Q Now, there are certain names on this diagram. What do those represent, those names?

A The labels represent events that occurred so that in looking at this you can correlate it with events that occurred.

Q And the labels that are on that, are they consistent with the opinions that you have drawn in this matter?

A Yes, sir. They are.

MR. COLE: Your Honor, I would move for admission of what's previously been identified as Plaintiff's Exhibit 16.

MR. CHALOS: Your Honor, I would have no objection subject to this witness connecting the labels to his opinion later. Right now we haven't heard his opinions. So, without that opinion I think it would be inadmissible, but I won't object, subject to the connection.

EXHIBIT 16 ADMITTED

THE COURT: All right. It's admitted subject to that condition.

Q (Captain Greiner by Mr. Cole:) Captain Greiner, would you take a minute and explain to the jury how you read a course recorder?

A I want to draw a diagram first. Just a simple diagram of a compass rose. A compass rose, and a compass is used to indicate what direction the

bow of the vessel is pointed. And it runs from zero all the way around 360 degrees, zero and 360 being the same point on it.

There are four, obviously, quadrants to it. If you divide it into quarters. There are four quadrants. And for the purpose of the course recorder, we're going to examine only one quadrant at a time. The course recorder, itself is a instrument which has a moving tape on it. This tape here, which is Exhibit 2. And it has two styluses, or pens, on it, which leave a trace on it as the paper moves along.

The styluses are connected to the lower one, which creates the large -- which creates this trace here, is connected to the gyro. In other words, the gyro points to the direction that the ship is headed. And so, at any one time you can look at this and find the heading of the vessel.

However, this only represents a single quadrant. It doesn't represent the 360 degrees. In order to know what quadrant it is we have the second pen, or stylus, which traces the quadrant up here.

Now, it's a little offset in this one, but this is the lower quadrant, which is 270 to 360.

So, when the upper stylus is there we're reading courses that are here. And we will use the appropriate scale. Here is the scale right here. 270 to 360. When the stylus moves up into the next quadrant above, and I'm pointing you to the upper stylus now, it shows 180 to 270. We will read the heading off of this scale here.

Now, you'll notice that there are two changes here. In other words the vessel is coming along in the lower quadrant. We're going to use this scale here. And so, at this point it's at 270, or very close to it. This indicates that there is either, because it's not at the bottom here, that there's either an error of one degree, or that the compass mechanism -- the recording mechanism has got some play in it there, because we change from one quadrant to another right at this point. So, it should go all the way to the bottom and then start up again.

We now have moved into the second quadrant, the 180 quadrant to 270. So, we've been going along here at 270 and then we swing into the other quadrant, we go 260, 250 as we come up this line.

Now, that's how it works. I hope its -- it's

difficult for some people to explain. I hope I've explained it adequately for you.

Q Okay. Well, that's fine.

Now, you can take your seat.

(Pause)

Would you tell the jury how we read this as to time? Is time measured on this?

A Yes, it is. The time is measured along this scale right here. And it's measured -- because the vessel transits to various areas of the world, or it may, and the time zone will change, the local time, it's common for them to use Greenwich Mean Time.

Greenwich Mean Time is the time kept at Greenwich, England and it is the standard used throughout the world. And, so, these times are Greenwich time and you have to convert them over to local time, which is nine hours different.

Q So, at 7 a.m. on that vessel, what time is it in Alaska time?

A It's 10 o'clock in the evening, 10 p.m.

Q Based on the course recorder...

A Incidentally, there's an error here. It shows on the original. It says 2400. And that should be up here.

Q So, 9 a.m. on this is 12 midnight?
A Yes, sir.
Q At 10 o'clock, or in the time period prior to that what course heading was the vessel going after in that time?
A This was 270. It shows 269, I believe, but it's within one degree of that.
Q And which direction did the vessel turn at about 10 o'clock?
A It turned to the left. Well, yeah. It turned to the left to transit the Narrows.
Q Okay. And you indicated that it transited the Narrows there. How do you know that that was when it transited the Narrows?
A Because I know the time. And in my reconstruction I've -- you can't tell by looking at this, but in my reconstruction I know that that's when it transited the Narrows.
Q Between the time of 10 o'clock and 11 o'clock?
A Yes, sir.
Q At 10:40 did the vessel change courses there?
A Yes, sir. It changed further to the left, and then steadied up and then came back to the right.
Q And at 10:50 what course heading did it take at that time?

A This was a -- it shows on here 218. You're using this scale right here. Look at the -- I'm sorry. Yes. We're in this quadrant right here, the 180 to 270. So, we're going to use this scale to read it. And you wanted this one right here?

Q Yes.

A Okay. So, we'll go across that scale 210, 215, 218 is the heading there.

Q And where was the tanker during that period?

A It was transiting the upper part of the Sound. It had just left the Narrows southbound, essentially southbound.

Q Now you indicated up there that the pilot was away at 11:24? Between 11:20 and 11:30?

A Yes, sir.

Q And that was based on what?

A This is based on the bell log, the one kept on the bridge of the vessel.

Q Okay. Then the next two notations there right at 11:30 and right at 11:40?

(Tape: C-3641)

(003)

A Yes. The turn starts at about 11:28, and right in here. And goes to...

Q What is "CC 200 degrees"?

A Change course to 200 degrees gyro.

Q Is that what's reflected by that particular part of the graph?

A Actually it's 199, approximately.

Q And then what happens after that?

A Well, they go along until about 40. Minute 40. That's 40 minutes after 11:00 in the evening. And then they change course again to 180 and...

Q Is that reflected by the "CC 180"?

A Yes, sir. It is. This is the changing of the course right here. And then he's steady on about 180.

Q Now, did you also use the bell logger in...

A Yes, sir.

Q ...in aiding you?

I'm showing you what's been marked for identification as Plaintiff's Exhibit 3 and Plaintiff's Exhibit 92. Do you recognize those two documents?

A Yes, sir. I do.

Q And what are those two documents?

A These are the bell recorder, the automated, the record of the automated equipment that keeps

track of the engine orders and the rpm.

Q Now, I'm showing you what's been marked for identification as Plaintiff's Exhibit 17. Do you recognize that diagram?

A Yes, sir. That is a extract of Exhibit 92, plus it has labels on it.

Q Of the portions that are extracted, is that a fair and accurate representation of those parts of Plaintiff's Exhibit 92?

A Yes, sir. It appears to be. Yes.

Q And the names that are on the program, or the labels that are on there, do they correspond with certain things that occurred on the Exxon Valdez that evening?

A Yes, sir. They do.

MR. COLE: I would move for the admission of what's been identified as Plaintiff's Exhibit 17.

MR. CHALOS: Your Honor, same comment as with Exhibit 16, subject to connection.

THE COURT: You gonna tie all these labels in terms of...

MR. COLE: Yes.

EXHIBIT 17 ADMITTED

THE COURT: It's admitted with that condition.

Q (Captain Greiner by Mr. Cole:) Now, this

diagram, Plaintiff's Exhibit 17 shows what again?

A The automatic bell logger that's maintained on the vessel.

Q What does that show?

A It shows -- let me take an example here. There is a time, and there is the engine order, and there is the rpm at that time. Over here we have a chevron, indicating that that is an order, and then these are the symbol for at. I don't know what they're technically called, but those are made by the bell logger under it's own program at a specific time.

There may be an event that occurs that has nothing to do with rpm that is not reflected on here. This just reflects the rpm changes.

Q Now...

A Excuse me. May I add one more thing?

There are times when you have a speed change where the rpm is given here, such as 50 rpm, the next one is two minutes -- well, no. Not quite two minutes past that. It shows 55. So, it doesn't log each rpm change. You have to interpolate between those two entries to see that it went from 50 to 55.

Q And the times that are on that, the times are

recorded, is that correct?

A Yes, sir. It's the time that's recorded...

Q Are they on Greenwich Mean Time, also?

A Yes, sir. They are.

Q So, 9 o'clock would have been what time?

A 9 o'clock would have been midnight Alaska Standard.

Q And would you explain, just show the jury beginning at the earliest point on that chart, and when is the latest point on that chart?

A Okay. The chart's read from the bottom on the left hand side. 7 o'clock, 7:47 Greenwich Time and 9:00 Greenwich Time, 9:00 Greenwich Time going up to 10:00, 12:00, 16:00 -- this is in military time. When you get above 12 you have to subtract 12 from it to get the local. That's a p.m.

That would be 4 p.m., 1600, and the date is there, 24th of March.

Q And 9 o'clock Greenwich Mean Time is what time Alaska Standard?

A Midnight.

Q Now, in reconstructing the track of the Exxon Valdez that evening, how did you do that? Explain to the jury how you did that?

A There are different pieces of information that you have to put together to make a track line. And in order to do that I entered -- I extracted them from the bell logger and from the course recorder and put them on a spread sheet, on a computer spread sheet.

Q What's a spread sheet? Just explain briefly what it is?

A A spread sheet is a way of listing information line by line and you can also have it do calculations for you. For instance, if I'm going to have an entry at minute one and entry at minute two, and in the next column I'm going to change, let's say I'm using the heading of the vessel and it goes from five to 10 degrees, I can have it calculate the rate of turn in the next column if I want it to. It has mathematical capabilities.

(Pause)

Q Now I'm showing you what's been marked for identification as Plaintiff's Exhibit 155. Do you recognize that?

A Yes, sir. This is my spreadsheet.

Q Now, what information did your spreadsheet provide you with?

A The first column I use Greenwich Mean Time, because a number of the records were in Greenwich Mean Time.

The second column was converting it into local time so that I could relate it to events that were in local time.

The third was the heading of the vessel at the particular time it appeared in the first column.

Q How did you get that heading?

A That heading came off of the course recorder, which is this exhibit here. I took it off of this. And, actually, there is an expanded version of that which is even more accurate, but for all intents and purposes it came from that source of information.

The next column is a calculated column where the spread sheet will calculate the rate of turn for you. In other words it takes the difference in the heading and gives you the rate of turn.

The next one is...

Q During the period?

A During the interval between -- this is in every minute. In other words it's logged every minute so that the intervals are one minute apart. So, it's the rate of turn in degrees in

the preceding minute.

The next column is the bell log. The bell log is the manually kept log on the bridge that I mentioned.

The next column is the bell recorder. And the only thing that that column has in it is when there was a change, such as here they went full ahead. It just says "Slow ahead," "Full ahead," whatever it was.

The following column is the rpm. The rpm is also taken from here. And you'll see it right here. Now, since I did mine minute by minute, and this is not a minute by minute record I had to interpolate between these entries.

(390)

The next column is speed of the vessel at a particular rpm. Now, this is an uncorrected speed. This is the speed taken from the vessel's data, which was corrected for it's draft.

Q What do you mean not correct for it's draft?

A The vessel's data, the speeds for it on the maneuvering data are given under two loading conditions; fully load, and ballast, which means empty.

The vessel on this night was neither. It was

in between. And it was about 78 percent loaded. And so you have to adjust, because it is neither the speed that's shown for fully loaded, or empty. So, you take a percentage of that.

That's what I got here. I made a graph up of it. That's an uncorrected speed.

Then there's the next column is the speed correction column. The speed correction here is made for one of two reasons. 1, when you increase speed the vessel doesn't increase speed immediately. It takes a period of time for it to increase. And, so I have made an adjustment each time the speed increased or decreased.

Also, when the vessel turns. If you go into a hard turn when the turn is 90 degrees completed you will have lost about a third of your speed. In other words, the vessel will have slowed down. And, so, you have to make an adjustment when you make the turn.

That gives you the speed through the water. And then I put in a current correction.

Q How did you get that?

A The current correction is based in part on the tide. On a rising tide, which you have here, you're going to have water flowing into Valdez

Harbor, and so you have to slow the vessel down to account for this current. The current is not great in Prince William Sound, or even in the Narrows, but there is some. The correction is very minor there. That gives you speed over the bottom.

It then calculates, the spreadsheet calculates for me how far it's traveled in the last minute, how far the vessel's traveled in the last minute.

And the last column is a cumulative distance traveled. And I've taken certain points and set them as zero. In other words, when I pass -- when the vessel passed Buoy 9, for instance, I set that at zero and then let it run. So, five minutes later it would tell me how far the vessel had traveled. Six minutes later it would tell me the same thing.

The last column is a comment column. And I put comments in there to remind myself of events that occurred, which I've taken from logs, or other information. Maybe it came from testimony.

Q So now the gyro headings that you took were off a course recorder that's here?

A Yes.

Q And the expanded version of the course

recorder...

A That's correct.

Q ...we've talked about?

Then, there's a formula for determining the rate of turn per minute, is that correct? And that's the next column?

A The speed correction column you're talking about?

Q No. After the heading of the gyro...

A Oh. I'm sorry.

Q ...and the rate of turn per minute?

A Yes. The rate of turn in degrees per minute is a calculated amount.

Q And the notations in the column from the bell log are from the actual bell log?

A Yes.

Q The bell recorder notations are the notations from the bell recorder that you observed in this case?

A Yes.

Q The rpm is based on the bell logger and your extrapolation...

A Yes.

Q The speed from the graph is determined by what, again?

A The speed from the graph is determined by a mathematical calculation based on the percentage loading of the vessel.

Q And the speed correction is based upon whether or not it's in a turn, or not in a turn?

A That's a subjective correction, either for increasing or decreasing speed as a result of change of speed, or decreasing speed as a result of a turn.

Q Now, your comments then at 7:20, which would have been about 10:20, is that correct?

A I'm sorry. 7:20? Yes.

Q And you commented -- what was your comment there? How did you reach that comment?

A "Entrance Island abeam on the port side .36 nautical miles."

That came out of the bell book that was kept on the bridge.

Q Okay. And the comment that was made at 10:32?

A Same explanation. Same source.

Q And the comment at 7:45, which would be 10:45?

A Yes. 10:45 p.m., same source for that information.

Q And at 10:53 your comment?

A Same sources of information.

Q At 11:24?

A "Pilot off". Same source.

(629)

Q Your comment at 23:29, which is 11:29?

A There's no comment on this exhibit.

Q Oh, there isn't. Okay.

What's the next comment that you have?

A 2338.

Q And...

A That's 10:38 p.m. And that's a two line fix Buoy 9 bearing and range. That was taken off of a chart, and I believe from some of the testimony.

Q And your next comment is?

A The next comment is at 11:55 radar range and bearing to Busby Island, that was taken off of the chart and from testimony.

Q And the next comment? Are there any more?

A No, sir.

Q Now, does that document represent a fair and accurate representation of the calculations that you made and used -- used and made in coming to developing a track line for the Exxon Valdez on the 23rd and 24th?

A Yes, sir.

MR. COLE: I would move for the admission of what's previously been identified as Plaintiff's Exhibit 155.

MR. CHALOS: No objection.

EXHIBIT 155 ADMITTED

THE COURT: It's admitted.

Q (Captain Greiner by Mr. Cole:) Now, based on the numbers that you received from that document did you prepare a diagram of the track line taken by the Exxon Valdez?

A Yes, sir. I prepared an enlargement of a section of the chart and placed a track line on it.

Q Okay. And where did you start from in your line?

A The Narrows.

Q And where did you end up at on that?

A Well, the track line ends up at Bligh reef where it went aground. The track goes a little south of that.

Q I'm showing you what's been identified as Plaintiff's Exhibit 122. Do you recognize that document?

A Yes, sir. I do. It's the document I prepared that we've been discussing.

Q And the red line that runs down through the middle of this, what does that represent?

A That represents the track line of the Exxon Valdez on the evening of the 23rd and the early morning of the 24th of March, 1989.

Q And how did you reach -- how did you determine that that was the course?

A From the information which I had gotten from the spread sheet -- that I had recorded on my spreadsheet.

Q And then there are various numbers that you have put on the chart along the red line. What are those?

A The ones that are horizontal are times. There are others that run along the track line that are the courses.

Q Well, let's begin with the top one here, 2:20, what was that a time of?

A That's the time of a fix, 2:20. There's a triangle that shows where it was at that time.

Q How did you get that?

A That was -- that one, I believe was from the radar from the Coast Guard.

Q And then there's one at 2256. What is that?

A That's a Coast Guard radar fix that was

plotted out there.

Q And the various fixes that are taken down there, did you get that from looking at the chart and those bell books?

A Yes. I got it from -- several of them came from the chart that was used on the bridge of the Exxon Valdez. And some of them came from the bell book information.

Q Now, there is certain information that is provided and printed and put on adhesive next to that. How did you get that information?

A I prepared the labels myself. And the information on the labels came from -- in some cases from testimony, in other cases from log book entries.

Q And is it accurate to the best of your knowledge?

A Yes, sir. It's accurate to the best of my knowledge.

Q Okay. And there's a red area on this. What is that?

A That's the red sector of Busby light. Some aids to navigation...

Q Don't go into that. That's just the red sector. Is that right?

A Yes.

MR. COLE: Your Honor, I would move for the admission of what's previously been identified as Plaintiff's Exhibit 122.

(Pause)

MR. CHALOS: Your Honor, I have no objection except as to one tab, specifically a tab at 2344.

With that tab removed I would have no objection to this document being admitted.

THE COURT: Why don't you bring it up here so I can look at what you're talking about, without showing it to the jury?

Okay. I see what you're talking about.

Why don't you ask specifically of this witness about that and if we can clear that up we won't have a problem?

MR. CHALOS: Your Honor, I also object to this (indiscernible - whispering). It would take another 45 minutes to get to sea speed (indiscernible - whispering).

THE COURT: Why don't you see if you can clear that up with the witness.

MR. COLE: Sure.

Q (Captain Greiner by Mr. Cole:) The notation at 2344, you put there that what? Why did you

put that?

A I put that there because I got it from the testimony given by the helmsman.

Q Are you sure about that number?

A The number, itself, comes from -- the time comes from the fact that what's indicated on here was given simultaneously with the order for the helm. It is not the point at which it occurs, but it doesn't purport to be the point at which it occurs, either. It's the point at which an order was given, not the point at which the action was taken.

MR. COLE: May I have a minute, Your Honor?

THE COURT: We'll take a little recess at this time. It'll be about 10 or 15 minutes.

Don't discuss the case among yourselves, or with any other person. Don't form or express any opinions.

THE CLERK: Please rise. Court stands in recess subject to call.

(938)

(Off record - 9:54 a.m.)

(On record - 10:11 a.m.)

(Jury present)

(906)

(Whispered bench conference as follows:)

THE COURT: You didn't tell me about this.

MR. COLE: Now he's objecting to this one. And I think that this is supported by the evidence.

MR. CHALOS: Judge, I think the evidence (indiscernible - whispering)

MR. COLE: (Indiscernible - whispering) going into the southbound -- northbound lane (indiscernible - whispering)

MR. CHALOS: (Indiscernible - whispering)

MR. COLE: I'll show you the transcript.

THE COURT: Well, if you have no objection to the vessel (indiscernible - whispering) the traffic separation zone...

MR. CHALOS: None whatsoever.

MR. COLE: (Indiscernible - whispering)

MR. CHALOS: (Indiscernible - whispering) but there was testimony he called up and said we're going to deviate our way through the ice and I'll call you (indiscernible - whispering).

THE COURT: Where did he do that?

MR. COLE: Up here.

THE COURT: Is there testimony to that effect? Is there any testimony that supports he did it without advising VTC?

MR. COLE: Yes.

THE COURT: What is it?

MR. COLE: Cousins testified that he didn't tell them because Cousins asked him, "Don't you think we should call because we're leaving?" He said (indiscernible - whispering.)

And the second thing was Taylor said he never called it down here when they left the zone and told him that they had left the zone. He only called them at 11:35, right there (indiscernible - whispering)

THE COURT: Okay. I understand. I remember that up there. This right here. I don't recall now when you say that Cousins testified that Hazelwood told him to go ahead and take the course. That way it'd give him more (indiscernible - whispering).

MR. COLE: No. He said that when I was checking the radars on the ice that I could see him in front I told the captain, "Hey, we're going to be leaving the whole system (indiscernible - whispering) after the 2330 time because he came up right there, and that's the first thing he did. So it was sometime in here. He was (indiscernible - whispering) the ice that he saw...

THE COURT: But, he testified it occurred right there. He testified it occurred where that arrow

is. Who can testify it occurred where that arrow is? Who has testified that it occurred where that arrow is?

MR. COLE: The vessel would use the traffic separation...

THE COURT: Without advising them.

MR. COLE: He's going to testify that the vessel left the traffic system and

THE COURT: Okay. Is there any evidence that he advised VTC at that point that he was leaving the northbound lane?

MR. CHALOS: Judge, but there's also no evidence that he had to tell them at that point (indiscernible - whispering) going into the southbound lane (indiscernible - whispering).

THE COURT: I think I remember that testimony. He's going to deviate further.

MR. COLE: I can show you the transcript.

MR. CHALOS: (Indiscernible - whispering)

THE COURT: Okay. At this time, Mr. Cole, until you can tie it up you'll have to eliminate without advise of VTC.

MR. COLE: (Indiscernible - whispering)

THE COURT: I think that's argument. That's argument.

(Indiscernible - whispering)

THE COURT: The jury's not going to be able to see that right now any way, are they?

MR. COLE: (Indiscernible - whispering)

THE COURT: Why don't you show it to him?

(End of whispered bench conference)

(1143)

THE COURT: We ready now?

MR. CHALOS: Yes, Your Honor.

THE COURT: Okay. Any further reason why the exhibit should not be admitted, Mr. Chalos?

MR. CHALOS: No objection.

EXHIBIT 122 ADMITTED

THE COURT: Okay. The Exhibit's admitted.

What number is that Exhibit now, please, again?

MR. COLE: Your Honor, this is Exhibit 122.

THE COURT: Yes. 122's admitted.

Q (Captain Greiner by Mr. Cole:) Now, you started to talk about this red sector that you have outlined here, Captain Greiner. Would you explain that now?

A Yes, sir. Certain aids to navigation have a red sector in them. There's a light here on Busby light. And when you're anywhere else here it appears white. If you're in this area here it

appears red. And so, if as a mariner you see it and it's red you know that you're in this particular sector.

Q And that is just an outline of the dots that appear on the actual chart?

A Yes, sir. On the chart, itself, there is a dotted line that goes down there. And there's a dotted line that goes down there that delineates this sector.

The bottom line is not on the chart. I ended it there because that was past any interest that we have.

Q Now, you indicated that the triangles along this line are what?

A They're fixes. I use a triangle for fixes. That's the way I was trained.

Q And these, again, from your -- when the vessel was abeam of Entrance Island?

A Yes, sir.

Q And then how did you get this area right here, what the course was through the Narrows?

A I principally used the fixes from the radar that the Coast Guard had to bring it through this area here.

Q And what was the heading after the vessel left

the Narrows and started to enter the lower part of the arm?

A Okay. The heading is shown right here, a course 219. The actual heading varies slightly. And it varied from 217 to 218 degrees. But, the course, as I understand it was set for 219.

Q And what do these circles that are -- the 2306 and 2312?

A Those are two positions that show on a chart that was on the bridge of the Exxon Valdez. Testimony -- information regarding how those positions were obtained was very sparse. I don't know whether they are fixes, or whether they are what we call dead reckoning positions. There is, I believe, one line of testimony in this trial here where somebody refers to it as a fix. But, I've shown them there just so that you can correlate them with a line.

Q The 2320 note that you have there, that's what?

A Okay. 2330, third mate off the bridge to assist...

Q 2320.

A I'm sorry. 2320. "Third mate off the bridge to assist pilot departure and stowing of the

pilot ladder."

Q And the 2324? What does that indicate?

A That's the pilot's departure.

Q And 2325, what does that indicate?

A That's when the third mate returned to the bridge after having stowed the ladder.

Q Now, did your computer printout, or did your analysis of the course recorder indicate that a turn had been -- that a new heading of 200 degrees had been come to during -- right around 2339?

A Yes. At 2339 the course was changed to approximately 200.

Q That was the course it was running on. What was the speed of the vessel at about 2330, 2335?

A Speed over the bottom at 2335 was about 11 and a quarter knots.

Q When did this vessel, then, leave the traffic separation scheme?

A Okay. The traffic separation scheme is outlined here by the dotted lines. There is an inbound lane and an outbound lane. And the gray portion here is the separation between them.

When the red line passed over the dotted line is the point at which he left the vessel traffic

system and, or the scheme here. And I calculated that at 2351.

Q And then, the next notation that you have on that is 2352. What was that notation?

A The speed of the vessel was set on what's called LPU, Load Program Up. It's a automated sequence run by a computer that will increase the rpm of the engine, and thus the speed of the vessel to its sea speed. Up to this point it had been operating on full maneuvering speed, which is slower.

Q And at the notation you have at 2353?

A "Master leaves the bridge."

Q Now, during this segment of the track of the Exxon Valdez this evening, about what heading was it on?

A 180.

Q And do you have a little mark on the line that will tell the jury about what time 12 midnight was on this?

A Yes, sir. I have two here. This is three minutes after. And it's right opposite the one when I put the course of 180 down. And then...

Q Wait a minute. Three minutes after what?

A I'm sorry. Three minutes after the previous

fix. That would be 11:58.

Q And that corresponds with this mark where? Right next to the one on Course 180?

A That is correct. And then the next mark on the red line below it is the approximate position of the vessel at midnight. And it's just north of the red zone.

Q Now, when does the course recorder indicate that the vessel began to make a change heading in this matter?

A The...

Q Why don't I just hold this out?

A We're on 180 and between minute one and minute two. That's one minute after midnight or two minutes after midnight the heading of the vessel started to move sharply to the right.

(Pause)

THE COURT: What are you looking for?

MR. COLE: The expanded course recorder that I believe I had marked on Friday.

(Pause)

Q (Captain Greiner by Mr. Cole:) Now I'm showing you what's been marked for identification as Plaintiff's Exhibit 156. Do you recognize that?

A Yes, I do.

Q What is that? Why do you recognize that?

A Because, for one, I gave it to you. But, it came out of the National Transportation Safety Board Hearing. And it's an expanded portion of the course recorder.

Q Would you explain what it's an expanded portion of?

A Yes. This is an expanded portion of that that was between 11:45 p.m. and 15 -- 16 minutes after midnight on the 24th of March, 1989.

Q Can you give the jury an idea of what that would be on this?

A Yes. It starts somewhere in here and it goes down to approximately that point right there.

Q And do you know what method was used to do that?

A Yes, sir. NTSB used an optical scanner to digitize [digitalize] the course recorder and put it into a computer. And then this was generated from the computer record that had been made.

Q And is it a fair and accurate representation of that segment, in a blown up sense?

A Yes, sir. It is.

MR. COLE: I would move for the admission of

Plaintiff's Exhibit 156.

(Pause)

MR. CHALOS: Your Honor, may I have a short voir dire on this?

THE COURT: Approach the bench please, Mr. Chalos and Mr. Cole.

(1700)

(Whispered bench conference as follows:)

THE COURT: Mr. Chalos, on several occasions you've used short voir dires to cross examine witnesses. Now that's not the purpose of a voir dire and you don't get a voir dire on every exhibit unless you have a genuine good reason to dispute what is validation. Now what is your dispute? That sounds like, if anything, it's a foundation form for this particular extreme.

MR. CHALOS: (Indiscernible - whispering)

THE COURT: Well, how do we know that the NTSB no longer (indiscernible - whispering)

UNIDENTIFIED SPEAKER: (Indiscernible - whispering)

THE COURT: Well, how are you going to through cross all this examination explain to us...

MR. CHALOS: Well, I can certainly ask him for (indiscernible - whispering).

THE COURT: That's his opinion. Your question just goes to the weight of his opinion, not to the admissibility of it.

MR. CHALOS: Well, judge I was just trying to save some time.

THE COURT: You know I don't mind you cross examining in due course, but not during a voir dire on a validation issue.

MR. CHALOS: Okay. So (indiscernible - whispering)

(End of whispered bench conference)

(1773)

EXHIBIT 156 ADMITTED

THE COURT: The exhibit's admitted.

Q (Captain Greiner by Mr. Cole:) Now, in examining the course recorder does it appear that the slope of the vessel changes, of the line changes after 12:02?

A Yes, sir. It does. The slope gradually increases for a little over a minute. And then we have a steady slope until about a minute -- just before -- let's see, just before six minutes after midnight.

Q Now, what does the slope on this line represent? And could you explain that to the

jury?

A The slope represents the rate of turn. In other words, while we can calculate what the rudder was we can also look at it and the steeper it is the more, the faster the vessel is swinging.

Q How about, isn't it the flatter the line is the faster it's turning? Wouldn't that be correct?

A Well, see you've got it on the side. I look at it from this angle.

(Pause)

When you look at it in this angle, in this position, the more horizontal the line is the faster the swing is.

Q Now, based on the information that you have reviewed you indicated prior that there were in your opinion, based on the damage that you observed, there were two strikes of the bottom.

A Yes, sir.

Q Is that conclusion corroborated by your analysis of the course recorder?

MR. CHALOS: Objection, Your Honor. He's leading the witness. No foundation.

THE COURT: Objection overruled.

A Yes, sir. I can indicate to you where the beginning and the end -- where I believe the beginning and the end of the forward motion was on this course recorder.

And I can indicate to you approximately where the end of the first contact occurred.

Q (Captain Greiner by Mr. Cole:) Would you give your opinion on that?

A Yes, sir. This area here, which is was I call a discontinuity is where the initial contact took place. And it flattens out. Well, in this mode it is sharper. And it's -- you can see it on the Exhibit 156 much better than you can see it here.

The...

Q Is that the initial contact, or the place where it came to rest at 12:07?

A 12:07 was the place where it came to rest.

Q Okay. And what were you pointing at there?

A I'm pointing here at where at 12:05, almost 12:06 is where this line starts to change direction and, obviously it's come into contact with something which has slowed it's rate of turn down. And then, the rate of turn starts to increase again.

And if you look at the graph in this

direction, looking right along the slope of the line you can see that there is another change of the slope that occurs at about minute 7-1/2. And this is where, I believe the vessel stopped.

Q Can you show the jury on the large course recorder the area that you're talking about?

A This is the initial contact. That's the end of the initial contact. And down here, which is not apparent on this one is where the vessel came to rest. Initial contact and the vessel came to rest in here.

Q Now, When did the vessel get steadied up after it was making a hard right turn at some point, is that correct?

A Yes. The turn reversed at this point here, which is shortly after 10 minutes after midnight.

Q How far had the vessel turned to the right at that point?

A The vessel had turned -- notice that we changed our sectors here and now we're in sector 270 through 360. And so, we read it right here.

And it had come right to about 305.

Q So, it didn't go to the right until 270, and then start heading back to the left?

MR. CHALOS: Objection, Your Honor.

THE COURT: It's leading, Mr. Cole.

MR. CHALOS: It also mischaracterizes the testimony.

Q (Captain Greiner by Mr. Cole:) Would you explain why that curve does not indicate that the vessel started, was making a right turn, and then started making a left turn at 270 degrees?

MR. CHALOS: Objection, Your Honor. Form.

THE COURT: Objection overruled.

A The swing of the vessel is with the exception of the changes that I've noted in here, is continuous all the way through this arc. The fact that the pen reverses does not mean that the vessel changed it's swing, because you notice up here that it changed sectors. And so, the swing to the right continues through this. In other words, we're in the 180 to 270 sector here. And so, this swing is coming down this scale here. It reaches 270 there and then we have to look at the next scale, because we've changed our sectors. And it continues to swing onto the right until it stops at this point here and reverses the swing.

(2149)

Q (Captain Greiner by Mr. Cole:) And how would

that have occurred? Why did that occur? Why did it reverse it's swing?

A The swing was reversed, because I understand the rudder was shifted.

When I say the rudder was shifted I mean it was put from one side to the other side.

Q Now, I'd like to focus on the time period from 12:38 on the course recorder to about 1:41. Would you describe for the jury the actions the heading changes that are occurring during this period?

A Okay. The headings are changing to the right and left. Every time you reach a peak, because we're not changing sectors here. We're not changing quadrants.

So, the vessel's head is being moved back and forth each time we reach a peak on one end that's changed from going from left to right, or right to left. And it changes back and forth all the way up to where the label "stop" is.

Q Was the vessel moving at this time?

A In my opinion it was not.

When you say moving, I'm sorry, what do you mean?

Q Was it going forward?

A No, sir. It was not going forward.

Q What was the largest degree of turn at any one time?

A 14 degrees, 14-1/2 degrees. And it's between here, this point at which the heading was 276. I'm using this scale here. And up to here where it was 290-1/2 degrees. Let's call it 14 degrees.

Q Now, based on this information and the damage diagram that has been made, that you observed and made available, can you give an opinion as to how far the bow might have been traveling during this 14 degree turn?

A Yes, sir. The bow moves back and forth, as does the stern, when you pivot around a point. In other words, if the vessel is aground at a point and you're going to move it back and forth the bow is going to move laterally, and the stern.

And using a 14 degree change in heading of the vessel I came up with the bow, if you're going to assume that the rock is, oh, somewhere around 384 foot from the bow, the bow will swing 94 degrees -- 94 feet back and forth.

Q From one end of the turn to the other?

A Yes, sir.

Q And how about the aft end of the vessel? Would it be moving during this time?

A Yes, sir. It moves the same number of degrees. But, because the pivot point is forward of the center of the ship it moves a greater distance laterally.

Q Can you demonstrate that, again, with your little...

A Yes, sir. If we're going to have a pivot point -- let's assume this is the bow, the pivot point is forward of the midships section here.

As we move back and forth we're going to have the same number of degrees turn, and we're using 14 for this calculation, but the amount that this goes back and forth is much less than the amount that the stern goes back and forth.

Q Do you have an opinion as to what Captain Hazelwood was attempting to do during that period, 12:38 to 1:41?

(2350)

MR. CHALOS: Objection, Your Honor. I don't think Mr. Greiner has been qualified as a master mariner, or someone having a license as a deck officer. So, I don't know if he can give an opinion as to what a

captain was doing, since he doesn't have that kind of experience.

THE COURT: Mr. Cole.

MR. COLE: He's done accident reconstruction. He can give his opinion on the type of orders that are being given at this time.

THE COURT: Objection overruled.

A Yes, sir. The movement of the rudder back and forth is consistent with trying to work a vessel off of a rock, or the bottom.

Q (Captain Greiner by Mr. Cole:) Why do you say that?

A I can think of no other reason for it. If the converse was true, that he was trying to hold it on there, he certainly would not have moved it back and forth. Also, moving it back and forth exposes a vessel to additional damage.

MR. CHALOS: Move to strike, Your Honor. Non-responsive.

THE COURT: Mr. Cole.

Q (Captain Greiner by Mr. Cole:) What risk...

THE COURT: Mr. Cole, there's a motion.

MR. COLE: I'm sorry. I'll withdraw it. You can strike it. I'll ask a new question.

THE COURT: All right. We'll strike that last

statement made by the witness.

Q (Captain Greiner by Mr. Cole:) What risk was there in moving this vessel, in attempting to get off the reef?

A The risk was additional damage to the vessel, and possible injury or death to people in the engine room.

Q What type of additional damage to the vessel?

A If the vessel was successful in moving forward, the rock upon which it was resting could have very easily caused damage in the engine room, hulling of the engine room and flooding of the engine room.

Q What about damage to the prop or the rudder?

A It could have done that also.

Q And what would have been the risk to the vessel if those had occurred?

A Well, if you flood the engine room you lose the buoyancy of the engine room. And it's my opinion without doing any calculations that it, in fact, would -- well, I know that it would increase the weight of a vessel, or decrease the buoyance of a vessel, and it could be totally lost if it came off.

MR. COLE: Nothing more, Your Honor.

THE COURT: Mr. Chalos.

MR. CHALOS: Thank you, Your Honor.

(2500)

CROSS EXAMINATION OF CAPTAIN GREINER

BY MR. CHALOS:

Q Good morning, Mr. Greiner.

A Good morning, sir.

Q I've looked over your résumé here and I notice that you're an attorney?

A I'm licensed as an attorney, yes, sir.

Q I see also that you're a member of the Washington State Bar Association?

A Yes, sir.

Q The Maritime Law Association?

A Yes, sir.

Q And the Association of Trial Lawyers of America?

A That's correct.

Q Have you as an attorney represented any clients?

A Only once.

Q Just once in your career?

A I've represented a client outside the family once in my career.

Q Did you do some personal injury work as a

lawyer?

A No. No.

Q Now, Your company's called Maritime and Environmental Consultants, is that right?

A Yes, sir.

Q What is the function of your company? What do you do?

A Maritime and Environmental Consultants is a referral agency that refers maritime oriented experts, or marine environmental experts to those people desiring their services.

Q So, you provide experts to lawyers, for instance?

A Yes, sir.

Q In this particular case have you provided any experts to the State of Alaska?

A Yes, sir.

Q Who have you provided?

A Captain Beevers.

Q Anyone else?

A No, sir.

Q Did you help them get Mr. Milwee, for instance?

A No, sir.

Q How about Professor Vorus?

A No, sir.
Q Now, you have a contract with the State, do you not?
A Yes, sir.
Q Originally the amount of the contract was for $20,000?
A The contract maximum was $20,000. Yes, sir.
Q And that was recently increased to $30,000?
A That's correct, sir.
Q Have you billed the State?
A I've billed the State, yes.
Q How much have you billed them for so far?
A I think it's between 17 and 18,000.
Q Do you expect that your fees are going to exceed $30,000 in this case?
A I haven't done the calculations of them. It will be in the upper 20s at least, yes.
Q Now, you have an arrangement with Captain Beevers with respect to the fees that he receives in this case?
A Yes, sir.
Q He gives some of that back to you?
A That's for the referral, yes, sir.
Q And how much of Captain Beevers' fees will you take back?

A 10 percent.

Q Now, Mr. Greiner, you were referred to several times by Mr. Cole as captain.

A That's correct.

Q The captain that we're talking about was your rank in the Coast Guard when you retired, is that right?

A That's correct, sir.

Q But you don't hold the master's license for commercial vessels?

A No, sir.

Q As a matter of fact, you don't hold any licenses for commercial vessels, is that right?

A No, sir. I was eligible for them, but I chose not to sit.

Q All right. You don't have, for instance, a chief mate's license, or second mate's license, or a third mate's license?

A No, sir.

Q Or chief engineer's, second engineer's, or first engineer's?

A I have no licenses at all.

Q I see from your résumé, again, that the last time you sailed was somewhere in the area of 1965 to 1967?

A I sailed as a crew member, yes, sir.

Q And that was on the Coast Guard Cutter the Taney (ph)?

A That's correct, sir.

Q That's a 327 foot cutter?

A Yes, sir.

Q And you said you were the equivalent of the chief engineer on that ship?

A That's correct.

Q Now, had you sailed the entire two years, or was that ship docked somewhere?

A It sailed over 200 days a year.

Q And were you on there the whole time?

A Yes, sir. I was on there the whole time it sailed.

Q What kind of an engine does that ship have?

A Twin turbine, steam turbines.

Q Have you ever sailed on a vessel with a diesel engine?

A Well, all the vessels have diesel engine. You mean main propulsion diesel engine?

Q Main propulsion.

A Yes, sir. No. I have not. I'm sorry. I have not.

Q So, do you know what kind of engine the Exxon

Valdez had?

A Yes, sir. A diesel engine.

Q Do you know the speed?

A You mean the rpm?

Q No. You're familiar with the designation of high speed, medium speed, and low speed diesel?

A Yes, sir.

Q Do you know what kind of speed this was?

A Yes, sir. It's a low speed.

Q I take it you've never sailed on any merchant vessels?

A Not as a crew member. I've sailed on them for other purposes.

Q In your work as a consultant?

A No, sir. In the Coast Guard.

Q When you say you sailed on them you mean you went on board to inspect them?

A No, sir. I mean I sailed on them.

Q For what periods of time?

A I sailed on a Keystone tanker for a month going up and down the east coast while we were doing instrumentation and tests on the tanks.

I've sailed on a passenger ship for the shakedown crews out of Seattle, Washington.

And there's one other. And I don't remember

the exact circumstances.

Q These were also steam turbine vessels?

A I think the tanker was. I was doing deck work. I wasn't doing engineering work down in the engine room, but I'm sure it was.

The passenger ship was not, though. It was diesel.

Q On those ships you didn't stand a watch, or anything like that, right?

A No, sir.

Q You didn't have any navigational duties?

A That's correct.

Q Now, again, referring to your résumé, I see that you've been consulted in the past five years, I think you said over 251 cases? Is that right?

A Yes, sir.

Q When you say you were consulted, do you mean people have come to you and said, "Can you find me an expert in this particular field?"

A No, sir.

Q You were consulted, yourself?

A That's correct.

Q And you've worked on 251 cases in the last five years?

A Some of them didn't amount to anything, but I was contacted on them and opened a case file on them, yes, sir.

Q I see here that you say approximately 60 percent of those were for plaintiff attorneys. 35 percent was for defendant attorneys, and five percent were non-litigation?

A That's correct.

Q That's the way it breaks down?

A Yes.

Q And I think you told Mr. Cole that you've testified 30 to 35 times in the past five years?

A That's correct, sir.

Q Do you consider yourself a professional witness?

A No, sir. It depends on how you use the term, but I don't consider myself as such.

Q Well, I take it your job is to consult and testify. That's your primary function?

A My primary function is to consult. If it requires testimony, and as you can see by the number of cases I've consulted versus the number I've testified in, most of them do not require expert testimony.

Q You don't have a job? I mean, for instance,

you're not a professional naval architect, or a professional engineer, or a professional salvage man who has a job that he does and then testifies in those areas of expertise?

A I consider consulting and marine safety as a job.

Q But that is your only job?

A Yes, sir. No. It isn't. The other portion of it is referring experts to other people. So, there's two portions to the type of work I do.

Q Okay. Now, let's talk about what the State of Alaska has asked you to do in this case?

A Yes, sir.

Q What did they ask you to do?

A They asked me to photograph the -- or, assist in the photographing of the bottom of the Exxon Valdez in dry dock.

Q That was in San Diego?

A In San Diego, yes, sir.

Q Yeah.

A To evaluate the damage that occurred to the bottom of it. To reconstruct the track line of the vessel. And to render opinion with regard to the actions that were taken after the vessel had gone aground.

Q Okay. Were you asked to do anything else?

A No, sir.

Q Nothing at all?

A Not that I can recall.

Q Do you remember the State asking you to contact the Coast Guard to find out what the pilotage regulations for Prince William Sound were at the time of the grounding?

A Yes, sir.

MR. CHALOS: Your Honor, may I approach the witness?

THE COURT: Yes, sir.

Q (Captain Greiner by Mr. Chalos:) I'll show you what's been marked as Defendant's Exhibit V and ask you, is that a letter you wrote to the commander of the 17th Coast Guard District in Juneau on 29 May, 1989?

A Yes, sir. It is.

Q I show you what's been marked for identification as Exhibit W. And ask you is that a letter you wrote to the Commandant of the Coast Guard in Washington, D.C., on 29 May?

A Yes, sir.

Q In those letters are you asking the Coast Guard for information relating to pilotage?

A Yes, sir. I am.

Q At whose request did you make that request?

A It was with the State's request.

MR. CHALOS: Your Honor, I offer at this time Exhibits V and W into evidence.

MR. COLE: My objection is relevance.

THE COURT: May I see the exhibit?

(3106)

(Whispered bench conference as follows:)

Mr. Cole.

When are you going to tie this up?

MR. CHALOS: (Indiscernible - whispering) loose ends by the State to look into this issue of pilotage. (Indiscernible - whispering)

THE COURT: He was told that it was waived (indiscernible - whispering).

MR. COLE: That's outside the scope of direct.

THE COURT: I'll forget about outside the scope. I'll (indiscernible - whispering)

UNIDENTIFIED SPEAKER: (Indiscernible - whispering)

THE COURT: You're offering it for the truth of the matter, that it was waived.

UNIDENTIFIED SPEAKER: (Indiscernible - whispering)

THE COURT: I think we better take this up outside the presence of the jury.

(End of whispered bench conference.)

(3190)

THE COURT: We need to take this matter up outside your presence. It may take a few minutes. I want to make sure we get a good record on it. Don't discuss the matter, or speculate what we're doing and don't form or express any opinions, please.

(Pause)

(Jury not present)

(3235)

THE COURT: All right. Maybe we better just develop this on the record as completely as possible.

As to Exhibits V and W. They're letters by the witness to the Coast Guard to obtain information regarding pilotage.

The objection was relevance.

Why don't you now take it from there?

MR. CHALOS: Your Honor, Mr. Cole has brought in several witnesses who have testified as to the issue of pilotage. And while I think that the issue is fairly muddied at this particular point in time there has been testimony by some of the witnesses presented by Mr. Cole that pilotage was in existence in that area

at the time of the grounding.

He also hired Mr. Greiner, as part of his functions, to contact the Coast Guard to verify that in fact pilotage existed.

Mr. Greiner has done that. He's written to the Coast Guard. He's gotten information from them. He's gotten public documents from them. He's been referred to public documents. And, basically, they show what we've been saying all along. That the pilotage in that particular area has been waived.

I think that since Mr. Cole brought up the issue initially and has presented testimony to the effect that pilotage has existed, I think he has an obligation, because that's exculpatory evidence now, he has an obligation under the code of ethics if he has exculpatory information, which he does. He's hired a man to get him that, he has an obligation to bring it forth.

He didn't ask this witness any question about the pilotage. And this witness said he wasn't asked to do anything else. But, obviously, that's not correct, because he's written numerous letters and gotten several responses to that.

So, I think that I'm entitled to question him on it with respect to credibility, 1. And, 2, as

exculpatory evidence.

Now, the evidence that we're talking about is not so much as to whether pilotage existed or not. What we're talking about, and Mr. Greiner in one of his letters pinpoints the issue, is what could Captain Hazelwood reasonably believe at that time, given the situation with respect to pilotage? Could he reasonably believe that pilotage was waived, independent of whether, in fact, it was, or not? And I think Mr. Greiner's come to certain conclusions and I would like to explore those conclusions.

THE COURT: All right.

Mr. Cole, you, at the side bar said hearsay was an objection, also of scope of the direct.

This is something that's a totally new matter, it seems like to me it wasn't covered in the direct, the pilotage. That has been covered by other witnesses.

And you want to elicit his expert opinion as to whether or not Captain Hazelwood could reasonably have relied on information that the pilotage was no longer in effect?

MR. CHALOS: Yes, but first setting up the foundation for it on the basis of information that he gathered in that regard.

THE COURT: Let's make sure we get this clear. You had other exhibits you haven't referred to?

MR. CHALOS: Yes.

THE COURT: You had information he received, Captain Greiner received, indicating that pilotage had been waived, and you want to admit those documents also, at this time?

MR. CHALOS: Well, I can do it one of two ways. I can ask him about it without admitting the documents, Your Honor. or, I can admit the documents if you think that would assist.

THE COURT: Well, I'm not telling you how to do your case. I'm asking you what your intentions are.

MR. CHALOS: I had intended originally to introduce the letters into evidence. But, I can do it the other way. Right now my intention has been to let...

THE COURT: Okay. And also you wanted to ask Captain Greiner his opinion, as I understand it, his expert opinion as to whether or not Captain Hazelwood could have reasonably relied on Coast Guard information that pilotage had been waived?

MR. CHALOS: Yes.

THE COURT: Mr. Cole.

MR. COLE: Well, I guess...

(Pause)

THE COURT: And Mr. Cole indicated at side bench hearsay and outside the scope of the direct. Those are the objections I've heard so far.

MR. COLE: Where are the two documents that he received?

MR. CHALOS: What's that?

MR. COLE: Where are the two documents that he received from the Coast Guard that indicate that...

MR. CHALOS: You mean the enclosures?

MR. COLE: Right.

MR. CHALOS: You never gave them to me.

THE COURT: What is it you're trying to admit, Mr. Chalos? That's the question. What exhibits...

MR. CHALOS: I'm trying to admit Exhibits...

THE COURT: The two requests by Captain Greiner, and how about the responses? Are there responses you wish to have admitted?

MR. CHALOS: I'll identify the letters for the record, Your Honor.

Exhibit V was the letter of May 29th to the Commander of the 13th Coast Guard District...

THE COURT: That's V as in victor?

MR. CHALOS: Yes.

THE COURT: Okay.

MR. CHALOS: W is a letter dated May 29th to the Commandant...

THE COURT: I have those. I'm talking about the responses that you wanted to admit.

MR. CHALOS: X is a letter from Mr. Greiner, again to the Commandant, dated July 20th, 1989.

Exhibit Y is a fax to Mr. Cole dated August 16th...

THE COURT: That's from Cole?

MR. CHALOS: No. From Mr. Greiner to Mr. Cole.

THE COURT: Yeah.

MR. CHALOS: Exhibit Z is a letter dated October 18th, 1989 from the Coast Guard, from the Commandant's office to Mr. Greiner.

THE COURT: And is it in that letter where you, as represented that the pilotage is waived?

MR. CHALOS: Yes. And Mr. Cole says that there's a reference to an inclosure in this particular letter and my response to that was we never received the inclosure.

(3634)

THE COURT: Okay. May I see the letter now, Exhibit Z, you're talking about?

(Pause)

Why don't we take a brief recess and Mr. Cole, you can look at that and you can articulate your objections when I come back. About five minutes.

THE CLERK: Please rise. This court stands in recess subject to call.

(3647)

(Off record - 11:04 a.m.)

(On record - 11:11 a.m.)

(Jury not present)

THE COURT: All right. Mr. Cole.

MR. COLE: Judge, my objections, I'm going to focus first on the answer from the Coast Guard to Captain Greiner.

First of all, I've noticed that the enclosures that are referred to are evidence that you have already excluded...

MR. CHALOS: Those weren't. No, no.

MR. COLE: That's what it says. Exhibit, Inclosure 2, Federal Register Volume 53, 108 of June 6th, 1988...

MR. CHALOS: Okay.

MR. COLE: ...with Defendant's Exhibit U, which is proposed changes in the regulations to eliminate pilotage. These are proposed.

Now you've already ruled that these are

inadmissible because they were only proposed, and that's one of the...

THE COURT: Mr. Chalos didn't focus on that. He chose to focus on the waiver of the policy.

MR. COLE: Right. And that inclosure is based on a federal code of procedure, it looks like, the History of Prince William Sound.

Our objections are, one, that that is hearsay. The statement from Michael Brown is something that we can not cross examine as to what he meant as a policy waiver was in effect. It's just plain hearsay.

Two, the opinion that he's giving is speculative if it's in response to Captain Greiner's request of what a tanker captain would reasonably -- or what Joseph Hazelwood would reasonably believe to be the law at this time. Which is, I think, what Captain Greiner says in his letter.

So, for those two reasons we believe that that information is speculative. It's also outside the scope of redirect, or of direct.

As to the memo, Plaintiff's Exhibit Y, there's nothing on this memo that is relevant to the issues in this case. So, Y we object to relevance.

As to Plaintiff's Exhibit W, X and V, which are all requests by Captain Greiner for information

from the Coast Guard, first of all, two of them don't go to anybody that is referred to. I mean, two of them go to Juneau, or one of them goes to Juneau and there's no response and no nothing, so we would object on relevance grounds there.

As to the two letters that were sent on May 29th and June 20th, we feel that they have no relevance because of the hearsay objection to the response.

THE COURT: All right. Mr. Chalos, let me ask you a couple questions so we can...

MR. CHALOS: Yes.

THE COURT: ...speed this up.

Without getting Z in, if you don't get Z in, what relevance does Y, X, W and V have?

I mean, the whole purpose of getting that is to lay the foundation, isn't it, for the response from the Coast Guard waiving pilotage?

MR. CHALOS: Yes, Your Honor. As far as Z is concerned I suppose I can ask him the question of whether he'd received any information from the Coast Guard without actually referring to the letter, because I don't think hearsay is an appropriate objection as far as an expert basing his opinion on anything.

The way I read 702 and 703 and expert may rely on what would normally be inadmissible in forming his

opinions.

THE COURT: Okay. Now, we have a hearsay on one. We also have the opinion as speculative. I'm assuming that means in this case how was Captain Greiner going to be able to speculate, or give an expert opinion on what Captain Hazelwood may, or may not have been relying on without any further information of what he has so far.

MR. CHALOS: Your Honor, it' not a witness saying what Captain Hazelwood would have relied on, but anyone having access to this information, including himself, what would they conclude, what could a person reasonably conclude, not necessarily what Captain Hazelwood would have concluded. I'm not going to ask him his opinion of what Captain Hazelwood might have thought.

But, could a reasonable person, taking everything into account, including documents that he received from the Coast Guard, could a reasonable person conclude that pilotage had been waived at best, and at worst that it was a confusing situation.

THE COURT: Anything further you want to add to your offer to overcome hearsay and opinion objections?

MR. CHALOS: No. Not at this time.

THE COURT: Okay. I'm going to sustain the objections based on hearsay. Also, I will not permit the witness to give his opinion as requested, because it would be based on hearsay. It's also beyond the scope of his expertise. It's not the type of opinion that will assist the finder of fact in this case. It would disclose information that would be used by the jury for an improper purpose. And the danger of that outweighs it's value of support for the expert's opinion. It's furthermore outside the scope of the direct testimony. It had nothing to do with Mr. Cole's examination.

So, for those three reasons inquiry regarding what he asked the Coast Guard and any information he received from the Coast Guard, or the use of that information in support of his opinion that a captain might be able to rely on the waiver of pilotage will be prohibited.

Let's get the jury back in now.

MR. CHALOS: Your Honor, before we bring back the jury, do I understand the court to be instructing us that even if we call Mr. Greiner back as our expert on this particular issue we'd be precluded from asking him questions about what he did in respect to obtaining information with regard to the pilotage?

THE COURT: I just made a ruling based on the offer you've made now and Mr. Cole's objections. I think you might be able to infer that if you ask the same questions of Captain Greiner, if you call him as your witness, that no longer would the objection beyond the scope of the direct be applicable, but you might be able to infer that the other objections would still stand and I would rule the same way. I don't know what your questions would be, but if they were precisely what you've offered it for now with the same questions and the same rationale, I think you can reasonably rely that I would rule the same.

MR. CHALOS: And that's notwithstanding rule 702 and 703 with respect to this type of testimony?

(Tape: C-3642)

(003)

THE COURT: That's correct. I ruled on the basis of, one, hearsay, and also, two, 705 and 702. I don't think it's the kind of opinion that experts of his caliber would really rely on, or people in Captain Hazelwood's position would rely on, and 705, the data that he relied on would be used for an improper purpose. So, I ruled on the basis of 702, and 705, and 703 incidentally, and 801.

Are we ready now with the jury?

MR. CHALOS: Your Honor, just one more point. Are you saying that the letters that he wrote to the Coast Guard are 801 hearsay documents?

THE COURT: I'm saying that based on what you said, without his opinion coming in, or without the letter from the Coast Guard, then they have no meaning, so that would be a relevance objection that would be sustained.

Let's bring the jury in.

(Pause)

(Jury present)

THE COURT: Thank you for your patience, ladies and gentlemen.

You may resume, Mr. Chalos.

MR. CHALOS: Thank you, Your Honor.

(097)

Q (Captain Greiner by Mr. Chalos:) Mr. Greiner, just picking up where we left off. In addition to the things that you told us about, you were asked by the State to look into the issue of whether pilotage applied, or not, were you not?

A Yes, sir.

Q So, when you said that you weren't asked to do anything else, that was a mistake?

A The -- I was giving you the principle things

they'd asked me to do. And that was such a small part of what I had done that I didn't consider it of significance. I had forgotten it, as a matter of fact.

Q Even though you wrote to the Coast Guard, three, four, five times, and you also filed an appeal?

MR. COLE: Your Honor, I object. Relevance.

MR. CHALOS: Your Honor, this goes to credibility.

THE COURT: I think he's answered the question and to go any further would go against the spirit of my earlier ruling, Mr. Chalos.

The objection is sustained.

Q (Captain Greiner by Mr. Chalos:) Now, before we get into the specific tasks that you were hired to accomplish, before you came here today what testimony and exhibits did you review?

A Today?

Q No. In the course of events. Did you review the crew members testimony given here at trial?

A No, sir. When you say crew members that's fairly broad.

Q All right. Let's say...

A I looked at Cousins.

Q ...Mr. Cousins?
A Yes. I looked at Cousins.
Q How about Mr. Kagan?
A No.
Q How about Mr. Kunkel?
A Yes. No others.
Q No one else?
A No others.
Q Okay. Did you review any of their NTSB testimony?
A Yes.
Q Did you review any of the exhibits that have gone into evidence here?
A I don't know what exhibits have gone into evidence, but I've reviewed a number of -- I've reviewed all the NTSB exhibits, yes.
Q All of them?
A No. All of those that were listed. In other words, they provided a list of them and in some of them they said not available. So, those, obviously I didn't review.
Q And I take it you reviewed statements given to the NTSB by various crew members?
A Yes, sir.
Q All right. Let's go to San Diego. One of

your tasks was to hire a photographer? Was that a...

A I recommended a photographer. They hired him. Yes, sir.

Q Are you taking a piece of his fee?

A No, sir.

Q Now, what was the purpose of your going down to San Diego?

A The purpose of it was to look at the damage, to assist the photographer. I took the notations as to where the photographs were taken and looked at the damage.

Q Okay. And after doing that you told us you came to certain conclusions, is that right?

A At some point, or other, yes.

Q Okay. The first conclusion that you came to was the vessel was sitting on some rock in the way of Tanks 2 and 3?

A Actually that was the second conclusion. The first conclusion was that it passed over a rock.

Q And then came to rest on a different rock in way of Tanks 2 and 3?

A That's correct.

Q And you also came to the conclusion that there was a lot of set in damage, that is damage pushed

up in that area as a result of the rise and fall of the tide?

A Yes, sir. In the way of 2 and 3 Tanks.

Q Do you remember this vessel ran aground on the 24th of March?

A Yes.

Q Do you remember what day it was refloated?

A Not precisely. It was April 8th -- 6th. Something like that, in that neighborhood, I believe.

Q So, she was aground, you would agree 10, 12, 14 days?

A Yes.

Q And you had two tides a day?

A Yes.

Q The vessel moved up, or rather the vessel shifted at each tide?

A I would expect it to.

Q Did you come to any conclusions as to whether the vessel stayed on the bottom wherever it was resting on the bottom throughout the tide changes?

A Yes.

Q In other words, the only thing that moved during the tide changes was the vessel heeling

one way or the other, depending on the state of the tide?

A That is correct.

Q But, she was resting on the bottom at all times?

A Yes.

Q Now, you saw certain damage at San Diego, is that correct?

A That's correct.

Q You don't know, do you, whether that damage that you saw in San Diego was caused by the grounding, subsequent to the grounding, in moving the vessel off the ground, in taking the vessel to Naked Island, or taking it back down to San Diego?

A Some of it was obviously damage that had occurred afterwards, yes.

Q But you can't tell exactly what damage occurred where?

A That's not true.

Q Well, tell us about the damage that you could tell that occurred at the time of the grounding?

A The crushing damage occurred at the time of the grounding. The vessel was afloat after she came off ground. The first series of damage that

I described to you occurred while the vessel was in a turn. It was five degrees, approximately from the keel. And it's my opinion that they occurred when it passed over the first rock and came to rest on the second rock.

Q Well, we're going to get into that opinion because I think it needs to be explored. But, what I'm saying is the actual damage that you viewed in San Diego was not the condition of the vessel when she ran aground, was it?

A Well, it wasn't the condition of the vessel when it ran aground. The damage occurred afterwards.

Q At the moment of grounding?

A But, with respect to the plates, no. With respect to the structural members it occurred as a result of the grounding and it may have been aggravated while she was aground, a date later than the date she went aground.

Q Because of the tidal conditions?

A Yes, sir.

Q Now, we saw some pictures here where the plates were missing?

A Yes, sir.

Q Could you tell when you looked at the vessel

in San Diego what was carried away as a result of the grounding and what was cut away in preparing the vessel to go to San Diego?

A No, sir.

Q Now, did you come to any opinions as to whether the vessel was impaled on the rock when she was aground?

A I've described how it sat on the rock. When you say impaled I'm not sure what exactly you mean?

Q Well, what I mean by that, was the rock sticking up into the ship at some point?

A Well, it certainly was one. We have a photograph of it.

As I look at the damage at some points -- how far in the ship are you talking about? In other words, obviously, the rocks protruded in below where the original skin was.

Q That's what I'm driving at. There was evidence of that wasn't there?

A Oh, certainly. Certainly.

Q Have you heard of the term interference with the bottom?

A I don't know how you're using that.

Q Well, the way I'm using it is, for instance, a

rock protruding up, or steel protruding down, across the bottom. Have you heard of those terms?

A Yes.

Q You had evidence of that in this case, did you not?

A Yes.

Q Now, let's talk about your opinion about the two significant touchings. You opined that there were two touchings starting at five minutes after midnight and continuing to about seven minutes after midnight?

A Yes, sir.

Q It took two minutes to go through the initial hit, and then, the ultimate stopping?

A Yes, sir. Approximately.

Q And how long did you say the vessel -- how long did it take for the first rock to travel the length of the vessel?

A Approximately a minute.

Q In your opinion what kind of noise would the crew expect to hear? What kind of vibration would they expect to feel?

A It depends on where you are in the vessel. And I talked to a number of people who have been

on vessels that have gone aground and they hear different noised in different places on the ship.

It's strange. Sometimes they're totally almost inconsistent.

Q Well, I thought you testified that in your opinion the first hit was a substantial hit in the sense that it made this tunnel right down the center of the ship veering off to the starboard, is that right?

A Yes.

Q Now, that kind of tunneling you would expect a vessel to be hitting pretty hard, wouldn't you?

A Relatively, yes.

Q And you would expect, if you were a crew member, to hear something, or feel something?

A Yes.

Q Okay. Now, you read the testimony, you said, of certain crew members?

A Uh-huh (affirmative).

Q Do you remember reading that they felt a jolt and some vibrations for a period of 15 to 20 seconds and then the vessel stopped?

A I don't remember. I remember them hearing the noises periodically. I don't remember the latter part of your question that it then stopped. I

don't know what you mean by "then". Obviously it stopped within...

Q The vessel then came to a dead stop after 15 -- 20 seconds? Do you remember reading that testimony?

A No. No, I don't.

Q If that was the testimony that contradicts what you've said, doesn't it?

A Not necessarily. Vessels go aground sometimes without people hearing them go aground. So, some of the initial damage may not have been of such a noise level that they heard it.

Q That's just speculation on your part, isn't it?

A That's correct. I'm drawing on my experience of where vessels have gone aground and some people haven't heard anything.

Q All right. Let's talk about -- may I approach the witness, Your Honor?

(516)

You say that you believe, referring now to Exhibit 16. I'm sorry.

Incidentally, when you reviewed the statements given by the crew members to the NTSB is that the kind of thing that you would do normally in the

kind of reconstruction that you were hired to do here?

A Yes, sir.

Q And you'd rely on what they said and come to certain conclusions?

A I may, or may not rely on what they say. I will take it into consideration because obviously there's contradictory testimony and you try and figure out which one fits the pattern best.

Q Okay. Now, you say you believe that the grounding occurred somewhere between 12:05, the initial hit...

A Yes, sir.

Q ...and 12:07, when you think the vessel came to rest?

A Yes. I think 12:07 on the NTSB is down here somewhere.

Q Okay. Now, did you calculate the rate that the vessel was swinging prior to this 12:06 per...

A Yes.

Q ...minute?

A Yes, sir. It's on the spreadsheet.

Q And what did you conclude was the rate of turn just prior to 12:05?

A Well, it depends. 12:03 was 13 degrees. 12:04 was 16 degrees. 12:05 was 15. Then it slowed down. 12:06 was 13 and 12:07 was six.

Q Okay. Did you do any analysis of what 13 or 14 degrees of heading change would correspond in terms of rudder?

A No.

Q Okay. You didn't think that was important to reach your conclusions?

A I wasn't -- no. Not to reach my conclusion. I wasn't asked to. I was asked to reconstruct the track line.

Q All right. Now, subsequent to what you say is the grounding at 12:07 did you do any calculation as to what the rate of swing was to the right after that per minute?

A Yes.

Q What did you conclude the rate of change was per minute after 12:07?

A On the spreadsheet it indicates that it then went up to 27 degrees at minute eight, and 17 degrees at minute 9. And then it tapered off and then it reversed.

Q Okay. Just so we don't confuse the jury, the course came down to about, oh, I guess 12:09 it

came to 270 and then continued on until about 3:05, 10 after.

A Yes, sir.

Q It's fair to say, isn't it, that -- so the jury's not confused -- if you took this section and just dropped it, that would be more representative of what was happening?

A Yeah. You could flop this over and lay it down below. And for this purpose it would probably be less confusing.

Q Right. In other words, the ship came to 12:05. Through 12:07 there was a slight hitch in there, and then she continued to swing on a steady basis right up to course 305 to the right?

A Yes, sir.

Q Okay. And then there was a hard left at that point?

A That's correct.

Q Okay. That was at 12:10.

Now, do you remember reading Mr. Cousins' testimony that he said he ran aground and immediately went over to the wheel and gave it a hard left?

A Yes, sir.

Q Okay. Now, that happened at 12:10, didn't it?

According to the course recorder?

A No, sir.

Q What time did that happen?

A Well, it occurred before that. The response of the ship is not instantaneous. In other words, first of all, it takes time to swing the rudder over. Secondly it takes time for the rudder to follow, and then you have a reaction time.

So...

Q Well, it wouldn't take four minutes, would it?

A No, sir.

Q It would take about 30 seconds for all this to happen?

A Well, the swing of the rudder, it depends on where you start it from, but my recollection was that it takes 25 seconds to swing from center to full and that's just for the rudder to follow the commands. So, that's at least 25 seconds. Plus it takes you time to turn it over, yourself.

Q Were you here, or did you read the testimony of the Sperry people that said they did a test on this ship and they could go from hard right to hard left in about 26 -- 27 seconds?

A I received information both that it took 25

seconds to go from hard left to hard right and from zero to hard left. And I thought it was the Sperry that said from zero to hard left was 25 seconds. I may be incorrect on that.

Q Well, in any event...

A I did not read their testimony. No.

Q You didn't? Okay.

Assuming that it took even a minute, and I'll give you the benefit of that. If Mr. Cousins said we ran aground -- I ran over to the wheel and I gave it a hard left. And let's say that whole process took a minute.

A Uh-huh (affirmative).

Q If this is shown that the hard left, or rather the left swing of the vessel started about 11 after, right, it's fair to say, then, that what Mr. Cousins was describing took place around 10 after, is it not?

A Yes.

Q Okay. That doesn't square with what you're saying was the time of the grounding, does it?

A You're leaving out other parts of the testimony, though.

Q Such as?

A I think that there was testimony that the

vessel veered sharply to the right. And if you look at the portion of the course recorder from here to there, or at least up into here, there is an increase in the rate of turn from here down and up through there.

Q Well...

A And that fits with his testimony. So...

Q Well, do you recall Mr. Cousins saying that before the grounding he gave this vessel a hard right? Do you remember that?

A I have not read Mr. Cousins testimony before this court.

Q Well, is the rate of turn, I think you said 27 degrees and then dropping down to about 20 degrees per minute, isn't that consistent with how this vessel would react with a hard right on it?

A I'm not sure that it would be a hard right with a right rudder on it. I -- you know.

Q All right. And isn't it also consistent, then, with Mr. Cousins saying I put hard right on there and the vessel swung to the right and then we ran aground and I ran over and gave it a hard left?

A Yeah, but you've left out the testimony that

went between that. And that is that the vessel veered sharply to the right.

Q After the grounding?

A After the grounding, yes, sir.

Q Okay. Well, wouldn't that be picked up in this area here somewhere, after...

A That's a...

Q ...12:10?

A No, sir. No, sir.

What you're proposing is that this area right here be the hard right rudder, where, in fact, if you look at the expanded one, the turn is actually slowing down from minute nine, slowing down considerably from minute nine.

If you look at the expanded one, I would say that the rudder was put over hard left at probably before nine minutes after midnight.

Q Let's talk about this a second. You're referring to Exhibit 156 and this is the NTSB expanded version?

A Yes, sir.

Q Were you aware that this expanded version is in error and that the NTSB is not using this...

A No, sir.

Q ...any longer?

You're not aware of that?

A No. I'm not.

Q Were you aware that this version is a minute off?

A It appears to be -- there appears to be a inconsistency here of approximately a minute, yes.

Q And no one ever told you that the NTSB has disavowed this expanded version?

A No, sir.

Q This is the first time you're hearing that?

A That's correct.

Q Okay. When you said that this is an accurate representation of this...

A Yes.

Q That's not correct, because this is a minute off, isn't it?

A How much do you want to nitpick on it? It is a representation of the line and the shape and such like that of this, yes.

Q A minute off?

A Approximately, yes.

Q Now, you started to tell us how the NTSB got this expanded version. You said it was done by some sort of what?

A Optical scanning.

Q Okay. That optical scanning gives you a point to point reading, doesn't it?

A It gives you -- it digitizes [digitalizes] the line. When you say point to point, it digitizes it in increments of points. I mean, it...

Q So, it's not really a reproduction of this. It's an interpretation of this, isn't it?

A Well, when you -- I don't know what you mean by interpretation. We print things out on printers nowadays that are made up of dots, but you don't see dots, you see the character, itself.

You can make -- when you go into a newspaper you print things at 600 dots per inch, or less, and it comes out. You can reproduce this as dots. This line is not as thick as that line. There's no question about it. And that's why this line is easier to use, but you can do that by adjusting it in the computer.

Q You haven't done any reproduction, or any expansion of this, yourself, have you? Of this course recorder?

A Yes, I have.

Q Do you have that here with you?

A No. But, it's just like this.

Q All right. Let's talk about something else for a second.

You say you believe because of this hitch at 12:05 to 12:06 that represents the first hit, is that right?

A Yes.

Q Okay. Did you on your plot, your course recorder plot figure out where the ship was at 12:05? Did you run it down?

A Yes. No. Not at 12:05, I didn't. The latest time I have on here is two minutes after 12.

Q Well, if the vessel happened to be at 12:05 in an area where there's 38 fathoms of water, your theory would not supported, would it?

A I would doubt that that could occur, because the only other thing that could have caused this is bottom action and I don't think you're going to get bottom action from this type of bottom with that characteristic and the rapid buildup and such like that.

Q Now, is that the only thing that could cause this little hitch in the course recorder at 12:05, just bottom?

A No, sir.

Q How about some counter rudder?

A That's correct. That could.

(989)

Q Do you remember reading the NTSB statement of Mr. Kagan?

A Yes.

Q And do you remember Mr. Kagan telling the NTSB that he was trying to steady up on course 245, and he used some counter rudder?

A Yeah. The statement is not a verbatim statement. It's a summary by somebody who is interpreting what he says. And it contains words similar to that. I don't have them memorized, but you're correct.

Q What course was this vessel on at the time that you say it ran aground?

A When it started -- when it first ran aground?

Q Yes.

A Right here.

Q Right. What course is she on?

A Let me get it from my spread sheet here.

(Pause)

About 234.

Q Now, take a look at the course recorder?

A Okay. We're coming down here. We're in the

-- this sector here.

Q Yes.

A And so we're using this scale here. I'm sorry. Thank you. 248.

Q And the line starts, actually a little bit before that around 244, does it not? In other words, what I'm saying is before you get to the flattening out of the course you'd have to move the rudder prior to when it indicates on there?

A If you're going to assume that that's made be a rudder, yes.

Q Okay.

A In other words, it isn't a sharp zigzag. It's faired (ph). There's a gradual change, yes.

Q Now, isn't that change consistent with what Mr. Kagan told the NTSB, that is that he was trying to steady up at 245 at that point?

A No. It isn't.

Q It isn't?

A No.

Q So, you're saying that there's no doubt in your mind that at that point in time the vessel was aground, but you don't know on your chart where the vessel was located?

A Where it was located? I put the grounding

location on the chart. I'm not sure I understand your question.

Q Well, I think what you're saying is you worked backwards. What you're saying is that you know the vessel ran aground here.

A Yes.

Q And you assume that that's 12:05, 12:06?

A 12:07.

Q Okay. What I'm saying to you is did you run it down this way on the basis of your calculations to find out where that ship would have been at 12:05?

A 12:05 it's somewhere in this area right here. Let's see. Three. Wait a minute.

(Pause)

Yeah. It would be somewhere in that area right there.

Q Okay. And there's 38 fathoms of water in that area, is there not?

A Well, we go from -- very sharply we go from over 20 down to 10.

Q Okay. But, 10 fathoms, plus two for the tide is 12 fathoms, right? That's 72 feet.

A Uh-huh (affirmative).

Q And this ship was drawing 57 feet?

A Uh-huh (affirmative).

Q So, when it hit there, is that right?

A Have you -- I'm sure you've worked with charts before and soundings and...

Q The question is either yes, or no. If the ship is drawing 57 feet and there's 72 foot of water, she's not going to...

A That's correct.

Q Okay.

A That's correct.

Q Now, let's talk a little bit about this spreadsheet that you used, that you made up?

A Yes, sir.

Q That particular spreadsheet is a computer generated spreadsheet?

A Parts are computer, parts are manually entered.

Q Okay. You had prepared a spreadsheet originally which had certain numbers, is that right?

A I've prepared a number of spreadsheets, sir. As I've gotten information I changed them and such like that. And you'll notice the date at the top of it which indicates it's just like drafts of a letter.

Q Okay. You've made some recent changes to your spreadsheet, didn't you?

A As late as this morning, yes, sir.

Q Okay. And you've made some changes on the basis of a simulation that you received from the NTSB, is that correct?

A No, sir.

Q You didn't make any changes on the basis of the...

A You said that I received from the NTSB. I didn't receive that from the NTSB.

Q All right. Who did you receive this simulation from?

A I received it from King's Point, the people that made it up. Well, actually I received it from the attorney general -- the District Attorney's Office. I have received parts of it and I just learned about it and inquired about it and he said yes, he had it, and he gave it to me and I've just had it a few days.

Q Okay. The report that you reviewed is a computer simulation of the vessel's course, is it not?

A Yes.

Q All right. And it was prepared by the Marine

Safety International K-ORF (ph) people at the King's Point?

A Yes.

Q Have you read this?

A I've gone through it, yes. I have not made a specific analysis of it. I've made some comments on it, yes.

Q And you used some of the date from this, as well, in your calculations, did you not?

A Yes, I did.

Q And this is the type of report that experts like yourself would look at and make in reconstruction of courses?

A Certainly we look at them, yes.

Q Have you ever used simulator facilities before, such as K-ORF?

A No, sir. I have not.

Q Now, when you made this chart with your track line, that was before you saw this report, right?

A That was before I saw anybody else's reconstruction, yes, sir.

Q Okay. But since then, after you looked at this report you've made changes in your own calculations, right?

A Yes.

Q So, if you were to replot this, it would be different. I'm not saying it would be a lot different, or a little different, but it would be different than this on the basis of your new numbers?

A The only thing that was changed was the rate of turn here, or actually when the turn started. That's the only thing that was done with respect to that.

Q Now, in your calculations, which is -- what did we say it was, Exhibit 156? No. 155.

A Yes, sir.

Q What rudder angle did you assume?

A Initially I assumed -- where are you talking about?

Q Along your track line? Let's start with -- let me withdraw the question and I'll set the foundation.

Do you agree that at 2355 the vessel was abeam of Busby Island light?

A Yes, sir.

Q Okay. Let's start there.

A Okay.

Q All right. Coming down to about a minute and a half after, I take it you assumed that the

rudder was in the middle -- amidships?

A Principally, yes.

Q Okay. Starting at a minute and a half, two minutes after, what rudder angle did you assume in your calculations?

A I didn't assume -- I did not use a rudder angle to come up with my calculations?

Q You didn't?

A No.

Q Well, wouldn't the placement of the rudder, the rudder angle effect the speed of this vessel?

A Certainly.

Q So, in other words, the more rudder you have the slower the ship is going to go?

A Correct.

Q That's called braking effect, right?

A Yes.

Q Okay. Well, how did you determine your speed if you didn't figure any rudder angle?

A I assumed for turns that there would be a slow down. And it -- there are no statistics given in the vessel's characteristics, or data for anything except a hard rudder. And so, if you're going to use less than a hard rudder it would be significantly less. And if you'll notice that

the amounts that I use, the speed corrections were generally under a knot. They were not -- I didn't use much speed correction at all.

Q Well, you had a chance to look at the K-ORF simulation, did you not?

A Yes.

Q And they did a whole analysis of what the rudder angle was at any particular time...

A Yes.

Q You didn't use any of those numbers?

A I used -- I changed my mind with -- I was convinced that a hard rudder had not been put on from that report. I found a number of things that I didn't agree with in the report, but I did use that portion of it, yes.

Q Did you also conclude that less than 10 degrees of rudder was used at any particular time from 2355 until the grounding occurred?

A Yes.

Q You did?

A yes.

Q What degree of rudder did you conclude was used?

A I didn't come up with a specific amount. It was less than 10, more than four. Somewhere

around seven or eight degrees. We're talking about average rudder. We're not talking about...

Q Right. Average.

A ...the actual rudder. We're talking about over a period of time what the average rudder was.

Q Now, Are you familiar with -- strike that. Did you look at any charts that gave you precise soundings in the area of Bligh Reef?

A No charts, no sir.

Q Wouldn't that have assisted you to support your conclusion by looking at a detailed sounding chart and running your track line to it?

A If you'll pardon me, you're nitpicking. I didn't calculate this with the intent of identifying every rock on the bottom, or whether the vessel was five feet to the left, or five feet to the right.

The purpose of this is to give the jury an idea of what occurred.

Q Well, you'll have to forgive me. I'm not nitpicking in the sense that you came to a certain conclusion that contradicts what the evidence is in this case. I want to test the theories and the basis for your conclusion.

A Okay.

Q So, I want to know if you looked at a detailed sounding chart of Bligh Reef to make a determination as to whether your theory that the vessel was aground at five minutes after midnight was correct?

A No. I didn't.

Q You know that they're available, do you not?

A I know they're available in a lot of places. I was not aware that there was one available here.

Q Are you familiar with the U. S. Department of Commerce Hydrographic Survey H-9384?

A No. I've never seen it before.

Q You've never seen it before?

A No.

Q You didn't even know it existed, did you?

A That's correct.

Q This -- these are soundings of Bligh Reef, are they not?

A That's what it purports to be. What's the date on it?

Q 1973.

A Okay.

Q In any event, you made no attempt to look at

any chart with detailed soundings?

A That's correct.

(1548)

Q Sir, you make certain calculations with respect to your theory that the vessel hit twice, is that correct?

A Yes, sir. You talking about the speed and time?

Q Yeah. Speed and time...

A Yeah.

Q ...distance.

Let me show you -- oh, you have them in front of you.

A Yes. I don't have the same copy you did, because when you were talking to me the other day I noticed an error in it and I corrected it.

Q Okay. When did you make these calculations?

A Initially?

Q Yes.

A Last week.

Q Was that the first time you made these calculations?

A Yes.

Q Was that the first time you came up with this theory of two hits?

A No, sir.

Q Did you speak to Mr. Vorus about this theory of the vessel hitting twice?

A I'm sure it came up in casual discussion, but I never went to him and said, "What do you think?" But, I'm sure it's come up in casual discussion.

Q Did you see Mr. Vorus' letter of September 11th, 1989, which we marked as Exhibit AA for identification?

A No, sir.

Q You've never seen this?

A Not to the best of my recollection, no, sir.

Q Okay. I would like to read you a paragraph...

MR. COLE: Objection. Hearsay.

MR. CHALOS: Your Honor, if he relied on any of this in form or substance to forming his opinion.

THE COURT: Well, you could ask him.

Q (Captain Greiner by Mr. Chalos:) Let me show you...

THE COURT: He's never seen it. He said he's never seen the letter, Mr. Chalos, so how would you expect him to answer he relied on it.

MR. CHALOS: The contents, not the letter, itself.

THE COURT: Objection sustained, Mr. Chalos.

Q (Captain Greiner by Mr. Chalos:) Mr. Greiner, did you and Mr. Vorus have a discussion that it would be important for the District Attorney, for you, as experts for the District Attorney, to conclusively establish that there were two hits as a basis for saying that the logical conclusion of that would be that Captain Hazelwood would not try to back this vessel up?

A No, sir. I don't remember any discussion between Mr. Vorus and I on that subject.

Q Did you have any discussion with any of the other experts on this notion that you had to prove that the vessel hit twice?

A No, sir. There was never any discussion that we had to prove anything.

We were told to come up with our own conclusions.

Q And you say you didn't discuss that conclusion with Mr. Vorus before you came up with it?

A No, sir. I think the answer is, Yes, sir. That is correct. I did not discuss it with him.

Q Well, you're a good lawyer, right.

(Pause)

Okay. Let's talk -- may I approach the

witness again?

THE COURT: You don't need to keep inquiring for that. You've got free leave.

Q (Captain Greiner by Mr. Chalos:) Let me ask you to come to the chart table here for a second.

(Pause)

Would you draw on here how you believe this vessel was aground? Do you have a notion of how the vessel was aground?

A You're talking about when it was -- when it finally stopped?

Q Yeah. When she finally came to a rest.

A Basically, that was the principal part of contact.

Q All right. Could you give us a side view below?

A (No audible response.)

Q Okay. What part was resting on the bottom?

A You talking about port or starboard?

Q Starboard side.

A It also probably depends on the tide, but...

Q Well, I think you told us that the vessel remained on the bottom at all times anyway.

A I'm talking about the extent. In other words, if the vessel sits down on this and this is put

into it it might be over a larger...

Q Well, let's say it's approaching high tide. Is that what you're drawing there?

A In here.

Q Okay. This area right here at the stern, okay?

A This?

Q Yeah. Mark that with an A, if you will, as being the engine room area, wherever you would see the engine room, right.

A (No audible response.)

Q Okay. Now, then where's the propeller and rudder?

A (No audible response.)

Q Okay. Well, it's not exactly...

A No. You're correct, it is not.

Q All right. Can you, even though your scale is off there, can you tell us approximately how many feet the vessel would have to travel forward before the propeller and engine room were reached on that rock?

A Approximately 400 to 450.

Q Would you right that down? 450 feet.

So, before the vessel engine room would be in danger of hulling, or the propeller, or the

rudder being in danger of striking that rock that it was aground, the vessel would have to travel 450 feet?

A Yes.

Q Okay. In your calculations did you do any calculations as to how many tons this vessel was aground?

A No, sir, I didn't.

Q Could you explain to the jury what we mean by tons aground?

A The amount of weight that is supported by the rock, as opposed to the buoyancy of the vessel.

Q And you made no such calculations?

A No, sir.

Q Did you make any calculations as to what thrust this engine could give?

A No, sir.

Q You made no such calculations?

A No. I did not.

Q And I take it you also made no horsepower calculations on this engine?

A No, sir. I didn't.

Q Now, when you say you believed that the risk created by Captain Hazelwood in maneuvering the vessel after the grounding was that he would go

forward?

A Yes.

Q And damage his engine room...

A Yes.

Q ...and his propeller...

A Yes.

Q ...and his rudder?

A Yes.

Q Do you know how much thrust would have to be generated by this vessel's engine before the vessel could move even one inch?

A No.

Q You don't?

A There's no way to calculate it. We don't know the amount of -- the total amount of contact area, the intrusion and how much it will take. However, we're looking at it with hindsight, and the captain didn't have that knowledge at the time.

Q That's not my question.

My question is, there are formulas for determining how much thrust would be needed to move this vessel one inch, are there not?

A With no rock?

Q With a rock the way it was aground?

A Well, you'd have to make certain assumptions, yes.

Q You didn't make that calculation?

A No, sir. I didn't.

Q So, when you say that he risked damaging the engine room and the propeller, you really have no basis for saying that? In other words, you don't know if Captain Hazelwood's vessel was capable of moving even one inch forward in the manner that she was aground?

A Obviously, it wasn't. It didn't move forward, apparently.

Q Is it your opinion that this vessel, in spite of the use of the engine and rudder did not move forward?

A Not significantly, no.

Q And is it also your opinion that there was no further damage done to the vessel subsequent to the grounding by the use of the engine?

A No, sir. I didn't say that.

Q Do you have an opinion?

A Yes, I do.

Q Was there -- did you see any evidence of such damage in San Diego?

A I didn't see specific evidence of it, no.

Q So, you're speculating that there must have been some damage?

A Well, yes.

Q The type of damage that you're speculating about, would that have created any more of a spill in this case?

A In actuality, no.

(2014)

Q Now, sir, you've never been, or perhaps you have been on a vessel that ran aground?

A I've been on a vessel that's run aground, but it was an intentional grounding.

Q When you say intentional, what do you mean?

A It was a tanker that I was riding down in the Gulf area, and as it left the dock they put the bow into the bank in order to turn the tanker around. The bank was known to be soft mud.

Q Uh-huh (affirmative).

You weren't navigating at the time, I take it that was...

A No, sir.

Q ...somebody else?

A I was on the bridge, but I wasn't navigating.

Q Okay. The vessel ran into the bank?

A Yes, sir.

Q Soft mud?
A Yes.
Q And how did she come back?
A She continued to swing on hard rudder and there was a tug that, when she had backed around, pulled her free of the bank. I'm sure other ships...
Q In other words, they pulled her backwards?
A Yes.
(Pause)
Q Sir, would you agree that when this vessel ran aground she was hard aground, given the evidence...
A After it stopped, yes, sir.
Q Okay.
A With good hindsight, yes, sir.
Q And using that same good hindsight, would you agree that -- well, strike that.
I'd like to talk a little bit about this red sector that you drew. This is what you're talking about here with the red sector is what you would expect someone that's on the bridge of a ship looking back at Busby Island light would see in that particular area?
A If the vessel was within it, yes, they would.

Q Okay. So, if the vessel is anywhere beyond this dotted line someone on watch, standing on the bridge wing looking back at Busby Island light would see a red light, isn't that true?

A If they were beyond this point here on the track line, yes.

Q Okay. But, someone on the bridge wing, let's say at 2355 -- 11:55 wouldn't see any red light?

A That's correct.

Q Okay. Sir, have you reached any conclusions, or do you have any opinion as to whether if a turn were started at 2355, using 10 degrees right rudder on this vessel and the way she was loaded and the speed she was traveling, whether she would have missed Bligh Reef?

A Yes, sir.

Q What's your opinion?

A It would have missed it.

Q Have you calculated by how much?

A No. I've seen the calculations in your report, but I haven't calculated it independently, no.

Q Okay.

A I'm sorry. In the NTSB report.

Q All right. Now, you see this portion right

here? It's 55 and 38 fathom mark?

A Yes.

Q Just slightly below the 2355 fix?

A Yes.

Q If a 10 degree right rudder was placed on this vessel given the condition she was in and the speed she was traveling, do you have an opinion as to whether she would have missed Bligh Reef?

A Yes.

Q What's your opinion.

A It probably would have missed Bligh Reef?

Q And, again, you haven't done the calculations?

A That's correct.

Q If the turn started at a minute and a half after, using your figures, and a 10 degrees right rudder was placed on the vessel in the condition that she was in at the speed she was traveling, do you have an opinion as to whether she would have missed Bligh Reef?

A She may have passed over the 20 fathom mark...

Q That's 120 feet.

A I know that. And that's also when you should be considered in that area. It goes up very rapidly.

Q All right. Aside from being concerned, she

still would have made it, in your opinion?

A At a minute and a half after midnight, yes.

Q Sir, there's been some talk by some witnesses that after the grounding the captain used full maneuvering speed, do you recall that?

A Yes, sir.

Q Do you know how much horsepower this engine can generate at 55 revolutions?

A No, sir. I don't.

Q Do you know how much horsepower this engine can generate at full sea speed?

A No, sir. I don't.

Q I take it you didn't try to acquaint yourself with those characteristics of the vessel?

A No, sir. You asked me that before and I said I did not do anything with regard to horsepower.

Q Sir, if the captain's intent as you've testified was to go forward and try and get off the reef would you expect him to use 55 rpms or the full sea speed if he was hard aground as you described?

A I'm not familiar enough with the plant to know if the plant can go directly up to full sea speed without going through the computer load up system.

I think that you may be able to bypass it and do that, but I don't have that specific knowledge. From the bridge control, the best knowledge I have is that you can go to full maneuvering speed directly.

Q I want you to assume for the moment that the engine has a feature that permits the captain in an emergency to use full sea speed just be pressing a button. If, in fact, he was trying to drive this vessel over, off the reef, would you have expected him to go to the full sea speed at that point?

A I can't anticipate what this captain would have done under those circumstances.

MR. CHALOS: Your Honor, if we could have a short break I think I can wrap up fairly quickly. I just need to gather up my notes.

THE COURT: We'll take our break. So, don't discuss the matter among yourselves, or with any other person and don't form or express any opinions.

THE CLERK: Please rise. This court stands in recess subject to call.

(2377)

(Off record - 12:14 p.m.)

(On record - 12:31 p.m.)

(Jury present)

THE COURT: Mr. Chalos.

MR. CHALOS: Thank you, Your Honor.

Q (Captain Greiner by Mr. Chalos:) Mr. Greiner, I'd like to go back to my last question. Do you recall the question that I asked you?

A No, sir.

Q The question is that if Captain Hazelwood was truly intent on getting this vessel off the reef by going forward as you believed he was...

A Yes, sir.

Q Would you consider it reasonable to then assume, as an expert that he would use the fullest power available to him to do that?

MR. COLE: Objection. Speculation.

THE COURT: Objection overruled.

A He may choose not to, because he may feel that if he used that amount that if he needed that amount in order to move the vessel it could damage the vessel.

Q (Captain greiner by Mr. Chalos:) Well, wouldn't he, then, be acting prudently by using less than the full power...

A I don't consider going forward at all was prudent.

Q All right. Let's talk about that, then. You can't tell us, sitting here today whether using his engines at 55 rpms could have moved the vessel one inch, let alone 450 feet that you said would be necessary before he risked damaging his engines?

A You are correct.

Q I take it you're not a salvage expert?

A That's correct.

Q And you wouldn't hold yourself out as an expert on salvage?

A No, sir, I wouldn't.

Q Would you agree, though, that the hulling that you saw in San Diego occurred either in your hypothetical first, or second hit?

A Yes.

Q Now, you spoke about the rudder being used after the grounding?

A Yes, sir.

Q Okay. And you spoke about a calculation that you made that the vessel's head moves something like 94 feet because of the...

A Yes, sir.

Q I take it you assume that that was all done as a result of rudder movement?

A Yes, sir.

Q Did you in any way figure that perhaps the ship's heading was changed by the tide coming in and the vessel pivoting on the rock?

A Did I consider it? Yes, I did. The report for the tides and currents in that area are weak and negligible. And if there was a current in that area I would only expect it to move the vessel in one direction, but not back again.

Q Did you come to any conclusion -- strike that.

You said that the use of the rudder in your opinion was consistent with someone trying to get off the reef?

A Yes, sir.

Q Again, you've never been a master of a ship.

A That's correct.

Q And, again, you don't know what was in Captain Hazelwood's mind at that particular point?

A You're absolutely correct.

Q And you said that the only thing you can think of with whatever experience you have in these type of matters was that he was trying to get off the reef?

A Yes, sir.

Q Did it occur to you that perhaps the rudder

was being used by the captain to make a determination as to how and where he was aground?

A No, sir. But, it would not be a safe way to do that.

Q Captain Greiner, it's true, is it not, that one of the ways you can determine how your vessel is hung up on a reef is to find out whether the vessel swings in a certain way, or not? Isn't it true?

A I would assume that that could be done, but that's not the way it's supposed to be done.

Q But, you're not a salvage expert, and you're not a captain?

(2600)

A I've been a deck officer. I've not been a captain, no. I've navigated a lot of vessels.

Q I thought what you told us earlier was that you were a chief engineer?

A No. You asked me at a specific point in time on a specific vessel. That's correct.

I've sailed as a deck officer on two other vessels and I've gone aboard other ones, buoy tenders, and for instance, I've taken a buoy tender through Wrangell Narrows as a navigating officer.

Q That was back in the 50s.

A 60s.

Q Early 60s? Late 60s?

A Mid 60s.

Q I take it in those instances you weren't aground?

A No, sir.

Q And you weren't the commanding officer?

A That's correct.

Q And whatever decision would have been made if that vessel ran aground would have been made by the commanding officer?

A After it went aground?

Q Uh-huh (affirmative).

A Oh, absolutely.

Q Now, you said even though you don't know whether this vessel was capable of moving and that, you said that the risk you perceive was that if this vessel moved forward 450 feet the engine room would be hulled?

A Yes.

Q But, you didn't do any calculations to see if that would in any way effect the stability of this vessel, did you?

A I don't have to.

Q You don't have to? Why not?

A I know it will effect the stability of the vessel. If you put water in the engine room it's certainly going to effect the stability of the vessel.

Q Well, in what way would it effect it? Did you calculate that?

A I didn't calculate it, no. I didn't need to calculate it.

Q And you said that -- well, strike that.

Just to clear something up, you used the term gyro when you were referring to the course recorder?

A Yes, sir.

Q What you're talking about there is the gyro compass on the vessel, rather than the automatic Mike, am I correct?

A Yes. That is correct. The input for the course recorder comes from the gyro compass.

Q Sir, in response to -- before I ask you that, you didn't see any evidence of any additional damage being caused by the vessel moving with the use of the rudder, did you?

A There was none that I observed. As I indicated that are plates missing that were cut

off later, and I couldn't tell whether they had been damaged, or not.

Q And, certainly, by using the rudder he didn't move the vessel forward at all?

A No. It was an attempt, but as far as I know it didn't move forward.

Q Okay. In response to Mr. Cole's questions on Friday, you said that you had been to fire fighting school?

A Four times, something like that, yes.

Q Is that the fire fighting school in Bayonne, New Jersey?

A No, sir. I don't think I've ever been to that one. I've been to one in Cape May, one in San Diego, one in Newport, one in Philadelphia.

Q That's the one where they put you in a tank and set the tank on fire and you fight the fire for a couple minutes and then you run away? That's the one?

A No. I wouldn't -- excuse me for laughing. I wouldn't describe it that way.

Q You know the one I'm talking about?

A Well, they light the fire in a simulated vessel, and then you go in and fight the fire. The first time they just run you through without

a mask so that you can understand what happens when you're in smoke.

Q Do you consider yourself an expert on fighting fires on board the ship?

A Yes.

Q In looking at your résumé I noticed that you listed certain casualty investigations that you've been involved with?

A Yes, sir.

Q But I also noticed that you omitted the Prospectus Southlyn (ph)?

A Prospectus Southlyn, yes, sir.

Q You omitted that from the casualties that you've been involved with?

A I did.

Q Did you omit it for a purpose?

A No.

Q In that particular casualty you were the commanding officer?

A Captain of the Port, officer in charge of marine inspection, yes.

Q And you were the ranking officer when you went on board?

A Yes, I was.

Q The ship was on fire?

A The ship was on fire.

Q You had to make some quick decisions, didn't you?

A Yes.

Q There were certain risks that were involved?

A Yes.

Q And you made the decisions?

A Yes.

Q Somebody got killed, didn't they?

A Yes.

Q And another guy got seriously injured?

A That's correct.

MR. COLE: Your Honor, I'm going to object as to the relevance of that line of questioning and move to strike.

MR. CHALOS: Your Honor, the relevance is that...

THE COURT: No. I don't want an offer of proof in front of the jury based on what I've heard so far. Approach the bench please.

(2896)

(Whispered bench conference as follows:)

THE COURT: Okay. Your motion to strike is denied. You waived it by not making an objection as to relevance when the questions were asked.

Just a further question, what are you going to try to show with further questions?

MR. CHALOS: The situation (indiscernible - whispering) you have to make a decision (indiscernible - whispering).

THE COURT: Okay.

MR. COLE: I will waive my objection, if he's gonna -- if you're not going to strike it, then I'm going to (indiscernible - whispering)

THE COURT: Well, the problem with this is Mr. Cole didn't have notice of what you were going to ask. The fact that he was involved in an action where somebody else may have been killed is bringing up a prior act that might (indiscernible - whispering) and I don't know what its probative value is in this case. Probably you should have brought it to my attention you were going to bring up some (indiscernible - whispering) before.

MR. CHALOS: I didn't bring it up for that purpose, Your Honor. There are situations where important decisions have to be made...

THE COURT: All right. You've explored it far enough. I've overruled the objection. I'm going to sustain the objection into any further inquiry in this area.

(End of whispered bench conference)

(2970)

THE COURT: The objection as to relevance is sustained any further inquiry into this area.

Q (Captain Greiner by Mr. Chalos:) Captain Greiner, I take it that you've had situations as Captain of the Port and as a Coast Guard Officer where you had to make quick decisions under very trying circumstances?

A Yes, sir.

Q I suppose sometimes things are done right and sometimes things are not in the course of events?

A Hopefully they're done right.

Q But, you don't know that at the moment that you're doing it. It's only in hindsight that you go back and say, "Well, perhaps I would have done something differently"?

A Yes, but you're trained and, in other words, the type of job you are in is something that you're trained for. And you're trained for the unusual. And so, when it comes along, usually you're prepared for it. You've thought it out in advance, even though it may be an emergency.

Q Captain Greiner, in that regard looking back on the casualty now, would you agree that this

was a major casualty, the grounding of the Exxon Valdez?

A Yes.

Q And would you also agree that it was a major salvage operation?

A Yes.

Q And would you agree that the type of casualty and type of salvage operation that we're talking about goes beyond any training that a crew member on a ship would have, captain or otherwise?

A Salvage, certainly. A master is not equipped for salvage.

Q Well, the moving of the vessel off the reef after the grounding is in the nature of a salvage operation, is it not?

A I guess one could call it that. I don't refer to it as a salvage operation, no.

Q Well, in order to remove a vessel that's stranded, whether you do it at that particular moment, or you do it later, that's called salvage, isn't it?

A Okay. I think we're just arguing a matter of semantics as to what you call it.

Q I think you're right. I have no further questions.

(3100)

REDIRECT EXAMINATION OF CAPTAIN GREINER

BY MR. COLE:

Q As Captain of the Port you were required to make decisions that effected people's lives, is that correct?

A Yes, sir.

Q So, you were aware that you would ultimately be responsible for those decisions, is that correct?

A Absolutely.

Q Mr. Chalos asked you about ways to find out the location of the damage, and he specifically talked about using the rudder. Are there other ways to find out where the location of the damage is, and how the vessel shifts?

A Yes. Absolutely. The normal method of doing it is to take soundings around the vessel using a lead line. To determine what the depth of the water is in the various spots you look at your...

Q Let's just slow down here. Would you explain to the jury what a lead line is?

A Okay. A lead line is a line. It's a line with a piece of lead on the end of it. And you go around to various positions on the vessel and

you lower -- you can feel when the lead hits the bottom, in other words...

Q Various positions on the level, you mean on the edge of the...

A On the edge of the ship, I'm sorry. On the edge of the ship.

And you can feel when it hits the bottom, and it's marked so that you can tell what the depth is.

Q Okay. Let me just give you an example. If a vessel were sitting, like let me set that there.

How would the lead line work if the vessel was sitting like this and there was open water here and in front?

A You walk around the vessel and you drop the lead line and you measure the depth of water here, you know what the draft of the vessel is, itself. And since the depth of the water is greater than the draft of the vessel, you know the vessel isn't sitting on the bottom there. And then you do the same thing as you go around, and up here, you're going to find that your draft and your depth of water are identical, and so you'll know that the vessel is aground at that area and you can work your way on around and do

that all the way around the vessel.

Q Now, Mr. Chalos asked you about the reconstruction, what evidence did you have through the information that was provided you that the track line that you made there was consistent with the track line, with the physical information?

A Well, we have a number of things. You start out with the position of the grounding, with a position off Busby light, with a position here on Buoy 9, with a position coming out of Valdez Narrows. There are two other positions in here which not much is said about.

Then you take the track line and run it along the course, and over those, go back and check and see if your speeds that you've calculated match those. And if they do match, that's a confirmation of it.

You have to weigh the various pieces of information, too, because they won't always agree. For instance, times don't always agree. Various clocks are set in different times. You notice in the spreadsheet that there's a difference between the bell log and the bell logger of a minute, or two minutes. But, taking

all those into consideration, then you come down with a track line that best fits all of the information.

Q Is there certain inaccuracies with just the course recorder, itself?

A Yes, sir.

I pointed out here that there is probably a one degree error here. And, of course, the course recorder is run by a clock. We don't know that the clock that the course recorder is run by is identical to the clock which other things, for instance, the rpm are kept by.

There is, here, a question as to whether there is an error in time. In other words, NTSB has approximately a minute. Their chart is a minute different than this one. I don't know whether they found that this was in error, in other words that the times here were in error by one minute and corrected theirs for that, but you will notice that there is a difference between -- and you can see right here that there's -- that's about minute two, and I think they show -- I say minute two. Then, at 11:42 or 42-1/2, where the NTSB one shows it about a minute earlier than that.

Q Now, what about the course recorder's accuracy when it's on the edges of quadrants?

A When it's on the edges of quadrants I -- this is the area where play in the mechanism will most show up.

I guess I should point out here, too, that it went above -- at the end of the quadrant it went above the top line and by about half a degree.

Q Well, you were explaining the inaccuracy on the quadrants, themselves. Would you explain that?

MR. CHALOS: Your Honor, this goes beyond the cross examination. I don't really understand what we're doing here. Is he impeaching the chart that Captain Greiner drew here?

THE COURT: Objection overruled.

Q (Captain Greiner by Mr. Cole:) Is there any inaccuracies noted that say when the course recorder is recording on the edge of a quadrant?

A Well, I pointed out this one here and this one up here, actually, that's not on the edge of a quadrant. Well, it is. It is. This is the last degree. I pointed those two out. Those are the only ones that I see.

Q How about reliance on crew member's

statements? Were you aware that Mr. Kagan denied using a counter rudder to the NTSB and to a court here in this trial?

A Yes, sir. I am.

Q And would that be consistent with the conclusions that you've drawn in this case?

A Yes, it would.

Q The rudder orders that people gave, did you see any evidence in the course recorder that any rudder orders were executed before 12:01, while it was on 180, after it steadied up?

A No, sir.

Q Would that include the period 11:56, 11:57, 11:58?

A Yes, sir. That's constant there.

Q Is there any way to reconstruct exactly the turn, the course, that the Exxon Valdez took out that Port that day?

A No, sir. There isn't.

Q And what...

A Not that I'm aware of.

Q What have you tried to do in this?

A I've tried to give a general representation so that the jury could understand the track line of the vessel and where different events occurred,

and putting in times there.

Q Now, Mr. Chalos asked you about the damage that witnesses had testified to. If Mr. Radtke had indicated that he had heard a sound coming that seemed to travel from the bow to the stern, would that be consistent with the damage that you observed in this matter?

A Yes, sir.

Q Now, these charts that we have here, how accurate are they as far as fathom marks? Do you know when these were made?

A No. I don't. I've been involved with chart analysis before because when the ARCO Anchorage went aground there was a question as to the type of bottom and where rocks were and such like that. And I had the occasion to talk to the cartiographers [cartographers] back in Washington, D. C., with charts that are older charts there may be rocks in between where they've taken the soundings. With the newer ones they're usually aren't. They're done with a different method.

Q Did you use the various testimony of witnesses about rudder commands that they said were ordered and executed in coming to your conclusions in

this?

(3748)

MR. CHALOS: Objection, Your Honor. Leading the witness.

THE COURT: Overruled.

A The primary thing that I used was the actual course recorder, because this shows the response of the vessel. Whether a command was given, or not is not really relevant, it's whether it was executed. And if it's executed, it's shown by the course recorder.

Q (Captain Greiner by Mr. Cole:) Can you tell the rudder angle that was ordered from the track line of the course recorder?

A No, sir.

Q Can anybody?

A No. They can't tell what's ordered. They may be able to analyze the average of what was given, but not what was ordered.

Q Did you have to make any calculations as to the horsepower of this engine to determine whether or not Captain Hazelwood created a risk of further damage by trying to move this thing ahead?

MR. CHALOS: Objection, Your Honor.

Foundation. Leading.

THE COURT: Objection overruled.

A No, sir. I didn't.

Q (Captain Greiner by Mr. Cole:) Why is that?

A Because as one sits on the bridge one doesn't know how deeply impaled the vessel is, and the amount of horsepower to get it off can't be calculated sitting on the bridge.

Full power, full maneuvering power is a significant amount of power, and if it was able to move the vessel, could cause additional damage.

Q You indicated that you did not see damage done from the twisting motion of the vessel?

A That's correct.

Q What are the reasons for that?

A Could be that the plates were missing, or that the area was compressed later from sitting on the rock.

MR. CHALOS: Your Honor, I move to strike. Speculation.

THE COURT: It's been waived by not raising the proper objection, but it would have been overruled anyway, so go ahead.

Q (Captain Greiner by Mr. Cole:) And when you

went aground the one time, was that in mud, or did you hit rocks?

A Mud.

(Pause)

Q I'm showing you what's been marked for identification as Plaintiff's Exhibit 157. Do you recognize that at all?

A I have seen it here before and I recognize what it purports to be, yes.

Q Is there anything wrong with the damage this represented in that diagram?

A I'm not sure about the damage. The area that was aground appears to be incorrect.

MR. CHALOS: Your Honor, I'm not sure I understand this. He's shown an exhibit and he's got to say what's wrong with it?

THE COURT: Mr. Cole. That seems like a little deviation from what we normally use an exhibit for.

MR. COLE: Well, that's because I'm not admitting it through this witness, Your Honor. I'm just having Captain Greiner identify this.

THE COURT: Are you proposing you're going to admit it through some other witness after this witness has indicated it's improper, there's something

incorrect about it?

MR. COLE: Yes.

THE COURT: All right. Then you've laid a foundation that it's incorrect and you're going to try to admit this through another witness?

MR. COLE: Right.

MR. CHALOS: Your Honor, I would object, because I think any witness that he would admit it through would be one of his own witnesses. It's not something that's drawn by our witnesses.

THE COURT: Is it something that the defense witness you expect to propose admission on?

MR. COLE: Your Honor...

THE COURT: Don't show it to the jury.

MR. COLE: Sure.

THE COURT: No. Just answer my question. When you say you expect to admit it through another witness is it through your own witness?

MR. COLE: Yes.

THE COURT: Okay.

All right. Do you still have an objection? Pointing out irregularities...

MR. CHALOS: I guess I don't. I'm just confused by the process...

(Tape: C-3643)

(003)

THE COURT: Well, I think I was a little confused too, but we'll let Mr. Cole go and see what it does.

Mr. Cole, see if you can tie this up.

Q (Captain Greiner by Mr. Cole:) You were talking about the one inaccuracy...

A Yes, sir.

Q ...that you perceived...

A The area of grounding here is not consistent with the damage on the vessel.

Q But, the other parts are?

A Yes.

Q I have nothing further.

RECROSS EXAMINATION OF CAPTAIN GREINER

BY MR. CHALOS:

Q Mr. Greiner, you told Mr. Cole that as Captain of the Port you felt responsible for, I suppose, the people that you oversaw?

A Yes, sir.

Q And I take it, though, that you have never been brought up on criminal charges for something that you did in that capacity?

A No, sir. Nor even reprimanded.

Q And you weren't court martialed for the

Prospectus Southlyn matter, were you?

A No, sir. I wasn't in charge of the firefighting on there.

Q Now, you spoke about soundings. You said that you would take soundings to determine how the vessel is aground?

A Yes, sir.

Q Well, a sounding wouldn't tell you what the vessel, or how the vessel is aground, would it? It would just tell you what the water is around the vessel? Right? In other words, if she was aground in the center of the vessel, underneath, soundings wouldn't tell you anything in that regard, 'cause you could have good water on either side?

A Theoretically you could have a pinnacle. And the ship was on the middle of the pinnacle and you have deep water on either side. I would agree with that. You could.

Q And the only way to know how you are hung up in that situation is to use your rudder, not to take soundings?

A No, sir. It isn't.

Q It isn't?

A No.

Q That's your opinion?

A Absolutely.

Q Based, again, on...

A That's not the only way to do it, no.

Q But it's one of the ways to do it, isn't it?

A It would work.

Q Okay. Now, just to clear something up again, would you agree with me that if the vessel was in 38 fathoms of water at five minutes after midnight, in this case, that your theory of the vessel striking at that time would be incorrect?

A I think it's five and three quarter minutes, or something like that.

Q All right. Let's say six minutes.

A Six minutes. And it depends on whose clock you're using. Yes. If it's in 38 fathoms of water it's not going to be aground.

Q Now, you spoke a little bit about the clock, you had an opportunity to look at the clocks on this ship, didn't you?

A Yes.

Q That was on April 2nd?

A Yes.

Q And you said in one of the reports that you wrote even though you didn't test the clocks you

believed that they were essentially correct?

A I don't remember that I said that, but if you would refresh my recollection I'd appreciate it.

Q Yes, I will.

(Pause)

A I think you misquoted me. I'd prefer the whole sentence to be read.

Okay. In answer to your question, what is said is, "The clocks on the vessel, although apparently operating correctly were not checked for accuracy, since they had all been reset for Daylight Savings Time the day before I came aboard."

So, the check was -- there's no assertation of accuracy of the clocks.

Q I take it though, if you wanted to check them at that point you could have certainly done it to see if there was any difference between the clocks?

A Certainly I could have, but that wouldn't prove anything.

Q Now, again, when you plotted that track line you said that you use certain empirical data. And the empirical data that you used was all prior to 2355, is that right? In terms of fixes

that were taken by the vessel and other...

A No, sir.

Q That's not correct?

A That is not correct.

Q Okay. Let me bring you down then, to what you marked as 0002.

A Yes, sir.

Q Two minutes after midnight?

A Yes.

Q Okay. It's at that point that the vessel started to use some rudder?

A Yes.

Q You've told us, though, that subsequent to that point in time you didn't calculate how much rudder was used?

A That's correct.

Q Okay. And certainly the rudder would have -- the use of the rudder would effect the speed?

A Yes.

Q Okay. So, anything after 002 might, or might not be accurate on this particular chart, depending on what rudder you used?

A You asked me before whether I used everything that was -- only things that were before that and I answered your question no. The reason I

answered it no is because this position here is one of the positions used.

Q Right.

A And that's where it was going to end up. That's where the ship ended up.

Q We're saying the same thing. You say the vessel was aground here. I assume and you assume that that's about five to six after midnight?

A Seven, somewhere in that area.

Q Or seven. Okay.

A Yeah.

Q What I'm saying to you, though, you didn't go back to 002 and calculate minute by minute the movement of this vessel using the...

A Angle of rudder.

Q Right.

A That is correct. I did not.

Q Mr. Cole asked you by looking at the course recorder...

A Yes, sir.

Q You can't -- there's no indication of rudder orders being given before a minute and half after midnight, is that right?

A Yes, sir.

Q It's true, is it not that the course recorder

wouldn't tell you when an order was given. It will only tell you when an order is carried out?

A That is correct.

Q Okay. So, to be more accurate, what the course recorder is showing you is the moment that the vessel's heading is changing?

A That's the way I answered the question, yes, sir.

Q Yes. And, in fact, Mr. Cousins could have given an order to the helmsman at 2355, 11:55 and the helmsman didn't carry it out for five minutes? That could have happened?

A That could have happened.

Q And the course recorder won't tell you that?

A You're right.

Q Now, Mr. Cole asked you about Mr. Radtke's testimony, where he said he felt the sensation that appeared to him to be something starting forward and working its way back?

A Yes, sir.

Q You also remember reading that Mr. Radtke said the whole thing took about 15 to 20 seconds?

A No, sir.

Q You didn't read that?

A I didn't read Radtke's. He gave me...

Q A hypothetical?

A ...a portion of what Radtke was supposed to have said. I have not read the rest of it.

Q And Mr. Cole didn't give you the portion that said he only felt it for about 15 to 20 seconds?

A No, sir.

Q Now, that would be inconsistent with your theory, wouldn't it, if that's all he felt it?

A If the vessel was stopped at the end of 15 seconds and if it went aground in 15 seconds and then it was stopped at the end of 15 seconds, it would be inconsistent, yes.

Q Now, you've said that these particular charts, the soundings are not accurate. I take it you were out to the ship on the 2nd of April. You didn't take the opportunity to take soundings in the area to in effect bolster the argument that you're making, or the opinion that you're giving here?

A You're question starts with a misquotation of what I said.

I didn't say that the soundings were inaccurate.

Q What did you say?

A I said that there may be other things in

between the soundings that don't show up. In other words, in some cases these are taken with a bottom -- straight bottom sounding fathometer, or in some cases maybe with a lead line, although I doubt it in that depth of water. And it may not indicate something that is a short distance away.

Q But, the bottom line, though, you didn't do any soundings, yourself?

A That is correct.

Q You said you didn't have to make any calculations to determine if Captain Hazelwood created a risk by using the engine here, is that right?

A That's correct.

Q Would you agree that a risk is only created in those situations where something would happen as a result of your actions?

MR. COLE: Objection. Speculation. And misstatement of the law.

THE COURT: I'm going to let the question stand. We'll clear this up with the jury instructions.

A Would you repeat it?

Q (Captain Greiner by Mr. Cole:) In other words, before you can assume that a risk exists, the actor who's supposedly creating the risk has

to be capable of doing something. Do you agree with that?

A Has to be capable of doing it? Certainly he doesn't have to have the results. I don't know whether he has to -- under the law, I don't know whether he has to be capable of it, or not. He may attempt to do something, believing he can do it, and the fact that he -- it isn't physically possible, I don't think -- you're asking me to interpret the law and I...

Q Well, let me put it to you a different way. You've said here the risk that Captain Hazelwood was creating was running his ship forward 450 feet and damaging the engine room.

A Or laterally.

Q Uh-huh (affirmative). 450 feet?

A No, no, no. When he moved it from side to side there could be a rock alongside the stern of the vessel, which when he used the rudder it could come up against and it could hull the engine room, or hull a different part of the vessel.

Q But, you don't know sitting here today whether in fact there was a rock?

A No, sir.

Q Okay. What you do know, though, you would have to move 450 feet forward to damage the engine room, at least as far as that risk is concerned?

A As far as the rock that it was sitting on is concerned, yes.

Q Well, before you say that he created that kind of risk, wouldn't you need to know that he was capable of doing that?

MR. COLE: Objection. Asked and answered.

THE COURT: You're invading on the court's providence now. I'll instruct on the law in this area. This witness is not qualified to give that answer.

Objection sustained.

(410)

Q (Captain Greiner by Mr. Chalos:) Now, you said that full maneuvering speed on this vessel is significant power, is that what you said?

A I used that word, yes.

Q You're a former chief engineer, or the equivalent of a former chief engineer?

A Yes, sir.

Q Is it your testimony that you didn't bother to find out what the power curves were on this vessel?

A No, sir.

Q Don't you think that would be important in order to come to the conclusion that you came, that is knowing what power this vessel had at 55 rpm?

A Well, it's sufficient power to drive a vessel of large size at 12 knots.

Q Well, running at 12 knots is not the same thing as being aground, wouldn't you agree?

A You're correct.

Q Okay.

A You're correct. I agree.

Q So, before you can that it was significant power you'd have to first figure out how many tons were aground and how much thrust would be needed to move this, wouldn't you?

A If you are -- you're saying that you would have to calculate it. In hindsight that might be true. You might be able to calculate it and say that it would have been possible for him to do what I perceive he was trying to do.

Q Well, has anyone told you that it would have been impossible for him to do what you perceive he was trying to do?

A I think that I said that I agreed that it was

impossible, because he attempted to move the vessel, and didn't. So, that it doesn't take somebody else to interpret it. It didn't move.

Q Wasn't it also impossible because the thrust that would have been required to move this vessel just an inch was so great that this vessel's engine, even running at full sea speed ahead couldn't generate even 99 percent of the thrust that was required?

A With hindsight that can be said. Yes, I agree. In other words, we know that there is a large are in contact and the power didn't overcome it. The acts speak for themselves. It didn't move.

Q Did Mr. Cole explain the law as it relates to risk to you? The creation of a risk?

A No, sir.

Q He didn't?

A Well, he explained it to the extent that he said that the results don't have to occur, it's the risk that's involved, and that's the extent of which...

Q That's how he explained the law to you?

A That's all that he told me, or that I recall that he told me. He may have told me more, but I

don't recall any more.

Q I have no further questions, Your Honor.

THE COURT: Counsel approach the bench for a minute, please.

(515)

(Whispered bench conference as follows:)

I'm going to have to put a call in to Judge Holland (indiscernible - whispering) but I want to find out how much longer you have now with this witness.

MR. COLE: About three questions.

THE COURT: Okay. Go ahead and ask him the questions.

REDIRECT EXAMINATION OF CAPTAIN GREINER

BY MR. COLE:

Q Based on your review of the records, do you believe Captain Hazelwood had any idea what horsepower was required to drive that vessel off the...

MR. CHALOS: Objection, Your Honor. How would he know what Captain Hazelwood knew?

THE COURT: I'll have to sustain that objection as a rule.

Q (Captain Greiner by Mr. Cole:) Mr. Chalos indicated one scenario of why this vessel didn't turn until 12:02. Are there other scenarios of

why this vessel didn't turn until 12:02? He said that if Mr. Cousins had given an order and Mr. Kagan had not followed it, the vessel wouldn't have turned. Are there other reasons why that could happen?

A Yes.

MR. CHALOS: Your Honor, my -- if I may object, my question went to in response to Mr. Cole's question, which was no rudder orders were given until 12:02. I wanted to clear up that you can't tell that from looking at the course recorder. I wasn't getting into any other...

THE COURT: Objection overruled. You may answer the question.

Q (Captain Greiner by Mr. Cole:) Are there other reasons?

A Yes.

Q Would you tell the jury what those would be?

A That the orders weren't given at that time. They weren't given until later.

Q Would it make a difference whether the vessel was on automatic pilot, or on gyro?

MR. CHALOS: Objection, Your Honor. This is going beyond recross.

THE COURT: I don't think so. I think you

brought that up. Objection overruled.

A Yes, sir. If it's on gyro, or automatic steering, movements of the helm will not result in the movement of the rudder, and there's no alarm on it.

Q I have nothing else. Thank you.

MR. CHALOS: Just two quick questions, Your Honor.

RECROSS EXAMINATION OF CAPTAIN GREINER

BY MR. CHALOS:

Q Mr. Greiner, did you read the testimony of Mr. Cousins and Mr. Kagan to the effect that they took this vessel off gyro at 11:53?

A I didn't read the testimony of Mr. Kagan at all. And the testimony of Mr. Cousins I don't remember the exact time, but I remember he said that he had taken it off, yes.

Q Okay. There's no indication by looking at the course recorder, or you have no reasons to believe that the vessel was on gyro after 11:53, do you? By looking at the course recorder?

A I can't answer that with the degree of accuracy I'd like to.

Q Okay. No further questions.

THE COURT: May the witness be excused?

MR. COLE: Yes.

THE COURT: Pardon me?

MR. CHALOS: Yes. Nothing from me.

THE COURT: Okay. You're excused.

A Thank you, sir.

(652)

(Witness excused.)

THE COURT: We'll recess for the day, ladies and gentlemen. We'll see you back at 8:15 a.m. tomorrow morning. Please remember my instructions not to discuss this matter among yourselves, or with any other person and not to form or express any opinions.

We'll see you back tomorrow. Please be safe.

Is there anything we need to take up, counsel?

MR. COLE: No.

MR. MADSON: I'm not aware of anything.

THE COURT: Okay. We'll stand in recess. Thank you.

THE CLERK: Please rise. This court stands in recess subject to call.

(663)

(Off record - 1:16 p.m.)

CONTINUED