UNITED STATES OF AMERICA

NATIONAL TRANSPORTATION SAFETY BOARD

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| Investigation of: | * | |
| LOSS OF THE SUBMARINE *TITAN* IN THE NORTH ATLANTIC OCEAN ON JUNE 18, 2023 | * | Accident No.: DCA23FM036 |

Interview of: JEROME SANTOS, Software Engineer
OceanGate, Inc.

Everett, Washington

Wednesday,
July 26, 2023

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Marine Board of Investigation
United States Coast Guard

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I N D E X


| ITEM | PAGE |
|---|---|
| Interview of Jerome Santos: | |
| By LT. [redacted] | 6 |
| By Mr. Neubauer | 33 |
| By Mr. Muise | 36 |
| By Mr. [redacted] | 37 |
| By LCDR [redacted] | 38 |
| By Mr. [redacted] | 47 |
| By LCDR [redacted] | 55 |
| By Mr. [redacted] | 59 |
| By LCDR [redacted] | 60 |

I N T E R V I E W

(1:30 p.m.)

LCDR [redacted] -- U.S. Coast Guard - NTSB investigation, and the Coast Guard is the lead agency, and we are conducting this interview under the applicable Coast Guard regulations.

What we're going to do is first go around the room and introduce ourselves and once you introduce yourself, if you could please state your affiliation is and spell your last name.

So I am Lieutenant Commander [redacted] I am an investigator with the Marine Board of Investigation, and my last name is spelled [redacted]

MR. [redacted] My name is [redacted] of Investigations NCOE, and my last name is spelled [redacted]

MR. MUISE: I'm Marcel Muise. I'm an investigator with the NTSB, and Muise is M-u-i-s-e.

MR. [redacted] I'm with the U.S. Coast Guard, and just here for digital forensics and (indiscernible).

LCDR [redacted] advisor to the Board, last name spelled [redacted]

MR. NEUBAUER: Good afternoon. I'm Jason Neubauer. I'm the chair of the Marine Board of Investigation, and my last name is N-e-u-b-a-u-e-r.

LCDR [redacted] And before we -- we have one member of the team who is joining us virtually. Ms. [redacted]

LCDR [redacted] Yes. This is Lieutenant Commander [redacted]

[redacted] last name spelled [redacted] I am a technical advisor to the Marine Board of Investigation.

LCDR [redacted] Thank you. And, Mr. Santos.

MR. SANTOS: Yes. Jerome Santos, OceanGate, software engineer. Last name is spelled S-a-n-t-o-s.

LCDR [redacted] And are you represented by counsel today?

MR. SANTOS: Yes.

LCDR [redacted] And, ma'am.

MS. SHVETS: Jane Shvets with Debevoise & Plimpton. Last name is S-h-v-e-t-s, representing for OceanGate.

LCDR [redacted] And so for the record today, today is July 26th, 2023. This is an interview with Mr. Jerome Santos. The time is 1330, and we are in Everett, Washington.

We are conducting this interview to examine the events surrounding the event -- to examine the events surrounding the events leading to the loss of the submersible *Titan* and five persons which occurred on June 18th, 2023, in the Atlantic Ocean approximately 435 miles south of St. John's, Newfoundland, Canada.

For your knowledge, you may change, modify anything that you say in this interview if you recall at a later time. You may also appeal the final results of any report of investigation that may result from this interview. And if you want some more information regarding Coast Guard marine casualty investigations, the Coast Guard Marine Safety Manual, Volume 5, can be found online.

Okay. And at this point, we're going to go ahead and begin

the interview, if you don't have any questions?

MR. SANTOS: Not at this moment.

INTERVIEW OF JEROME SANTOS

BY LCDR [redacted]

Q. Mr. Santos, can you please start off by giving me your brief education and relevant work history?

A. Yes. I graduated from Washington State University with a bachelor's in software engineering.

Q. It's not on. You're good. If it's playing, it can hear you. I just want to make sure we got it.

A. And OceanGate was my first job out of school.

Q. Okay. And what was your position at OceanGate?

A. Software engineer.

Q. Software engineer. And what does that mean?

A. Software engineer encompasses the life cycle maintenance of all the software that we created or that was adopted at the time of me joining, the overall maintenance of software and functionality.

Q. And I may have missed it. I'm sorry. When did you start with OceanGate?

A. January 2019.

Q. And how did you come across OceanGate once you graduated from college?

A. We had a school field trip to OceanGate, and I had a friend who got a job there not long after, and then when I graduated

after, he suggested that I come and then do some work while I looked for another job, and I ended up staying.

Q. And were you a full-time employee?

A. Not at the time.

Q. And can you talk to me a little bit about your -- so when you were first hired, was there an orientation? Was there any type of training that you went through?

A. At the very beginning, they wanted me to get used to and get familiar with the, you know, the architecture of their software. I did a lot of socket programming, and that's kind of where they started me off and some GUI or Crackle user interface stuff.

Q. Can you explain to me? I'm not a software engineer. Can you please explain to me what's socket?

A. Socket programming is -- it's a network protocol. It's just the passing of data between different entities.

Q. All right. And when you, when you joined OceanGate in 2019, did they already have software in place?

A. Yes.

Q. And were you familiar with that software?

A. No.

Q. And did you become familiar with it, and how did you become familiar with it?

A. I did become familiar with it, and just over time, just understanding the architecture of the software itself.

Q. Okay. And has that changed since then?

A. Has what changed?
Q. Has the software that when you initially came in with the company, has it modified or changed since 2019?
A. It's been modified.
Q. And did you do that modification?
A. I did some do some modifications, yes.
Q. And when we talk about software, are we talking, and please just walk me through maybe the whole software architecture and the way that it breaks down of the interface, but whether it's company policy, admin related or whether it's submersible related? Can you talk about -- are you -- did you work on both of those or was it --
A. Could you repeat the question?
Q. Yes, of course. So when you mention software, are we -- are you talking about software that was specific to the business or to the actual operation of the submersibles?
A. Specifically to the operation of the submersible.
Q. Okay. And can you talk to me about that software with regards to *Titan*?
A. Yeah. The software itself, the control program, it controlled the thrusters as well as various other, various other aspects of the sub, you know, whether it's, you know, dropping drop weights, just basically all of the, all of the systems in the sub that would pertain to controlling it.
Q. Okay. And, so did you create that program?

A. No.
Q. And you said -- was it the same program that was in place in 2019 for another submarine or --
A. That I'm not sure. It was already there, established when I came in --
Q. Okay.
A. -- the software, yeah.
Q. And how do you like manipulate -- I don't -- again, I'm not a software engineer. So how does that work? So are you creating code? Are you doing those types of things for the mechanisms to react to the controllers?
A. I see what you're saying, yeah. We had a joystick controller. The joystick controller is input a range. It's an integer number range, and based on those integer numbers, we go in and it talks to an Elmo controller and that controls the thrusters. But also the Elmo controller was its own software. That was made by Elmo itself. So essentially we just cull (ph.) functions for those controllers.
Q. Okay. And were you also familiar with the hull monitoring system?
A. Yes, sir.
Q. And did you create the hull monitoring system?
A. No, sir.
Q. What -- in your position, what did you do with the hull monitoring system?

A. I took the data that it created, and I plotted it onto these just graphs.
Q. Okay. And do you -- and are you familiar with what that data was and what it was reading?
A. Acoustic sound. Otherwise, no, I'm not sure.
Q. Okay. Did you also deal with the strain gauges as well?
A. The strain gauge was already put into place when I got there, and they already created their own graphs by that time.
Q. Do you know what the strain gauge measured?
A. No.
Q. Okay. And had you -- were you aboard any of the -- what -- did you go aboard any of the expeditions?
A. Yes, all three of them.
Q. All three of them.
A. Of the *Titanic* ones, yes.
Q. The whole time for all three of them?
A. For the second expedition, I left week 5.
Q. Okay. And while you were on board in expedition 1, what was your roles and responsibilities?
A. I was comms and tracking. That's up on the bridge.
Q. Okay. And as doing comms and tracking, what would you be doing?
A. Comms and tracking, you would be checking the GPS lat/long of the sub as well as, you know, communicating with the sub itself.
Q. Okay. And did you do anything on deck during expedition 1?

A. Yes, I did. I did some dome opening and closing as well as just general charging of the LPA tanks and the HPA tanks.
Q. And for these positions that you held, did you receive any training or any formal training for OceanGate on how to actually conduct these jobs?
A. Yes.
Q. And can you talk me through that, the training you received.
A. The training, yes. I was given somebody to mentor me, and we went over the -- we always have checklists for all of these different procedures. We used to go through the checklist and, of course, check it off with my mentor a couple of times, and then that was it.
Q. Okay. So on the -- so that was 2021. 2022, what was your position on board the expedition?
A. Same thing.
Q. Same thing. And then 2023.
A. Also the same thing.
Q. Also the same thing. Okay. So just to discuss the 2023 expedition, so at what point would you move from the -- so did you do the -- I'm just trying to think -- the hull opening or the opening?
A. The dome opening?
Q. Dome opening team, were you part of that?
A. Yes.
Q. Were you part of that for the -- all five missions?

A. Yes, sir.
Q. Can you walk me through that procedure and how that works?
A. Starting when?
Q. Let's start with the initial dive. So when you -- do you have a pre-meeting? Do you get everybody together? How do you put the bolts in? I want basically everything about that.
A. There's always a pre-brief on a mission. Everybody goes over their different roles, and who's going to be the leads for those roles. For the dome opening/closing, you would go over in the duties to the platform. The dome would be closed initially. We have a flip caster or an air caster that will hook onto the dome itself. You give it air, and it lifts up. And then you go in and you unloosen all those bolts first. Then you undo those bolts, and then you would open them. There's two all threads, one on the bottom, one on the top. And then you would use drills to slowly remove that along with the air caster. Slowly open it, and then that was open. And then same in reverse when you close.
Q. Okay. And how many people are conducting this?
A. That's is three.
Q. Okay. And how many bolts are there that -- for the dome?
A. How many to put in?
Q. Yes.
A. You put in 12.
Q. Okay. And once they're put in, is there -- are they set to a certain torque spec or how does --

A. Yes, sir. Each one is torqued to 20 pounds.
Q. To 20 foot pounds?
A. I'm not sure.
Q. Okay. And you have a torque wrench?
A. Yes, sir.
Q. Okay. And who maintains the torque wrench?
A. I'm not sure.
Q. Where would you pick it up from? Would you bring it from the -- in this condition or in the *Polar Prince*?
A. We would bring it from -- there was an operations container, and that's where we held the dome kit, and that's where it would be.
Q. So it had its own kit?
A. Yes.
Q. Okay. What was in the kit?
A. The 9/16 wrenches, 1/2 inch wrenches, ratchets and sockets as well as the dome bolts and the dome nuts and then spares for all of those.
Q. Okay. So spares were on board?
A. Of course.
Q. Did you ever have any bolts break or become, you know, become warped where they couldn't be used any more?
A. Yes, sir.
Q. What were the conditions on -- so for this -- so for 2023 expedition, it was different than 2021 and 2022, correct, with

regards to the -- using the platform and --
A. It was different, yes.
Q. So just specifically 2023, what were the conditions like when you were on the platform and trying to do the dome opening and closing?
A. It was pretty much the same thing.
Q. Well, what were the sea conditions? I mean the platform wasn't very large, and you're out in -- 300 miles offshore. Was it difficult to maintain your balance? Were you -- was it -- were you getting wet? You know, was it --
A. It varied. We would get wet sometimes. Sometimes a little rough. It varied a lot.
Q. And when you got to the -- so what was, what was the other people's positions? There were three people --
A. Correct.
Q. -- including yourself, correct?
A. Correct.
Q. So what was -- what were they -- what was their jobs for the dome closure position?
A. Those were -- they were technically -- they were my support. The dome lead, myself, would be watching the dome to make sure that it opened so that the two screws that I was talking about, they each had their own drill and they would go in simultaneously. And I would just be watching just to make sure everything was good.

Q. Okay. And then once its -- once it comes in -- I mean once moving it, it gets locked in at that point and then went out?
A. Are you talking for an opening or for a closing?
Q. For a closing.
A. Yeah. So after the dome closes, you torque down all of those bolts. You would remove the foot caster, because it wouldn't be able to get on the platform, remove all the equipment required for opening the dome, and then that would be put into the dinghy and then off they go.
Q. So would you be the one who's torquing those bolts or is it -- maybe today it's this person or another day it's this person?
A. I always check. Even if they torque them, I would do one last torque.
Q. You would do one last torque.
A. Yes.
Q. And you did that on the beginning of the fifth mission --
A. Yes.
Q. -- of the third expedition?
A. Yes.
Q. And then if you could talk -- so now when the, when the sub returns, if you can tell -- walk me through the reverse, the opening post-dive.
A. Okay. What are the assumptions here? It's already on the platform.
Q. It's already on the platform, and you're just -- do you then

take a dinghy up to, once it's on platform and then what happens from there?

A. Okay. So we bring our dinghy up. We have the dome kit and everything that we took off is also with us. We come in. We put the foot in first just to supply support. That's the one -- the air caster on the bottom. And then you come in and you put those two all threads back on, one on the side near the top and then one on near on the bottom. And then you hook up the air caster to the LPA tanks, you know, those tanks we were talking about on the platform. Hook those up, and then we proceed to open the dome.

Q. Okay. Did -- once you released all of the bolts, did it just kind of swing open, or did you have -- or was there something else that you had to prior to? Was there like a vacuum where it was difficult to open? Did you have pry it open?

A. A vacuum would always be on the sub. The vacuum would have to be released from the inside, from the pilot before you started. And, of course, there would be air coming -- air supporting the dome before you even do any of that.

Q. Was it ever difficult to open after, after a dive?

A. Not after they would release the vacuum, no.

Q. Have you ever had to use anything to pry it open?

A. No.

Q. Was somebody responsible to ensure that the O-ring in the face was nice and clean and --

A. I'm not sure.

Q. So that wasn't part of the -- of your position?
A. Not that I'm aware of.
Q. And just so, just so we're clear. You know what I'm talking about? So the forward titanium ring, was anybody responsible --
A. Oh, yes. I would wipe that, because if there's any sort of debris in there, that would be a point of failure, right.
Q. Yeah.
A. Even at the point you're under pressure, I would wipe it just to make sure that there's no sort of contamination inside there.
Q. Yeah. Okay. Had you ever changed out that O-ring before?
A. No.
Q. Were you ever -- do you know when the last time it was ever changed?
A. No.
Q. Do you know how big the O-ring was roughly?
A. No.
Q. Was it smaller than half an inch?
A. I can't say.
Q. Okay. And then once you -- so once you've completed -- so on a dive, once you've completed the procedure of closing the hatch -- closing the dome, what would you do then?
A. Then -- are you speaking which expedition?
Q. Expedition 3.
A. The one with the *Titan*?
Q. Yeah.

A. Okay. So -- and then I would hop into the dinghy and that is the dinghy that would have the controls for the platform raise and lower, and I would wait, I would wait until the sub would get -- because if I had gone back to the boat, just in case they had to get out again, I was beside with my gear right there --
Q. Yeah.
A. -- ready to remove them. So I would wait for them to actually get off the bow.
Q. Okay. And then once you, once you did go back to the vessel, to the *Polar Prince,* what would you do then?
A. Then, I'd go up to comms and tracking.
Q. And who else is with you? Who was with you on comms and tracking?
A. With me was Wendy and Gary.
Q. And Gary's last name?
A. Foss.
Q. Foss, okay. And was there a separation of like responsibility? What's up on the bridge? Tell me about that suite up there and what was your job?
A. So up there, we had a comms and tracking laptop, and then it had a tracking software on there and we would just watch it track the sub with dots.
Q. Okay. And would you communicate with the sub?
A. Yes, sir.
Q. And what type of communications would be common for back and

forth?
A. These are text messages, shortened text messages to preserve power.
Q. Okay. And like comms checks, those types of things? Is it --
A. Yes, comms checks would happen very frequently, maybe about 10 to 15 minutes.
Q. And if there were to be any alarms or anything that went off on the sub, would they relay them back?
A. The pilot?
Q. Yes.
A. They should.
Q. Okay. And is there an instance that you remember which they did?
A. No.
Q. So in -- so they had -- in the -- over the three expeditions, they never relayed any alarms back up to the -- to you -- that they were getting an alarm?
A. Okay. They're typically surrounding the batteries or maybe using the thrusters, they would say we're going to come back up because this is, this is somehow (indiscernible) and we're coming back up, stuff like that.
Q. And you weren't able -- you couldn't -- the monitoring that you had up on the bridge, did not -- was separate from the monitoring that they had on the submarine?

A. This is a separate -- completely separate from the control program, yes.
Q. So the control program is just the EvoLogics --
A. No.
Q. -- data? Okay.
A. The control program is just for the sub. The EvoLogics program was separate. It was on a Windows PC, that software, and that's what would communicate to the topside.
Q. Okay. Can you explain to me -- so -- but the control program, are you able to view and see what's going on, on the sub from the control program on the bridge?
A. No.
Q. So that's just specific to internal and only anybody who was in the submarine could view that?
A. Yes.
Q. Can you talk to me about the EvoLogics program?
A. As much as I know, it was the new program that we used this year. It uses acoustic transducer head from topside and then there's a transducer beacon on the subside. And it talks using acoustics. Other than that, I'm not sure how the magic works.
Q. And that's what you would be monitoring up in the -- up on the bridge?
A. Using the software, it would plot GPS coordinates of where they are, yes.
Q. And where was that data stored?

A. I'm not sure what folder that was saved into.
Q. Where it would have been stored locally?
A. It would have been stored on that laptop that we were using.
Q. Okay. On the fifth mission of expedition 3, can you talk me through that mission from, you know, when you departed St. John's if you remember specifically and just kind of go through day-by-day if you remember?
A. That's quite a bit of days. We departed St. John's, 1 1/2 to 2 days of towing. You get on the wreck site, and then you proceed to do some platform preps, some sub preps, and then the following days would a dive day in which they would go over -- the mission director would go over all your roles, and they would go over the timeline of what's going to happen in the day, and you would proceed -- everyone would go to their, you know, according to positions and the dive would commence.
Q. And was there just -- for this mission, was there just the one dive day? Did they dive prior to that Sunday?
A. By dive, do you mean actually getting off the platform?
Q. Correct.
A. This was the first time it had ever got off the platform.
Q. For that mission?
A. The whole mission. The whole expedition.
Q. So starting on May 8th was when the -- if I'm incorrect, please let me know. May 8th is when the expedition began, correct?

A. Yes.
Q. And then this would have been the fifth mission of expedition 3. So what you're saying is so from May 8th until June 18th, it had never gotten off of the platform?
A. Yes.
Q. Was this the only mission that had mission specialists aboard?
A. No, sir.
Q. So there was previous missions that had mission specialists and they did not get off the platform at all?
A. Yes.
Q. And what was the -- was there -- what was the reason for none of the days being able to dive?
A. A lot of the days were due to weather, and some of the other days were due to technical difficulties with the platform. That was pretty much what it was.
Q. Was there ever any technical difficulties with the sub?
A. There were some difficulties with the cameras. There's cameras inside and, of course, there's only one port in the front. So these cameras were used to visually see around. Those cameras, we had a hard time troubleshooting that, and that also led to some scrubbed dives.
Q. Okay. And did those cameras -- were those cameras fixed when it went down on a mission to dive?
A. Yes.

Q. Was everything working and functioning properly?
A. Yes.
Q. Can you tell me about the pre-dive meeting and the -- is there a pre-dive meeting? I think you said there was.
A. Are you speaking right before we start?
Q. Correct.
A. There is. The dive -- what do you call it?
Q. Dive plan.
A. The dive plan comes out always the day before, and then we'll kind of see what role we're playing or participating in, and then on the day, there's always a 15 to 30 minute dive debrief or brief, and that's when you go over your roles. And then you go over the line items, (indiscernible) items, and what's going to happen, how long each is going to take. These are all estimates as well, and from there you proceed.
Q. And did the mission specialists or clients have any roles and responsibilities when they were on a mission?
A. Yes.
Q. And what were some of their roles and responsibilities?
A. A lot of them were on deck hands, and those were the people that were, you know, grabbing tools if we had needed them and whatnot.
Q. And so then when we go to the dive, so within the dive, did they have any roles and responsibilities as being part and in the submersible?

A. You mean other than being inside the submersible?
Q. Yeah.
A. Just those guys.
Q. They didn't have any -- one wasn't in charge of, you know, running the -- piloting the sub?
A. No.
Q. How many sub pilots were there?
A. How many?
Q. Yeah.
A. Two.
Q. And who were they?
A. One is Stockton and the other is Scott.
Q. Scott Griffith.
A. Griffith.
Q. Griffith. And was there any training on board for the mission specialists as you sail about to the *Titanic* location?
A. Are you saying for the people that are the deck hands?
Q. Yeah.
A. Those would be led by, you know, kind of just getting familiar with the inventory of the container that we had the tools in. There was always a deck boss. So the deck boss would be -- say if there was an item that they needed to get, whether it was a 9/16 wrench or something, if they weren't sure what it was, they would ask the deck boss to confirm what they had, and that was essentially job shadowing training.

Q. And using the *Polar Prince* was obviously different than from the *Horizon Artic* in the way that you had to tow it?
A. Yes.
Q. Did you guys ever encounter any issues with the barge, or platform or the *Titan* that could be attributed to the towing of?
A. I'm not sure.
Q. You weren't aware of any, you know, wire connections or any through holes or any penetrators or anything that was external becoming broken or damaged from the tow?
A. No.
Q. And the issues with the platform, did they ever figure out what those were attributed to?
A. I believe -- I want to say -- I'm not sure. I don't want to speak about items I'm not sure about.
Q. Okay. What was your -- so we know what your role was at the beginning of the dive on mission 5 on expedition 3. Once you went up to the comms suite -- I'm sorry. I'm mispronouncing the name.
A. That's okay.
Q. Up in the bridge, what did you observe up there specifically? Specific to that day, what did you observe? What did you hear? What kind of messages did you see? And, how did the dive appear to be doing, descending and --
A. Specific to the day?
Q. Yes.
A. At that time, you know, we were getting -- we had VHF radios,

and they were letting us know the depth that they were, you know, every couple hundred meters. And then Wendy was very good at letting us that we got comms. On that day, I was charging the platform. So they had gone off the platform correct. The platform was raised, and then I was tasked to recharge those four tanks. And once those four tanks were done, as soon as I came up to the comms pit, they had already lost communication.

Q. Do you remember about what time that was?

A. The time that they lost communication or the time that I got up there?

Q. Both.

A. I could see on the EvoLogics system, the last ping was 10:47 at a depth of 3355. And I had gotten up there 10:55, you know, shortly after.

Q. And do you know what time the last text message was received at?

A. I'm not sure.

Q. Are you aware of any -- or were you made aware of any of the messages that were passed back and forth?

A. Yes.

Q. And what were some of the ones that you remember?

A. The last one I remember was a confirmation that they dropped weights, and that was the last.

Q. Now, would they -- if they said whereabouts -- and I'm adlibbing. I don't know exactly what the message was, but if they

said we're about to drop weights or dropping weights, would they then come back with weights dropped? Would there be a confirmation message that they actually did drop?

A. Yes.

Q. And from -- once you made -- once you were up in the bridge from 10:55, what happened from there? What was going on?

A. From there, I waited there to see if -- when the next ping would come, and it just never came.

Q. And do you remember at any point either the *Polar Prince* crew or anybody from OceanGate reaching out to authorities for assistance?

A. I was not part of that, no.

Q. Who -- what time did you depart the bridge roughly?

A. It's hard to say. I stayed up there for a while just because -- even in the last couple years, comms and tracking, it's supposed to be like every so many minutes. So you can't really go off somewhere especially if -- especially when there's a lost comms, you know. I want to be there when it comes right back, you know, to evaluate some information.

Q. Yeah. Have you ever lost comms before?

A. We've lost comms before, yes.

Q. For how long?

A. The longest I've ever seen, 30 minutes.

Q. And that would have been -- so it's hard to tell, right. So this was the first time it dove on expedition 3. So that would

have been in either expedition 1 or expedition 2?
A. Yes.
Q. And what do they, what do they -- had they ever provided you like a troubleshooting? Like what attributed to the lost comms when they did lose it?
A. Usually it's when the thruster -- when they're using thrusters, the frequency of the thrusters interferes with the acoustics, but as soon as they stop, then you'll get that next ping.
Q. Would it be a certain area in the water column?
A. I don't know.
Q. That was if you can -- you're not sure of that.
A. I'm not sure about that.
Q. Have you ever been on an expedition -- or I'm sorry, a mission or a dive when they made it to the *Titanic*?
A. Yes.
Q. About how many times have they made it to the *Titanic*?
A. At least eight.
Q. And how long, how long did those dives last?
A. 8 hours, 2 1/2 down, 3-ish to find the wreck, 2 1/2 back up.
Q. And on those -- so you worked comms when they actually -- when they had a successful dive to the *Titanic*. Is that correct?
A. Yes.
Q. Was there -- once they got down that far, was there ever any issues with comms or tracking?

A. Only when they're thrusting.
Q. Only when they're thrusting. And then when you've lost the comms and then they came back, would you kind of say, hey, were you thrusting? Is that why we lost comms or was there any procedure to verify why comms were lost?
A. I would ask them to do a comms check and they would say, we were thrusting -- confirming that they were thrusting. So then we kind of deduced that it wasn't, you know, an error with software, the technology. It was more so just them thrusting, using the thrusters.
Q. And who would be the communicator in the sub? Who communicated?
A. That would be the pilot or co-pilot.
Q. Okay. And do you know what the co-pilot's rules and responsibilities are?
A. No.
Q. And would the co-pilot ever be a client or mission specialist?
A. No.
Q. Who was normally the co-pilot?
A. PH.
Q. You said PH. PH stands for?
A. Paul-Henry. Paul-Henry.
Q. Was he on all of -- how many have you -- I'm sorry. How many missions have you done with PH?

A. Missions or expeditions?
Q. We'll start with expeditions?
A. He's been on all of them.
Q. He's been on all of them. And does he stay for all of the missions on each expedition?
A. Yes.
Q. So you've worked with him quite a bit. And was he the co-pilot for all of the successful dives to the *Titanic* that you remember?
A. I'm not sure. I'm not sure if he was for all of them.
Q. Would you -- could you tell who was communicating -- which -- whether it was the pilot or the co-pilot communicating back? Did they give like this is PH or this is Stockton or whatnot? Or was it like it's coming from the same user name?
A. It's -- since it's only -- you're only talking to one, to just the sub. It doesn't really matter. It's coming from the sub.
Q. Okay.
A. I guess the user name would be the sub.
Q. The sub. Okay. And you wouldn't know necessarily unless they told you who was -- who you were communicating with?
A. Correct.
Q. Did you have -- so what's -- the software on board the submarine, what software were you responsible for? And, how were you responsible for it?

A. I was responsible for the control program, and it was maintaining, fixing -- the overall life cycle of the control program itself.
Q. Can you explain to me the control program and how it worked from the controller, how the controller worked and then how the control actually drove the motors and how that all worked?
A. Sure. You have your joystick controller which was the Logitech controller, and when you would move the joystick controllers, there's a finite range, and it would give, it would give a range of 128 to -127 because the middle one is zero. And based on those -- based on that range, you would go in and you would tell the motor controller, you would multiply it by a certain like scalar number and then the Elmo controllers have functions -- built-in functions already. That would be like a JV which means job velocity and then you would just tell it to go to set velocity based on -- I guess it's hard to explain.
Q. No, you're doing a great job.
A. Okay. Thank you. So that is the controller. And the Elmo would talk to the thruster, and then that's when the thruster would move. There's also a power box in the sub. It's a PLC power box and my program would just sent it like a 1 or a 0. So on or off, and that would turn those on. Whether it's, you know, the drop weights or the VBT, and that's it.
Q. And VBT?
A. Variable ballast.

Q. Okay. Are you -- can you talk to me about the variable ballast and the drop weights and how that --
A. I can't speak to the physics of how that works.
Q. Okay.
A. But essentially there's motors and the two drop weights have rotating motors and then it'll drop bags that we made based on those waters, and the variable ballast runs on a tube that goes up and down based on the motor turning and that would, you know, release air or hold air in.
Q. It does. And it's getting that air from?
A. That is coming from the high pressure air tank.
Q. And where is the high pressure air tank located?
A. That's in the aft of the sub. External.
Q. So the tail section?
A. Yes.
Q. Okay. How many different ways was there to drop weights?
A. So you have three.
Q. So you already described the one which was the bags.
A. You have bags.
Q. Yeah.
A. And then you can drop the carriage itself which is another weight, and then you can also drop the legs.
Q. Drop weight carriage. Would that be considered like the frame?
A. Correct.

Q. Okay. And then --
A. The frame that holds the bags.
Q. Gotcha. And then you said the legs.
A. Yes, sir.
Q. Can you explain the -- is the legs of the frame or legs --
A. I can't explain how that works. I just know that they're able to be dropped.
Q. Okay. Fair enough. And do those have any fail safes? So if the program didn't work or they lost power, do they have a non-electrical way to release weight?
A. Yes.
Q. And how would that be?
A. That was using pneumatic air.
Q. Using air. All right. I don't have any further questions for you right now.

LCDR [redacted] Mr. Neubauer.

MR. NEUBAUER: Thanks. I have questions.

BY MR. NEUBAUER:

Q. Was Paul-Henry on expedition 3?
A. Yes.
Q. Was there a reason -- because he was not the co-pilot during the one voyage that was conducted, right?
A. Correct.
Q. Was he the co-pilot during the accident voyage?
A. The one in question?

Q. Yes.
A. Yes, he was co-pilot.
Q. Okay. And then there was also a guide on that voyage. Is that correct?
A. What's that?
Q. Was there also like a tourist or an expedition guide included on that voyage?
A. Yes.
Q. Okay. And what was that person's name?
A. Paul-Henry.
Q. Okay. Just making sure that was the same person.
A. Yeah.
Q. Okay. Was it -- in your opinion, was it easier to launch the *Titan* from the *Horizon Artic* than it was from the *Polar Prince*, as a rule?
A. (Indiscernible) my opinion, it was easier from *Horizon*.
Q. Is there one primary reason it was easier in your mind?
A. Maintenance.
Q. Okay. So just to expand on that, was there less maintenance required on the barges?
A. No, just the amount of resources to be able to do, you know, let's say if I wanted to make a software change or an update, you would have to -- on the *Polar Prince*, you've got to get the crane driver, dinghies, go out there and then, of course, the sub always has to be close when it's being towed. It's just more resources

had to be used to accomplish, you know, what otherwise would be a more simple job.

Q. And so if that was the case, would each operation take longer on the *Polar Prince* than it used to take on the *Horizon Artic?*

A. Correct.

Q. Can you give kind of an estimate of how much longer it would take in general?

A. I can't give a good estimate.

Q. You mentioned there was lost communications in prior missions. Did that include the text communications and the position data as well?

A. Yes.

Q. I have a question about the duties that you were doing for the dome itself. That was a little outside of your expertise or it wasn't -- you're a software engineer.

A. True.

Q. Were those duties like voluntary or was it something that was expected of you? And I guess I'd mention like was it something where you were -- it was said if you'd like to do this, you can be part of the dome team or was it like that's part of your duties for the mission?

A. That was something that I decided I wanted to be a part of, yes.

Q. Okay. So it wasn't, it wasn't mandatory. You volunteered to be part of that team?

A. Correct.
Q. Did you ever find it difficult to do your technical duties and those duties? Did they ever overlap or interfere with you doing the hands-on work?
A. Not particularly. I wouldn't expect it to do that. I would just stay up later to do some of my code fixes but, you know, of course, on the dive day, I can't, I can't hold up the operation based on that. So to answer your question, it wasn't too difficult to handle both.
Q. Thanks. Those were the questions I had.
LCDR [redacted] Thank you. Mr. Muise.
BY MR. MUISE:
Q. I just have one question. This is Marcel. What's Wendy's role during the dive?
A. She would be comms and tracking.
Q. And she would hang out in what you call the pit?
A. What we called the pit, yes.
Q. The pit. Is she talking to anybody during this?
A. Yes.
Q. Can you elaborate a little bit more on what else she would be doing?
A. She's the one that stays there and continuously does comm checks every 5 to 10 minutes.
Q. Okay. Thank you, sir.
LCDR [redacted]

MR. [redacted] Thank you.

BY MR. [redacted]

Q. When the *Titan* is on *Horizon*, how do folks get into the *Titan* itself? Did they get into the *Titan* when she was on *Horizon* and would be lifted up and over?

A. The mission specialists would be loaded on the deck, and then the *Titan* would come off the deck using winches.

Q. Was it easier to close the dome when it was on *Horizon* than it was on the barge?

A. Yes.

Q. Also, on the control program side, the joystick controller, did you ever do any training the pilots as far as if the joystick controller failed at any time what they would do then?

A. Yeah, we have -- there are spares inside the sub, multiple spares as well as, you know, multiple battery changes as well, and just your typical debunk (ph.) where you unplug the dongle (ph.), plug it back in, restart the control program, restart also the whole sub if that's the case as well. And if that doesn't work, then they would scrub the dive.

Q. So if they were in mid dive or whatever, and the joystick control just decided to go out, there's no other alternate means of going to like the -- straight to the mouse or touch screen or anything like that as a backup?

A. No.

Q. So it's strictly just that or --

A. Just control.
Q. -- drop the weights and back up you come.
A. You can drop the weights from -- you don't need the controller to drop weights.
Q. That's what I'm getting to.
A. Oh, yes, yes.
Q. So if the joystick controller, if replacing the dongle didn't work, restarting the program didn't work, then the mission is scrubbed and she would have to come back up?
A. Yes, sir.
Q. Thank you.
LCDR [redacted] Thanks you, [redacted] Mr. [redacted]
BY LCDR [redacted]
Q. Jerome, thanks for being here. I know it's been a lot, but we appreciate you taking time out. Going back to 2019, when you were hired, who did you speak with when you were hired from OceanGate?
A. That would be Tony Nissen.
Q. Do you remember Tony's position at that time?
A. I'm not sure what his position was.
Q. Do you at least him as handling the engineering crew?
A. Yes.
Q. And when you were brought on, what was the description of your duties?
A. That would be -- it was essentially debugging, debone --

debone bugs.
Q. Okay.
A. Yeah. Any kind of low level stuff, you know.
Q. Okay. Did they start you at the lower level because you were fresh out of school and they were just kind of training you up and then --
A. Yes.
Q. Did you kind of expect that your responsibilities would get kind of higher as your experience increased?
A. Yes.
Q. Okay.
A. And that's how it's works, yeah.
Q. Yeah. Was there a job description when you were hired? Did you like sign something that said like here are your job duties or here could be your job duties in the future?
A. I did sign. I don't recall the list of duties or the potential duties or future duties.
Q. Okay. So after you were hired, did you receive any training right away from anyone at the company on your job?
A. Yes.
Q. What was that training?
A. That was just job shadowing.
Q. Who did you shadow?
A. Mark Walberg -- no, Mark --
Q. It's not Mark Walberg.

A. It's Mark -- would I be able to look up his name? Is it okay with you guys?
Q. Sure. Yeah. That would be great.
A. Walsh. Sorry.
Q. Walsh. Okay.
A. Walsh.
Q. What was his position at the time?
A. He was an electrical engineer.
Q. And when you started, did you start directly working on the *Titan* or did you work on the other subs or all of them?
A. This was for the control program, *Titan*.
Q. So you were specifically brought on for the control program for *Titan*?
A. I can't say if it was specifically for that. I maybe just didn't get to the other subs.
Q. Did you ever work on the *Cyclops*?
A. No.
Q. Is it fair to say all the work that you completed for OceanGate was primarily for *Titan*?
A. Yes.
Q. Did you complete any sort of -- any qualifications or like checklists? Did somebody check you off before you did work by yourself on anything?
A. No.
Q. Was there any sort of training manuals from, you know, like

any sort of societies, like ASME (ph.) or --
A. No.
Q. Okay. And what was it like, your day-to-day? When you were in the office, can you describe how the day, when you would come into work, what you did and tasks that you fulfilled and people that interacted with?
A. Sure. Are you talking about -- this is when I first got on?
Q. Well, maybe we'll fast forward to a normal day when you were kind of let loose and you were operating independently, you had more responsibility?
A. Okay. We had a task manager by the name of JIRA. It's a task management software, and that is where you would lay out the different issues or we would call them -- yeah, we call them issues, and then each person would be assigned, you know, one of those tasks. And then from there, I would open up a software called software task in which it would explain the bug or the improvement that you wanted to be made. And then I would go in and I would make a branch of control program. Are you guys familiar with branches?
Q. No, I'm not.
A. Okay. A branch is something in Git. Are you guys familiar with Git?
Q. No.
A. Git is a version control software, and you have your main branch and that's all the official releases and all the stuff that

has been okayed to, you know, be released. And then you have branches that I'll just make a copy of this, and then I can kind of go off and -- without ruining the main stuff, of course, because that would be really kind of disastrous, right. So that's how -- I would take an issue. So it would go from JIRA, and go onto the Git hub and then make a branch of that new development branch, and then from there, I would merge it back into the main after doing some code review and --

Q. So it sounds like pretty -- and that's problem solving. You were problem solving most of your days?

A. Yes, sir.

Q. Okay. Did you know of any kind known? Was there any scuttlebutt or talk about any engineering or structural issues with *Titan*?

A. Not that I know of. I don't think they'd involve me with that.

Q. And were you there for the original pressure vessel that Spencer Composites made? I think they tested and scrapped it and they went to a second hull. Were you there for the first hull?

A. When you mean there?

Q. Were you at the company, at OceanGate at the time? Did you work on -- like I suppose call it hull number 1?

A. Correct. Yes, I was there.

Q. But the hull number 1, did you go on any expeditions with that one, any dives, either that's local dives or any dives in the

Bahamas or anywhere else?
A. I did not.
Q. Do you know -- with that hull, did they dive anywhere else that you know of?
A. Just Bahamas.
Q. And when the hull switched from hull number 1 to hull number 2, do you know the timeframe or how many months were there between scrapping the first hull and the completion of the second hull?
A. That I'm not sure.
Q. And during that time, did you stay on as a full-time employee?
A. Yes.
Q. What were you job duties when they were building this second hull?
A. That was still making improvements to the control program and bug fixes.
Q. When you were able to do your job, do you have like a -- in the shop, do you have a set up to where you can kind of have the computer programs or modules, whatever you're working on and it would be like you were kind of running the *Titan* if it was complete?
A. Yes.
Q. Did you -- were there any bugs from the first hull to the second hull, anything you had to work out when it was all put together on the second one or was it very similar to the first

*Titan*?
A. No, a lot of these, they weren't pertaining to like the health of the hull. That stuff stayed the same.
Q. Okay. Do you do a lot of work with the hull monitoring system?
A. I worked with graphing the data.
Q. Okay. Did you install any of the sensor? Was that part of your job?
A. I installed some sensors, yes.
Q. Do you remember how many sensors were placed? I know there's acoustic and then strain. Do you remember how many of each were placed on the hull?
A. There was eight acoustic sensors, and then for every acoustic sensor, two strain sensors, one XY, XY, one for the loop and then one for the axle -- axiom.
Q. Okay.
A. Yeah.
Q. Cool. A total of 24.
A. A total of 16.
Q. Yeah, but with the acoustic and the strain --
A. Okay.
Q. -- it's like -- yeah, 24 spread out. What was your -- based on the data, did you believe that the monitoring system was functioning as it was supposed to?
A. Yes.

Q. Did you have a lot of interaction with Stockton?
A. Can you define a lot?
Q. Were you familiar with Stockton? Did you work with him often when you were at the facility?
A. Not a lot.
Q. But you had at least some interaction with Stockton?
A. Yes.
Q. Were those interactions pleasant?
A. Yeah.
Q. What was your opinion of Stockton?
A. He was a very honest guy.
Q. And honest as in like straight shooter honest or like honest with you, honest or --
A. Honest as in he wouldn't make you do something that you wouldn’t want to do. He was very good about that. That was one thing I appreciated about him.
Q. So if he was going to do it, he would it himself or he was going to show you I'm that type of guy?
A. I can't, I can't speak to that. I guess I can't confirm that.
Q. Safety-wise, what was the overall in your opinion the safety culture of -- at OceanGate?
A. I have nothing to compare it to because this is my first job out of school and, you know, I've never been -- I do know it's a small company, but I do know that there have been many checklists,

checklists upon checklists and like many different backups to backups. And if I were to give you a rate, pretty good -- very good.

Q. Okay. Do you feel like if you saw something unsafe you could raise it to anyone in the company, Stockton even? Just say, hey, I think this is unsafe. We shouldn't be doing this.

A. I would.

Q. If you were to raise something like that, would you fear any sort of reprisal or anything from anyone if you were to call out a safety issue?

A. I mean I guess if you're bringing any sort of issue like that, I myself would know that maybe something would be like kicked back, but I firmly believe if something is not safe, then like speak up, you know, I guess because that's pretty dire stuff.

Q. When you say kickback, like maybe you would get flack from the guys (ph.) maybe if you would have raised an issue?

A. I -- maybe (ph.).

Q. When you say kickback, what do you mean? I guess I don't know what you're --

A. I mean just in general. I mean just in general when you're bringing up something, there's always going to be -- not in a negative way. This is some sort of -- that would be open up to debate, like almost when you're bringing up an issue, not in a negative way.

Q. Okay.

A. Yes.
Q. That's all I have for now. Thanks, Jerome.
A. Thank you.
LCDR [redacted] Mr. [redacted]
BY MR. [redacted]
Q. Just a couple of technical questions. The Elmo control you speak of, where are some other applications outside of this industry that that's used for? I guess for a lot of arms. Is that what it's used for?
A. I think just motor controls.
Q. In general?
A. In general, I'm not sure. Like I said, I don't know of any other applications that it's in.
Q. You've never, you've never dealt with the Elmo controller before until this time? You've never dealt with it in school or any other times?
A. Correct.
Q. Okay. And when you talk about the connection back, that's a Bluetooth dongle that's plugged into the computer in the back in the aft cap?
A. This is the dongle that is -- came with the controlled. I guess I'm not --
Q. So you're not sure. It could be Bluetooth. It could be -- but it's a wireless connection?
A. It's a wireless connection, yes.

Q. Okay.
A. Whether or not it's Bluetooth, I'm not sure.
Q. Gotcha. And that plugs into the -- one of the CPUs in the aft cap?
A. Yes, sir.
Q. And on that same line, how many CPUs were mounted in the back?
A. There is three.
Q. And could you describe what each CPU does? One does what?
A. The first one is a control PC. On that, it runs the control program.
Q. So that runs the Elmo control program?
A. The -- I guess it's -- the Elmo is its own self-contained product, and we just send it text messages. And those are the commands that are laid out from the reference manual.
Q. Okay.
A. So I guess I don't --
Q. I understand what you're saying.
A. Okay.
Q. So you're saying you built, you built an application or you were responsible for the application that sends the codes to the Elmo.
A. Yes, sir.
Q. On one CPU is the application that you are responsible for maintaining, correct?

A. Yes.
Q. And is that CPU labeled at all?
A. Yes.
Q. What was it called?
A. Control.
Q. And what type of -- does it run on Linux? What type of operating system does it run on?
A. That was run on Linux.
Q. And as far as logging files, did that system maintain any logs?
A. Yes.
Q. For how long would it maintain the logs?
A. Until you take them off.
Q. So for a long time?
A. Yes.
Q. And the logs are in a text format or --
A. Yes.
Q. And inside that specific CPU, what type of media is stored on it?
A. That was SSD.
Q. Just a singular SSD?
A. There's a maintenance SD that runs the operating system, and then the plug in and plug out SSD.
Q. And it's a hotspot. That's what you're (indiscernible) on. So a hotspot, that's just used for -- would that be where the log

files would be stored so you can quickly get them off?
A. That one is for the 4K camera.
Q. It's not the same CPU that the controller --
A. This is -- I guess it's hard to explain. The camera that we had --
Q. Okay.
A. -- interfaced with Windows but it couldn't save, it couldn't save data onto the Windows for whatever reason.
Q. Okay.
A. So we used NTS, it was a file transfer program. So it dropped directly into the control CPU hotspot.
Q. So you just used the fact that it's running on Linux and it was a specific platform that would store that media on that --
A. I don't --
Q. -- the camera media?
A. I don't know the decision on why that was but that's how we did it.
Q. So the hotspot SSD store the camera data.
A. Correct.
Q. And then you have an internal SSD that ran the operating system and the software that you were responsible for?
A. Yes, sir.
Q. Okay. So that's the controller CPU. What were the other CPUs?
A. The other CPU was the media PC. That ran Windows, and that

was all the other peripheral, the other peripheral like software that was not (indiscernible). So the 4K camera software, BlueView Sonar, Oculus Sonar.

Q. Okay.

A. And then the EvoLogics.

Q. Okay. And that's run in Windows.

A. Yes, sir.

Q. And then the third CPU?

A. The third one is the logger PC, and that is the one that contains the AE and strain data.

Q. And what operating system is that run on?

A. That one is Linux.

Q. And when I'm looking down at the cap, or I guess if I'm in there, what's the arrangement? Top to bottom the way you just described.

A. Top to bottom.

Q. So top being the control, media --

A. Media, control and logger.

Q. And then as far as the mounting goes, those CPUs back there, is there a rack that's mounted to the cap? How is all that mounted back there?

A. I'm not sure how it was framing is attached to --

Q. If I ever wanted to remove those CPUs, how would I do that?

A. There's a slide. There's a thin aluminum slide out.

Q. So it's just like a server rack setup?

A. Yes, sir.
Q. And what's in between the -- where the passengers sit? Is there a bulkhead or a wall or something? What is that? So there's a separation between the passengers and that end cap, right?
A. There's a door, yes.
Q. And what is that made of?
A. I don't know.
Q. So there's a door, and then is there something else that separates them? I'm just wondering what the infrastructure looks like to get to those computers?
A. A swing door.
Q. And then you're right there. So you just swing that door open and you're working on the CPUs?
A. Oh, I see. There's another small space there before you get in there.
Q. But there's nothing between the door and the CPU?
A. Oh, no.
Q. There's no other glass or anything like that that's in the way?
A. There's -- oh, you mean something to remove.
Q. Yeah.
A. They have a, they have a pretty nice cover with a see through glass. I don't know if it's glass.
Q. It's may be Plexiglas or something like that, but it's see

through?
A. It's see through, see through material.
Q. In terms of moving those CPUs, do you require tools or clips?
A. I'm not sure. I did not mount those in there.
Q. Do you have any knowledge of the servers or NASes (ph.) that are located at OceanGate here in Everett?
A. No.
Q. Have you ever worked on the server or logged into the server at OceanGate as an administrator?
A. I have. No, not as an Administrator, no.
Q. Do you have any knowledge of their of their storage capacity or at least the store, the server?
A. That -- none of that was part of my --
Q. Who would know about the storage capacity?
A. That would be Chris Danford.
Q. Does he work for OceanGate?
A. To my knowledge, yes.
Q. Stanford, like the college?
A. Danford.
Q. Danford.
A. Yeah.
Q. Back to the sub. Any of those CPUs, are you aware of any type of encryption or --
A. Not that I'm aware of.
Q. How is the media, like the camera media stored on it? It is

JPEGs, MP4 files? Is it as simple as that or does it require --

A. Are you talking about on the SSDs?

Q. Yeah. Does it require a separate proprietary application to remove or view any of the data?

A. They're MP4.

Q. That's all I have. Thanks.

A. Thank you, sir.

LCDR [redacted] Ms. [redacted] on the line, do you have any questions?

LCDR [redacted] Not at this time. Thank you.

LCDR [redacted] Thank you, ma'am. I just have one follow-up question.

MR. [redacted] I just have one more question. I'm sorry.

LCDR [redacted] Go ahead.

BY MR. [redacted]

Q. Was there a limit to the size of the text that you guys could send back and forth through EvoLogics?

A. I can't say there was a limit. We just definitely kept them short.

Q. Did you guys use like a special code?

A. Yes.

Q. Like for drop weights, was there a code that you guys used to say drop weights?

A. Not for drop weights, no.

Q. How would I know the code if I'm outside? How would I -- if

I'm looking at the text stream between you guys --
A. Yeah.
Q. -- is there a manual that describes your --
A. We had a little cheat sheet that was laminated that had the codes and what they meant, like comms check acknowledge.
Q. But as far as you know, there wasn't a limit, a size limit that they could send back and forth?
A. I don't know.
Q. My point being is that if there was an emergency, could they have not been able to relay the whole emergency because of the size and then it required another text message. You see what I'm saying?
A. I see what you're saying.
Q. Like drop message.
A. I see what you're saying. I --
Q. You're not aware.
A. I don't know. I'm not aware of the size --
Q. Okay.
A. -- limit.
Q. That's all I have. Thanks.
BY LCDR [redacted]
Q. One final question string-ish. So I just -- I want to talk quickly about the acoustic, not acoustic -- the hull monitoring system. You said you assisted in installing it or some of the sensors.

A. Yes.
Q. Who was the brains behind that?
A. The brains?
Q. Who -- it's -- because or who installed it? Who created it? Is it -- can I buy it in bulk? Can I go and purchase it from the store? Is something that was created within OceanGate?
A. That I'm not sure who created it. Like I guess that's -- that sounds like multiple questions I guess.
Q. It is multiple questions, yes. So I will slow it down there. Sorry. Are you aware who created the acoustic -- or who created the hull monitoring system?
A. I don't know who created it. It was just there already. And it's like this is what we're going to do.
Q. Okay.
A. Yeah.
Q. And then how -- so now we know like -- so you stated that that data was stored on the logger PC. Is that correct?
A. Yes, sir.
Q. And how often would you pull that data?
A. That would be every complete dive.
Q. After every complete dive. And can you explain to me how you pull it?
A. It's in the hotspot.
Q. Okay.
A. So to be forwarded, it would take a while to transfer onto a

thumb drive. So it's mandatory that somebody do that.
Q. It's in the hotspot. And then once you get it back up to the bridge, you would then download it or upload?
A. The program -- the monitoring program will produce the graphs, and then I put those on a thumb drive and then would give those to Stockton.
Q. When you -- so you just created the program for taking the data and turning it into a graph?
A. Yes, sir.
Q. That's all I have for now.
LCDR [redacted] Does anybody else have any questions?
UNIDENTIFIED SPEAKER: I do.
BY UNIDENTIFIED SPEAKER:
Q. To follow up on that -- about that data.
A. Yeah.
Q. So when you said that you graphed it, did you ever review the graphs?
A. I was not the one to review the graphs.
Q. Were you aware of a team that would review them together or was it -- would you just delivery them to Mr. Rush?
A. Correct, they were just delivered, and whatever from there, I'm not sure who would get them.
Q. How about the acoustic data? Did you ever -- were you ever involved in downloading that?
A. That is the same. The acoustics data -- the graph will be

created from the acoustic data.
Q. Okay.
A. So then he has the CSV files, the data along with graphs, and then I put those together.
Q. Okay. How about the strain data?
A. The strain data would also be in there as well. Those graphs were created. That's not my portion. They were already created from an app.
Q. Okay. But you would deliver the strain and acoustic data to Mr. Rush? Is that (indiscernible)?
A. Yes, sir.
Q. And did you -- but you had no knowledge of how that was reviewed? You don't remember hearing anybody --
A. I've never been in the meeting where they discuss that or what they were used for.
Q. Do you know who would review that data though?
A. Stockton.
Q. Just him?
A. I'm not sure who he would talk to about that.
Q. Did you ever hear any talk at the company about the data at all, like concerns about strain or acoustics?
A. Not concerns, just how to -- because it was quite a bit of data, how to nicely see it visually I guess.
Q. Just how to package it for review or whatever?
A. Well, sure.

Q. And then just one other question on the -- during the last expedition, you mentioned there were several days where there were no operations.
A. Yes.
Q. Can you give me an idea about the mindset if you were around Mr. Rush at that time during those days? Did you interact with him at all?
A. I guess that's -- it's hard to say. There's a lot of interactions when you're on a small boat together. You're talking specifically on a day where the dive was scrubbed?
Q. I guess, you know, throughout the days as you were on scene, did you sense any frustration or pressure to get the dive in?
A. No. Like I said, the safety portion, if it didn't feel right, then we wouldn't -- we would not do it. So, yeah.
Q. Did you sense some frustrations at all from clients?
A. From what I know, they held together very well. I would say no, in terms of the perceived frustration.
Q. I guess I'm looking for something like we're losing money out here. We've got to get a dive in. There was nothing like that?
A. No, no.
Q. All right. That's the last question I have.
BY MR. [redacted]
Q. Just one more. Do you have any pictures or where can I find pictures of that aft cap arrangement as far as what everything looked like in the aft cap?

A. Where? I don't have because I don't hold that sort of data. I'm not sure what person has.

LCDR [redacted] This is [redacted] for the record.

BY LCDR [redacted]

Q. Did you ever work with any third parties? Any third party software companies or anybody else who came in?

A. During my time there?

Q. Yes.

A. No.

Q. And do you ever remove the aft end cap to work on any of the computer stuff?

A. Are you talking about me specifically?

Q. Yeah. Or would someone remove the aft end cap to work on it because it seemed like it could be accessed from the interior? A lot of it was interior-wise.

A. I've never seen it taken off, but you can access it through the front.

Q. And one more, sir. To follow up on the pressure, do you feel that the mission specialists were maybe frustrated with not being able to dive?

A. Everyone seemed to be having a very good time. I mean even just being involved in something such as this, everybody was in pretty good spirits, yeah.

Q. Those are all the questions I have.

LCDR [redacted] Thank you. We don't have any further questions

for you, sir. That will complete the interview, and thank you again for your time.

MR. SANTOS: Thank you.

LCDR [redacted] I'm going to turn off the recorder.

(Whereupon, at 2:53 p.m., the interview was concluded.)

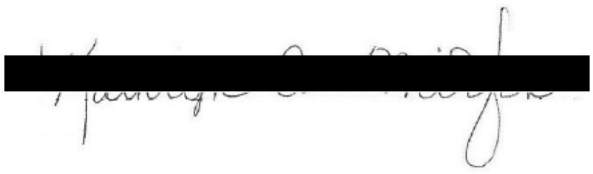
CERTIFICATE

This is to certify that the attached proceeding before the

NATIONAL TRANSPORTATION SAFETY BOARD

| | |
|---|---|
| IN THE MATTER OF: | LOSS OF THE SUBMARINE *TITAN*<br>IN THE NORTH ATLANTIC OCEAN<br>ON JUNE 18, 2023<br>Interview of Jerome Santos |
| ACCIDENT NO.: | DCA23FM036 |
| PLACE: | Everett, Washington |
| DATE: | July 26, 2023 |

was held according to the record, and that this is the original, complete, true and accurate transcript which has been transcribed to the best of my skill and ability.



Kathryn A. Mirfin
Transcriber

NATIONAL TRANSPORTATION SAFETY BOARD
OFFICE OF MARINE SAFETY
WASHINGTON, D.C. 20594

# *Errata*

## Interview with Mr. Jerome Santos

Loss of the submersible *Titan*
DCA23FM036

| Page/ Line | Original | Correction |
|---|---|---|
| 34/16 | (Indiscernible) | There's pros and cons to both. |
| 47/21 | the controlled | the controller |
| 55/22 | string-ish | strain-ish |
| 57/13 | UNIDENTIFIED SPEAKER | Mr. Neubauer |