

UNITED STATES OF AMERICA

NATIONAL TRANSPORTATION SAFETY BOARD

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Investigation of:

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ENGINE FAILURE ON BOARD OFFSHORE
SUPPLY VESSEL OCEAN GUARDIAN
IN SHILSHOLE BAY NEAR SEATTLE,
WASHINGTON, ON MAY 27, 2022

Accident No.: DCA22FM021

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Interview of: CHRISTIAN VANALEN, Chief Engineer
Stabbert Maritime

Seattle, Washington

Tuesday,
June 7, 2022

APPEARANCES:

BRIAN YOUNG, Investigator
National Transportation Safety Board

LT [REDACTED]
U.S. Coast Guard

LT [REDACTED]
U.S. Coast Guard

MS. [REDACTED]
U.S. Coast Guard Academy

BRAD WESTLUND
Stabbert Maritime

I N D E X

ITEM

PAGE

Interview of Christian VanAlen:

By Mr. Young

4

By Mr. [REDACTED]

36

By Ms. [REDACTED]

41

I N T E R V I E W

(12:51 p.m. Pacific Time)

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2
3 MR. YOUNG: Okay. It is 12:51 on June 7, 2022. We're in
4 Seattle investigating the engine failure aboard the Ocean
5 Guardian. This is Brian Young, with the National Transportation
6 Safety Board, Y-o-u-n-g, and we're interviewing the Chief Engineer
7 from the Ocean Guardian. Today in the room we have?

8 MS. [REDACTED]: Lieutenant [REDACTED] with the Coast Guard,
9 [REDACTED] Last name [REDACTED]

10 MR. WESTLUND: Brad Westland, Stabbert Maritime. Last name
11 Westlund, W-e-s-t-l-u-n-d.

12 MR VANALEN: Christian VanAlen with Stabbert Maritime. Last
13 name V-a-n-a-l-e-n.

14 MR. [REDACTED] Lieutenant [REDACTED]
15 Coast Guard.

16 MS [REDACTED] First [REDACTED] from the Coast
17 Guard Academy. [REDACTED]

INTERVIEW OF CHRISTIAN VANALEN

BY MR. YOUNG:

19
20 Q. So, thank you, Chief, for meeting with us today and
21 appreciate you taking us through a tour of the engine room on your
22 vessel. If you could just maybe start out so we get to understand
23 your background and how you got to the point of sailing chief on
24 the Ocean Guardian we would appreciate understanding your maritime
25 experience and training.

1 A. Sure. Roughly speaking I've served on a number of yachts,
2 served in the Gulf of Mexico and in a lot of ground water vessels
3 as they were lovingly referred to. So the lion share of my
4 experience is split between yachts and OSBs, some construction,
5 LCB type work.

6 How did I get into it? By happenstance which is a lot of
7 what you'll find in the marine community, I think, how did I get
8 to be where I am now in proximity to where I live, Seattle based
9 and companies nearby, so I thought I'd give them the opportunity
10 and see how it went.

11 Q. How long have you held your chief engineer's license?

12 A. Newly minted. I think it was issued in January, but chief
13 engineer unlimited, so chief engineer limited I've held for at
14 least an issuance or two.

15 Q. Okay. In order to go to the unlimited chief's license, can
16 you talk about any of the training you may have had to go through,
17 particularly firefighting training?

18 A. It doesn't change in the scope of the firefighting training.
19 Any officer qualification I think is basic safety training and
20 then advanced firefighting. I haven't done any requalifications
21 since.

22 Q. And can you recall about the last time you had gone through
23 the advanced firefighting?

24 A. I can't directly other than, you know, we donned and practice
25 the -- generally speaking we've practiced an active simulation of

1 the fires and different types of fires and what fire suppression
2 techniques were used, and, yeah, that's --

3 Q. But you have been through advanced firefighting at some point
4 through your license --

5 A. Correct.

6 Q. -- career. And how long have you been assigned to the Ocean
7 Guardian?

8 A. As of now, do you want in minutes, hours or days?

9 Q. Days.

10 A. I think so we're at Tuesday -- Wednesday, Tuesday, so that
11 would qualify me two weeks and two days or three weeks, yeah.

12 Q. And prior to this, you had never been aboard the Ocean
13 Guardian, right?

14 A. I had --

15 Q. Okay.

16 A. -- once just to do a walk around in the area.

17 Q. Okay. But not employed aboard the Ocean Guardian for any
18 length of time.

19 A. Right.

20 Q. And when you got to the Ocean Guardian, then your first day
21 were you signed on as chief engineer?

22 A. I think that's a difficult term. I'd be careful to say how I
23 was signed on as the chief engineer because I hired onto the
24 company as a chief engineer, and I was to be assigned to the
25 Guardian. It's not an active vessel and there's -- so it's kind

1 of to say that I didn't assume the care of the vessel as a chief
2 engineer necessarily, right?

3 Q. Okay.

4 A. There was no formalized process to say that I did or didn't
5 do that, right, only that I was going to be hired as the chief
6 engineer. I was now employed at the company, so I wouldn't say
7 that that's formal, that you could formalize that.

8 Q. Okay.

9 A. If that's fair. I didn't sign onto the vessel, I didn't, you
10 know, it wasn't formally documented anywhere.

11 Q. Okay.

12 A. But there was an understanding that I would be the chief
13 engineer of the vessel.

14 Q. Okay.

15 A. So I don't mean to call that distinction, but it's obviously
16 a vessel in the shipyard and undergoing extensive modifications.

17 Q. Okay. When you did go aboard the vessel, and here's where
18 I'm going with it --

19 A. Sure.

20 Q. -- did you ever receive any sort of familiarization with the
21 equipment and the safety gear and all?

22 A. Nothing was presented to me, no.

23 Q. Okay. Were there any drills or exercises with the crew prior
24 to departure?

25 A. Yes, we held a safety meeting and did outline everyone's

1 responsibilities and go through, make sure everyone did understand
2 their role in the situation, what the location of items were that
3 they would need to use, and so I can say in that case, you know,
4 given the dynamic nature of the state of the vessel, people were
5 as familiar as they should have been and responded accordingly.

6 Q. So that safety meeting was prior to departure for the sea
7 trials --

8 A. Yes.

9 Q. -- is that fair?

10 A. Yes.

11 Q. And leading up to the sea trial day during the shipyard
12 period, did you have a crew working for you, an engine crew?

13 A. There are people employed at Stabbert assigned to the vessel,
14 so, yes. There are two engineers and one OS viper, one Q-med.

15 Q. Any other licensed engineers.

16 A. Not at that time. Currently yes.

17 Q. Okay. And what would your typical work day be hour wise?
18 Would you work days?

19 A. For myself?

20 Q. Rotating shifts? Yeah, for yourself.

21 A. For myself, you know, typically morning meetings starting at
22 6:30, and breakfast for 7:00, and then went through the day and my
23 days were obviously varying in like --

24 Q. And would you have a safety meeting every morning with your
25 team?

1 A. Yes, sir.

2 Q. During the short time you're here prior to sea trials, what
3 kind of work was going on board the vessel?

4 A. Wow, yeah. I think it's a shorter list to say what wasn't.

5 Q. Well, we had talked to the captain and we know a lot of new
6 equipment has been added back on the stern.

7 A. Yes.

8 Q. What about -- let's talk just in the engine room, and what
9 kind of work was getting done in the engine room?

10 A. Specifically in the engine room in the while that I've been
11 there, I wouldn't say much of anything. Outside of the engine
12 room they've been reinstalling piping for various systems. Mostly
13 new addition, a lot of steel is still being laid for foundation.
14 A good example would be the crane pedestal is a new addition, so
15 there was a lot of steel, a lot of welding happening there. In
16 terms of kind of what was going in the machinery space, you know,
17 technically the engine room, a lot of the focus was on improving
18 electronics and electrical stuff, so there's two ETOs if you will,
19 that were assigned to that task and have been assigned to it for a
20 good while now. So just restoring channeling for the AMS and what
21 interaction the AMS has with equipment proving that after
22 reinstallation from the modifications, a lot of this -- a lot of
23 signal and channel provings sort of stuff. Going into switch
24 gear, making sure that breakers and manual activation was safe,
25 megering (ph.) through a lot of power circuits, making sure

1 everything was DH'd well enough. You know, things have been laid
2 up for a long time, so putting heaters on things, making sure that
3 compulsion motors can be brought online, cooling pumps were
4 operational, safety shutdowns were functional. That was pretty
5 much the scope of what happened between Monday and Friday.

6 If we just keep it in context between the day I started to
7 the day we were on se trial.

8 Q. Okay. And what was the real reason for performing the sea
9 trial? What was the intent of that sea trial?

10 A. The intent of the sea trial was to prove that the larger
11 elements of the vessel were functional so that main engines and
12 propulsion drives including a drop down of a protractible
13 (indiscernible).

14 Q. And because it hadn't been run in so long, is that the
15 intent?

16 A. (No audible response.)

17 Q. And was there say a formalized plan showing, you know, this
18 is what we're going to do, how hard we're going to run the
19 engines, this is -- for the sea trial day?

20 A. There wasn't a formalized plan, a written plan, but the scope
21 was limited, so there wasn't really -- there was a discussion
22 about what we would, and it was just understood that we would
23 perform a 360 on each of the bow thrusters bi-directionally, call
24 it good, you know, just simple function testing to make sure that
25 the PMS was healthy and able to call in generators, load chair

1 with not just CR loads. As someone said, an elephant trying to
2 eat crumb, having two elephants trying to eat crumbs is kind of
3 what you see when you have a CR load on two generators.

4 Q. Right.

5 A. So to avoid that and see that they're functional kind of
6 operating bands. That all seemed to go well. It was a pretty
7 simple test. It was a quick test. It was meant to be out, make
8 sure those things were working.

9 Q. And that was the intent just to go out in the morning, run
10 these tests and turn right back around and head in?

11 A. Correct. And by tug assist, so the only intent of the
12 operation of the vessel was to be once we were let loose in open
13 water for those devices and return by tugging them. That was --
14 the understanding for me is that we were -- a barge with
15 propulsion to prove that's head propulsion --

16 Q. Right.

17 A. -- and go back in and figure out what we needed to do for
18 that.

19 Q. Okay. Okay. And I understand the idea of rotating the
20 thrust is making sure everything's working 360, but when you talk
21 about the power management system, you can load up the thrusts to
22 drive the engines to start and stop --

23 A. Right.

24 Q. -- automatically.

25 A. Yup, and those are the only viable loads to do that.

1 Q. Right.

2 A. Yup.

3 Q. Right.

4 A. And we wouldn't have been able to do that obviously dock side
5 without rearranging the place a bit.

6 Q. Yes.

7 A. So the -- to give you an idea of kind of the load sharing of
8 that vessel, it's a pretty conservative load sharing system, you
9 know, the -- in its manual mode, you can only go to 85 percent of
10 the load of the generator before it's going to ask for another
11 generator --

12 Q. Right.

13 A. -- and up until that point it's going to power limit, so it
14 was fully functional. We proved that. The -- so the maximum a
15 generator saw was electrically maybe 80-ish percent load.

16 Q. Um-hum.

17 A. You know, it seemed to be conservative testing. We had
18 constant monitoring, pyrometers, you know, pulling oil. I did
19 have people positioned in ways that we could make sure that all
20 that information was captured and monitored and digested with
21 enough people that no one was overwhelmed.

22 Q. And how many people did you have in the engine department
23 that day?

24 A. So I think eight would be the answer.

25 Q. Eight.

1 A. Yeah.

2 Q. Including the two cadets.

3 A. Yes. But that would be the, you know, considering the person
4 who commissioned the PMS was present, practice gentleman was
5 present and so they were assigned roles of monitoring their
6 equipment as well so that anything unique to their systems was
7 presented by qualified individuals.

8 Q. Okay. So the two vendors that were aboard, one was for the
9 power system?

10 A. Correct.

11 Q. And one was for the AMS system.

12 A. Correct.

13 Q. And they were just observing the loads and how the engines
14 responded.

15 A. Yeah, and a large amount of that very small function test was
16 derived by the PMS vendor.

17 Q. Right.

18 A. He said these are the things we would want to see. It's a 20
19 year old system. It's a fairly simplistic --

20 Q. Yup.

21 A. -- power management system.

22 Q. Yes.

23 A. So testing it was simple, and functionally it worked fine.

24 Q. Okay. Leading up to the time when the engine failed, were
25 there any abnormal temperatures, pressures, alarms, anything

1 that --

2 A. Related to the number three?

3 Q. To the number three engine, yes.

4 A. Negative.

5 Q. Nothing.

6 A. So let me qualify that. In the second leading up to the
7 failure, I did see the climb in pressure which I mentioned to you
8 earlier. It didn't seem appreciable considering I'd just seen the
9 engine come off load in a 10 PSI drop. So it maintained 50 PSI
10 throughout the trials. It was happy. I saw it come offload, I
11 saw it go into the 40s. He said that's okay, I'll keep an eye on
12 it, and the subsequent -- and it's documented in the -- I passed
13 along a file that shows the engine operating parameters.

14 Q. Okay.

15 A. It's well documented that the engine was healthy up until the
16 final seconds that it wasn't.

17 Q. Okay.

18 A. So -- and that's according to the AMS.

19 Q. Right.

20 A. But I was visually monitoring the symptoms of the engine and
21 I didn't see anything that was indicative of a failure until the
22 failure.

23 Q. Okay. And the -- any odd -- oh, what was the load, that was
24 the question, the load that before went to say take itself
25 offline, what was the highest load it had seen prior to the

1 failure on engine three?

2 A. I can only speculate that answer. I can't tell you what --
3 based on what I observed, I would be impressed that it was over 60
4 percent at any given point.

5 Q. 60 percent of an electrical load on that engine.

6 A. It was low and even if it was that high, it was for a short
7 period of time just to prove that it was connecting additional
8 generators. At any given time I think the highest we ran the
9 propulsion so the propulsion request was I think highest at 75
10 percent, and most of the again very short trial was between 60 and
11 65 percent, and that was split across two generators.

12 Q. Okay.

13 A. So there's -- pretty level. So in general 25 to 35 percent
14 on the generator.

15 Q. Okay.

16 A. And at the time of the failure it would have been around that
17 I would guess.

18 Q. 25 to 35 percent of engine power?

19 A. Yes. Yeah, it was low, light load at the time failure,
20 relatively.

21 Q. Right. And with your crew of about eight people and yourself
22 probably in the engine control room, did anybody smell, hear or
23 see anything odd leading up to the time of the failure that you
24 can recall or report to you?

25 A. Not up to the -- so the only reported thing was on generator

1 number one, they saw a trace of smoke. It was a cadet's
2 observation. They were hypervigilant which was excellent, and I
3 didn't remark it as being significant. It looked as though it was
4 just potentially something burning off of the exhaust. It was
5 observed, there was video taken of it, and it was completely
6 insignificant.

7 Q. Um-hum.

8 A. Outside of that, no. We had a couple burps of box coolers
9 that we had to flush out, air in number two which had a rise in
10 temperature for number two for a short while. I think it called a
11 shutdown at some point but it wasn't significant. It was clearly
12 attributed to just an air in the system bled out. Certainly
13 (indiscernible), so --

14 Q. Okay. When you say that it was videoed, do you have any CCTV
15 cameras down there?

16 A. No.

17 Q. No.

18 A. It was just one of the cadets that I think took it on his
19 phone.

20 Q. Oh, okay.

21 A. And he -- sorry. He just wanted to make sure that -- because
22 I was primarily trying to stay in (indiscernible) --

23 Q. Yup.

24 A. -- and have other people retrieve information and keep me in
25 a central point for being able to communicate.

- 1 Q. Okay.
- 2 A. Yeah, so just doing due diligence --
- 3 Q. Yes.
- 4 A. -- and saying, hey, what do you think, chief.
- 5 Q. With the test of the PMS system, would the engines actually
- 6 go from a stop to idling and starting and putting themselves
- 7 online based on load dependence starts?
- 8 A. They can.
- 9 Q. Is that how you had it set up?
- 10 A. They were already running at the time so they had already all
- 11 been warmed and given the -- they were in a running state when the
- 12 -- when that was performed.
- 13 Q. So throughout the sea trial, all four engines were running?
- 14 A. No.
- 15 Q. No.
- 16 A. No, but we went through the manual processes of bringing the
- 17 engines on and offline first --
- 18 Q. Okay.
- 19 A. -- so they were in stages of readiness and online when they
- 20 were each added to the bus.
- 21 Q. Okay.
- 22 A. If that makes sense.
- 23 Q. Yup. And when you do a manual start of an engine, do you
- 24 blow them down manually?
- 25 A. No, they don't have blowdowns.

1 Q. No.

2 A. It's not (indiscernible) in a Caterpillar.

3 Q. Okay. On these engines are they equipped with any sort of
4 pre-lube pumps?

5 A. Yes.

6 Q. And can you talk about how they're functional and when they
7 would be activated?

8 A. Sure. Prior to the request for a start from the PMS, the
9 request cycle of the PMS cannot override -- the request for start
10 from the PMS cannot override the pre-lube. It's just
11 preconditioned start.

12 Q. Okay.

13 A. It asks for a start, the Caterpillar receives the start
14 command and initiates its sequence only as I mentioned to you
15 earlier, only in the case where it already sees adequate oil
16 pressure will it bypass the preload.

17 Q. Okay. And do you have any idea about how long the pump would
18 run prior to the engine start?

19 A. 30 seconds is a good guess.

20 Q. 30 seconds?

21 A. Yeah, about that long.

22 Q. And can you --

23 A. The only thing I can't say from recollection is whether or
24 not -- I think it is a pressure based stop for where the cycle of
25 the pre-lube pump starts and stops. I don't think it's -- I can't

1 remember specifically if it's a timed event or if it requires a
2 certain pressure to be built up first.

3 Q. Okay.

4 A. I just -- I can answer that question later, but I don't know
5 that offhand.

6 Q. Can you manually start a pre-lube pump and just let it run or
7 is it only part of the starting sequence?

8 A. You could. You could, but that wouldn't be something you
9 could do in a normal -- you can't request that from the PMS, kind
10 of give you a line of sight. You can't request it from the PMS,
11 you can't normally request it from the outside of the cat panel.

12 Q. Okay.

13 A. So it would require some tinkering to --

14 Q. Programing or tinkering. Okay.

15 A. Yeah, you would -- yeah.

16 Q. Okay.

17 A. It's not -- it's meant to be an automated feature of the
18 engine.

19 Q. And do you know if that was --

20 A. You can bypass it.

21 Q. Sure.

22 A. Yeah, (indiscernible) bypass, if that was your next question.
23 Sorry. It was not in bypass on any of the engines.

24 Q. Okay. And do you know if those pre-lube pumps were part of
25 the original construction or was it something that had been added

1 to the engine at some point?

2 A. So I can't answer to the construction of the vessel, but what
3 I can tell you from my previous experience with these engines that
4 it's typically part of the installation package, and I think that
5 -- and I think he said in one case he saw that some did not have
6 them. I don't know that earlier series of 3516s if they were
7 spec'd with them, but I think in general they -- that's an
8 automatic part of the order.

9 Q. Okay.

10 A. I think they're just automatically specified with the pumps.

11 Q. Okay. And do you know if these engines are equipped with any
12 sort of a high crankcase pressure alarm or shutdown?

13 A. I do not believe they are equipped with that.

14 Q. Okay. So then that was my next question, if you had received
15 any sort of crankcase alarms. What about oil mist detectors?

16 A. I can confirm that they are not --

17 Q. They're --

18 A. -- equipped with.

19 Q. -- not equipped with that.

20 A. Yeah.

21 Q. Have you ever seen any other cat engines with oil mist
22 detectors?

23 A. Absolutely. Actually the majority of the engines, 3516s that
24 I've worked with have been equipped.

25 Q. Okay. And what's -- from what you know, what's the function

1 of an oil mist detector?

2 A. Specifically to detect oil mist in the crankcase.

3 Q. And do what?

4 A. And if it detects enough of that, so it's a qualitative
5 value, right. If it sees enough of that, it will command a
6 shutdown. You usually have staged oil mist detection, right. You
7 usually have a step which is warning, and a step which is shutdown
8 depending on how severe and quickly it happens.

9 Q. Right. Prior to the sea trial, do you have any idea when the
10 last time the engines were run under load?

11 A. Under load? How would you qualify that?

12 Q. Anything more than a short power load or hotel service load
13 at sea load.

14 A. No, as far as I know since there was maintenance performed,
15 that was the first time since there was maintenance performed.

16 Q. And can you talk about what type of maintenance may have been
17 performed on main engine three?

18 A. As far as I know, again it's hearsay, I have not put my hands
19 on reports. I have requested them.

20 Q. Okay.

21 A. That the turbos were remand, the after coolers were either
22 cleaned or replaced. They look new in pulling them. So again
23 speculation, but cylinder heads were remand, and the connecting
24 rod bearings were replaced. I don't know outside of those things,
25 and that's just on a conversational level.

- 1 Q. Okay.
- 2 A. I wouldn't want to attest to the work performed.
- 3 Q. Okay. And do you have any idea when this work may have been
4 done?
- 5 A. I know it's -- I don't. I've been told a couple of different
6 times, so --
- 7 Q. Okay.
- 8 A. -- it's again hearsay based. I'd love to put my hands on the
9 report to digest that.
- 10 Q. Okay. And this work that may have been done on the engine
11 would have been done by a vendor or by ship's crew or --
- 12 A. NC Power.
- 13 Q. NC Power.
- 14 A. It's been made clear several times --
- 15 Q. Okay.
- 16 A. -- prior to the incident as much as known.
- 17 Q. Do you know how many hours are on these engines or especially
18 number three?
- 19 A. How do you want to count the number of hours?
- 20 Q. Since the last major overhaul.
- 21 A. It was brought to my attention that -- I was under the
22 impression that it was between zero and 10. The figures stated
23 today was that they had less than 50, so again without seeing the
24 report or any documentation, I don't have a reference point.
- 25 Q. Okay. So zero to 50 hours since the overhaul --

1 A. Correct.

2 Q. -- is what you may have heard.

3 A. And I'm told that as you were privy to that the engines were
4 run on the trip to Guam. I was under the impression that they
5 were over -- or that work was performed after that.

6 Q. Okay.

7 A. So that these were the fledging hours since the work was
8 performed. I can tell you that NC Power has been in attendance
9 since then in my presence to witness startups. We did that in
10 their presence. They were happy with the condition of the
11 engines, so I didn't -- wasn't -- I didn't receive any further
12 instruction that they were desiring to attend any further events
13 based on the operating parameters of the engines. I don't think
14 they would have seen anything that -- I don't know that they would
15 operate the engines any differently or would have seen anything
16 that we didn't see in the -- between the time of any indication of
17 failure. It wouldn't have been -- the technician attending that
18 trial wouldn't make any difference other than another person.

19 Q. Right, right. And you said when they were there witnessing
20 startups that was prior to the sea trial?

21 A. Yes. Their (indiscernible).

22 Q. Okay. Do you know if any sort of lube oil analysis is
23 conducted on these engines?

24 A. It is in general as part of the company's normal maintenance
25 procedures.

1 Q. And do you know if that had been done throughout the shipyard
2 period?

3 A. I don't believe so.

4 Q. Okay.

5 A. It wouldn't be terribly normal to do that in my experience
6 with such small sumps. That lube oil analysis went in
7 (indiscernible) periods would normally be read without operating
8 it.

9 Q. Running it. Yes, yes.

10 A. So I wouldn't say that that's out of character from my
11 experience.

12 Q. Okay. Can you talk a little bit about the incident? We know
13 -- well, maybe you can start right from the beginning from
14 starting up the engine and departing out, and just talk about what
15 happened and give us the whole story.

16 A. Yeah, I think we started up one in four, changed over from
17 short power. Prior to that we went through the harbor generator
18 and shutdowns there, and just proved the, again the manual
19 operation of the switch gear and then into its automatic functions
20 and making sure that it operates through its user panels. Went
21 onto one in four, sat unloaded for the trip out on tugs, right.

22 Got into clear deep water, ran the bow thruster and
23 retractable, deployed and retrieved it successfully. I think it
24 looked like it was happy and operational. We did steering tests
25 prior to departure. We did, you know, normal pre-departure check

1 kind of thing. Went out, again did the steering tests, bump
2 tests, made sure that he had control of the stations which was
3 done the previous day. I mean, I can go into the volumes of
4 testing that we did to make sure that, you know, the vessel was
5 going to at least predictably perform as well as we could
6 understand it from new vessel with all kinds of --

7 Q. Yup.

8 A. -- work performed. So we went out, did the retractable bow
9 thruster, started applying propulsion to port and starboard
10 individually, you know, just making sure that we had healthy
11 response, healthy conditions, let everything come up to
12 temperature. We step loaded things carefully, made sure we saw --
13 what I like to see when I do that type of work is that you see
14 stabilized temperatures, right. So we were seeing that, and so we
15 decided that we would put a 75 percent load on the propulsion just
16 as a, you know, normal healthy test. I think we got about 11
17 knots out of that, between 10 and 11 knots.

18 Temperatures were okay. We just wanted to make sure head
19 tanks stayed filled and all that kind of, you know, 10 fingers, 10
20 toes with the basics, right. That was really what we did. I
21 don't -- so going through the load sharing, automatic base of
22 things.

23 We started -- I'm unclear which set of generators we started
24 and added to it. It's kind irrelevant I think, but essentially
25 there's kind of three modes of operation -- well, four modes, but

1 three modes that you would use underway. There's a manual mode
2 which you call any generator on and off. You have the option to
3 go through a cool down period or to turn it off at your leisure.
4 They still cool down, but that's neither here nor there.

5 Then there's a semi-automatic mode which will not allow the
6 PMS to command stops on the generators, only starts. And so we
7 went into semi-automatic, proved that two would start and ended up
8 fully automatic that it would command the stop request. And it
9 was in that period where number three had its incident.

10 The first sign of trouble was -- or concern I would say was
11 that there was dropping oil pressure, but it was very quick and it
12 was not obvious that there was a problem yet. It was still in a
13 healthy range. Within the seconds thereafter there was a loud
14 noise. I could hear pre -- what sounded like a pre-connecting rod
15 banging around, something loose banging around, and in those same
16 seconds, smoke filled the engine room, and in a matter of seconds
17 later, fire was present through the ECR, as in on the other side
18 of the ECR in the engine room.

19 At that point most of the people had gathered, and then
20 subsequently all gathered. In that period we began e-stopping. I
21 notified the captain, and essentially commanded everyone out of
22 the engine room. We continued securing equipment through the e-
23 stops and readied the CO2 and acknowledge -- got acknowledgment
24 from the bridge that that was going to be taking place. Requested
25 muster, made sure that we had accountability for the people in and

1 out of the engine room. They got a head count, pulled the CO2,
2 waited a short while. Had fire teams dress out.

3 When I say had, I didn't have them do it, but that was kind
4 of an automatic feature of what they were proceeding to do. And
5 they -- in the short while thereafter went to investigate, found
6 that there were still some smoldering fires in a couple of places
7 which you can see evidence of, and what got burned and where the
8 burning areas were. They attended to those with extinguishers and
9 A-FFF and some amount of buckets of water.

10 It was -- the decision was made not to use sea water to
11 extinguish it because it did not seem necessary at the time.
12 Hoses were ready, the emergency generator was running, the fire
13 pump was proving to be ready to go if need be. We charged the
14 line. Didn't find a need to use it.

15 So after that, we -- there was -- temperature was taken for
16 boundary areas, saw that there was a steady decline, and I think
17 it was determined that we definitely had control of the fire at
18 that point and then eventually a decision was made to hook -- or
19 to head in. I think we were already hooked to a tow well prior to
20 that, but I think they accepted the second tow at that point to go
21 on in.

22 Continued fire watches through the evening, through the next
23 day. We still had fire watches going on in teams with the idea
24 that there may be a recurrence.

25 Q. Right.

1 A. That's generally what happened.

2 Q. I'm sure your AMS was providing plenty of alarms, but do you
3 recall hearing any sort of smoke detector or fire detection system
4 alarms?

5 A. No.

6 Q. Is the engine room equipped with smoke detectors or fire
7 detectors?

8 A. Um-hum.

9 Q. And if there was a smoke or fire detector --

10 A. Well, let me qualify. I don't know if the engine room has a
11 smoke type detector. That would be -- usually I expect it in the
12 engine rooms frequently or phot and heat --

13 Q. Yeah.

14 A. Yeah, so whether or not it specifically is equipped with a
15 smoke detector, I cannot recall.

16 Q. Okay. There are some sort of --

17 A. Yeah.

18 Q. -- monitors in there.

19 A. And they are currently in hardened, molten -- hardened
20 globules of plastic, so --

21 Q. And if they were to activate, would you hear an alarm in the
22 control room?

23 A. Absolutely.

24 Q. It does. Do you remember hearing a general alarm from the
25 bridge?

- 1 A. Yes, I believe so.
- 2 Q. And is that some sort of a bell or something in the control
3 room?
- 4 A. I don't know. I couldn't answer that.
- 5 Q. Okay. The captain had said, too, that the A-FFF had been
6 brought down into the engine room. If you weren't running the
7 fire pumps, how did that get dispersed?
- 8 A. It was poured into the bilge.
- 9 Q. Poured right from the bucket into the bilge?
- 10 A. Absolutely. Again, a decision was made -- I won't say that I
11 was given instructions. I was -- I had suggested that we use
12 A-FFF as a means to not so much extinguish any residual bilge
13 fire, but to prevent any re-ignition.
- 14 Q. Sure.
- 15 A. So that we did not use the nozzles. We had them available.
16 Those were pulled, ready to be outfitted, but the belief was that,
17 you know, if we were to pour that into the bilge versus applying a
18 bunch of salt -- the idea was damage mitigation.
- 19 Q. Right.
- 20 A. We knew we were well in control of the fire. It was about
21 not ruining the boat any further.
- 22 Q. Right. And can you estimate about how many buckets of A-FFF
23 were used?
- 24 A. One.
- 25 Q. One bucket?

1 A. To my knowledge, one. Again, I wasn't directly overseeing
2 that taking place.

3 Q. And were you able to get down into the engine room at some
4 point to take a look at the engine at some point and what did you
5 see around the engine number three? What did you determine may
6 have happened when you got down there?

7 A. It was clear to me that -- it was pretty clear to me when it
8 happened what had happened. I don't want to say that 3516s do
9 that, but they do that.

10 Q. Have you ever been onboard a vessel that that's happened
11 before?

12 A. No. No, but I've seen the aftermath of them and familiar.
13 I've never personally experienced it.

14 Q. So when you get down to the engine room, what do you see?

15 A. A lot of smoke. Smoke damage. I would -- my grandparents'
16 house burned down when I was a kid, and I just remembered how much
17 everything was black and you really couldn't tell what was good
18 and what wasn't. That's kind of how I took that to be. I could
19 see a lot of -- I don't even say smoke damage, but you can see
20 everything covered in smoke. You put your finger to something and
21 say that's not necessarily damaged, it's just covered with smoke,
22 so what I could see at the local site was that def plates were
23 burned out, that there was just inside number three that it looked
24 like the fire had transmitted underneath the engine a bit and in
25 the overhead there was some heat damage in higher areas. That's

1 what we were monitoring.

2 Q. Right, and the engine itself, number three engine, were there
3 any components?

4 A. Yeah, you could see the explosion relief and the crankcase
5 door was -- left the engine and it was sheared away from that. It
6 wasn't -- it was clear that it wasn't removed by hand.

7 Q. All right. And were there any large components from inside
8 the crankcase found outside the engine?

9 A. Negative. No. Not at that time and later on I think they
10 recovered small pieces, but there was very little of the engine
11 was outside of it.

12 Q. Okay. And do you have any idea as to what may have caused
13 part of the crankcase to blow out? Was it a component striking it
14 or was it the pressure that may have separated from the engine,
15 from the crank?

16 A. It would be my belief that it was the connecting rods that
17 made contact with it and caused it -- it wasn't ejected in a way
18 that it was done -- it wasn't done propulsively if you will. It
19 was very close as though it had been punched off of the engine,
20 you know, like a large metal connecting rod striking it off of the
21 engine.

22 Q. Okay.

23 A. You can see it was laying a couple feet away. There was no
24 indication of damage where -- that had been propelled --

25 Q. Right.

1 A. -- with any force.

2 Q. Right. And since then, since the incident, what has happened
3 to that engine?

4 A. The -- an effort has been made to replace that engine with
5 one that doesn't have a hole in the side of it.

6 Q. Has anyone collected any parts or bits or pieces from the
7 engine?

8 A. Yes, sir.

9 Q. Okay.

10 A. NC Power was there the following morning to retrieve any of
11 the things that had been let go from the engine. And subsequently
12 we drained the sump. We did collect samples from the oil filter.
13 We drained the sump so that they could retrieve what I think they
14 were missing, what they thought was occurring or part of the crank
15 wall, so they wanted to see it emptied.

16 Q. Okay.

17 A. Try to trace out whether the -- threw a foot-and-a-half away.

18 Q. When they were collecting items from the sump, were there any
19 conversations or any observations made that there were any sort of
20 abnormalities other than a lot of damaged equipment?

21 A. No, they were pretty close, yeah, pretty close to the
22 (indiscernible). You know, I cannot speak to the work that was
23 performed. It's hard to say, you know. My inclination was to say
24 there weren't markings that I would expect to find, but how one
25 technician performs a torqueing procedure versus another one isn't

1 my business to say.

2 Q. Right.

3 A. You know, everyone does that differently and as long as they
4 stay within the context of the assembly, and assembly
5 instructions, whether you draw an X or circle or smiley face, you
6 know, in the higher glips of that, I can't speculate what it was.
7 In terms of how short of an experience the engine had before it
8 failed, my inclination was to say that there was a workmanship
9 error given that we had healthy parameters.

10 Q. Right. Leading up to my next question is is now that you've
11 had about a week or so to think about it, can you think of any
12 other reasons why this engine may have failed with respect to the
13 other engines other than what you just kind of talked about?

14 A. I think that statistically in failures possibly haven't given
15 enough time to the other engines or maybe there was just a bit of
16 inconsistency in that one time with that one bolt. I can't say
17 whether it's localized to that engine, to the technician that did
18 it, to the bolt that was maybe the fail point. You know, it's --
19 I don't have any line of sight. Like I said before, you know,
20 Caterpillar -- I've heard great things, I've heard bad things
21 about Caterpillar 3516s. That's -- they're used in such harsh
22 conditions frequently that it's hard to blame an engine
23 necessarily and in a lot of instances that I've heard where they
24 haven't performed as well as people expected, but they're a
25 ubiquitous engine in work boats and by and large they do well.

1 Q. Yeah.

2 A. So --

3 Q. And based on everything that happened last week, are there
4 any lessons learned or any recommendations or any better practices
5 that you may have or maybe will initiate that you've talked about
6 with your crew?

7 A. I wouldn't say one of the requests would be repeatable fire
8 suppression, you know. I'm a big fan of water mist systems
9 because especially in ocean going situations you have the
10 opportunity to re-use them. They're harmless. You can make a
11 mistake and turn one on and the worst things you've going to do is
12 put a mop out.

13 So looking at the best case means to deal with this in the
14 future and being that my more recent experiences with DP2 vessels
15 include multiple engine rooms, that they're close proximity
16 engines that they're 16 cylinders per engine and high speed, you
17 know, you get 64 cylinders at any given time operating and all
18 wanting to hold themselves together, you know. It's leaves me a
19 little bit of concern with having good repeatable suppression
20 means.

21 I guess that would be my first and most in making sure that
22 the big systems are available in vessels.

23 Q. Yes.

24 A. CO2s I think are good for near coast relief, and, but I've
25 seen a lot of companies retrofit with water mist. I've seen a lot

1 of companies embrace that, and I think for good reason. You all
2 could probably give me more indication of that fact that --

3 Q. We see it a lot on cruise ships. How would you say the
4 communication was throughout the sea trial and especially through
5 the incident between the wheelhouse and the engine room?

6 A. I go over every word that I could have said differently ad
7 nauseam at this point. I wish I would have said more. I wish I
8 would have communicated more. I wish -- but I think that the
9 things that needed to be communicated were. I'm sure that it is
10 an isolated place to me in the wheelhouse. You know, you're
11 depending on others to receive instructions. I was not the sum
12 total of the complement of the crew, right. Radios were held and
13 being communicated by others. Larry was on board. He was holding
14 radio. There were others reporting information than just myself
15 over the engine room, right, so I think overall that's kind of one
16 of those things, too much communication is probably the right
17 amount, and I wish I had said more at any given point, but I think
18 enough was said. You can't have too good of communication.

19 Q. Right. Yes.

20 A. Whether it's an organization or crew.

21 Q. Right.

22 A. Everyone struggles with it.

23 Q. Yeah. Well, thank you. You've answered all my questions.

24 I'll turn it over to the Coast Guard. Thank you.

25 A. Thank you.

1 BY MR. [REDACTED]

2 Q. So this is Lieutenant [REDACTED] with the Coast Guard.
3 Just a couple follow up questions for you, Chief. Was it -- so
4 after you released CO2, you released all of your bottles in this
5 space, correct?

6 A. No.

7 Q. No. Okay. How many were -- how many bottles were released
8 and how many were remaining?

9 A. I think they're sets of five.

10 Q. Okay. So that I guess kind of leads into my second question
11 then. So what -- can you walk through the decision process then
12 to go back into the space after the CO2 had been released as
13 opposed to --

14 A. I didn't clear the space. Let me be very clear on that. I
15 didn't clear the space for re-entry.

16 Q. Okay.

17 A. It was not my decision to re-enter the space.

18 Q. Okay. Who made that decision?

19 A. I can't say, but I know that the crew that were dressed out
20 decided to do it.

21 Q. Okay. So it was not -- if it was up to you, how -- would you
22 have had teams go into the space or would you have kept the space
23 closed?

24 A. The protocol for CO2 is that you leave the space sealed.

25 Q. Okay. All right. That answers what I had with that then.

1 Follow up, following up, has there been other like any kind of
2 inspections on the other engines yet to see what extent the damage
3 might be on those?

4 A. The NC -- it has been requested. There's a PO released for
5 Northern Commercial Power to attend starting with the number one
6 because that's considered -- suspected to be a healthy generator,
7 so --

8 Q. Okay.

9 A. -- they're starting that. Once they're finished with number
10 one, they'll go to two and four. The damage is obviously in the
11 harnesses to the point where (indiscernible). There's just
12 assessments that could be (indiscernible).

13 Q. Okay.

14 A. (indiscernible). I don't know how far they're going to go.
15 And the external assessments other than a few gaskets. I know
16 that there is a request on my part to go to the workmanship of
17 those and assess if the torques were done correctly and I think
18 they're still formulating a plan as to how to do that. And
19 obviously when you intervene mechanically to prove something
20 happened, you have to do it right again. You assume that you're
21 going to do it right again, but -- so that's the juggling act of
22 performing kind the forensics of those things.

23 Q. Right.

24 A. We suspect that this may have just been a one on failure,
25 right. It may have just happened. It could be that we can't

1 determine anything based on any amount of inspections and we'll
2 find that everything else is healthy to our -- by the means of our
3 inspection, right --

4 Q. Right.

5 A. -- and so really all you do at that point is just end up
6 putting hands on things, and every time we do that, we put risk in
7 the process.

8 Q. Correct.

9 A. So, I don't know, to answer your question, we're still
10 formulating --

11 Q. Okay.

12 A. -- what's the best course and as far as I know, Caterpillar
13 doesn't expect or require the replacement of the comrod bolts.
14 You know, that's obviously a suspected failure point, right, that
15 the bolt let loose and why it did that I think we could probably
16 understand that, but we may not be able to understand in terms of
17 how that pertains to the workmanship. So I think the goal is
18 right now to assess that the bearings are healthy, that the bolts
19 are adequate or suitable for use, but again there's not really a
20 whole lot of evaluation provided by Caterpillar to determine that.
21 They just expect they get reused, so --

22 Q. And then previously when we had talked, you had mentioned
23 that --

24 A. Sorry for --

25 Q. Oh, no, no, no, no worries. So previously when we had

1 discussed, you mentioned that immediately when you noticed the
2 fire, you punched out engines number three and four, is that
3 correct?

4 A. Yes.

5 Q. And then number one and two were later?

6 A. They were.

7 Q. Do you in your -- do you recall or have an estimate about how
8 long you think one and two may have run with the smoke and fire in
9 the space?

10 A. Less than minutes.

11 Q. Okay.

12 A. It would have been a couple of minutes.

13 Q. Okay. And then I know you mentioned when the teams went back
14 in there were some spot fires. Specifically you had mentioned
15 there were spot fires on the air filters. Were the intake air
16 filters, which ones of those were burnt up? Was that on all the
17 engines? Like were number one and two impacted or --

18 A. Number two on the side of number three it was.

19 Q. Okay. The air filter --

20 A. Yes.

21 Q. -- intake.

22 A. So I think on the other side -- I believe on the other side
23 of number two it was as well.

24 Q. Okay.

25 A. Number four on the side of number three.

1 Q. Okay.

2 A. So I think both of number two, one side of number four to my
3 recollection.

4 Q. Okay. So do you suspect that there may be internal damage in
5 those engines based on -- especially number two based on the fact
6 that it was running with a compromised air intake?

7 A. I don't think so.

8 Q. Okay.

9 A. I think where it would have probably caught fire -- number
10 one, it wasn't really under load. I don't believe so.

11 Q. Okay. I was just curious.

12 A. It's a fair question. It's hard to say. I think that the --
13 I don't -- I can't say.

14 Q. Okay.

15 A. It's a fair question.

16 Q. All right. And then aftermath, do you -- were you party to
17 any discussions about reporting this to the Coast Guard or even on
18 the trip back in potentially requesting Seattle Fire or anybody
19 else to stand by upon return to the dock or in transit?

20 A. No.

21 Q. Okay.

22 A. No.

23 Q. And then --

24 A. It's not typically something I would consider in my
25 wheelhouse.

- 1 Q. Okay.
- 2 A. It's kind of an above and below kind of thing.
- 3 Q. Yup. Understandable.
- 4 A. Yeah.
- 5 Q. Just had to ask.
- 6 A. Yeah.
- 7 Q. I think that that covers the questions I have.
- 8 A. Okay.
- 9 BY MS. [REDACTED]
- 10 Q. I just have one --
- 11 A. Sure.
- 12 Q. -- brief question for you, Chief. I know that earlier you
- 13 had mentioned that -- oh, thank you. This is Lieutenant [REDACTED]
- 14 [REDACTED] with the Coast Guard. The rep from NC Machinery decided
- 15 not to come on and partake in the sea trial or like it just was
- 16 determined that he was not going to be present?
- 17 A. Yeah, that there wasn't a reason.
- 18 Q. There wasn't a reason. Okay.
- 19 A. Yes.
- 20 Q. Is that typically how you see sea trials work? The people
- 21 who have done the work on the engines don't normally partake in
- 22 the sea trial or it would depend on --
- 23 A. It would --
- 24 Q. -- what's going to be tested?
- 25 A. It would depend on probably a handful of actors. One would

1 be the scope of work performed on the engines, and if you change
2 the filters on an engine, you'd be surprised how much work gets
3 outsourced in some places, in some companies, and so they wouldn't
4 typically require the presence of a technician for a lot of the
5 more minor work. The engine runs at rated speed all the time
6 basically so it's already at speed so you know the cylinder heads
7 -- the speed that it's going to be. I guess there's not
8 necessarily going to be the presence of an engine technician for a
9 sea trial. I wouldn't say that it was out of character.

10 Q. Okay. Thank you. And then just to piggyback off of that, do
11 you think that there's anybody that could have been onboard during
12 the sea trial that would have been helpful or you think everybody
13 was there that really needed to be?

14 A. That's a great question. I would answer that with I think
15 everyone was there that needed to be. Again, I don't think there
16 was any detectable reason that it was going to fail. It failed in
17 a very unpredictable way in my opinion other than being there may
18 be at the time when they assembled it.

19 Q. Okay.

20 A. That might have been the time when they wanted the right
21 people there. I don't know. I can't say that.

22 Q. That's all I had, Chief. Thank you.

23 MR. YOUNG: Okay. Any questions for us while we're
24 recording?

25 MR. VANALEN: No.

1 MR. YOUNG: No. Great. All right. We're going to stop the
2 recording. Thank you very much for your time. We appreciate it.
3 The recording is --

4 (Whereupon, the interview was concluded.)
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CERTIFICATE

This is to certify that the attached proceeding before the
NATIONAL TRANSPORTATION SAFETY BOARD

IN THE MATTER OF: ENGINE FAILURE ON BOARD OFFSHORE
 SUPPLY VESSEL OCEAN GUARDIAN IN
 SHILSHOLE BAY NEAR SEATTLE, WASHINGTON
 ON MAY 27, 2022
 Interview of Christian VanAlen

ACCIDENT NO.: DCA22FM021

PLACE: Seattle, Washington

DATE: June 7, 2022

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.



LOIS D. RUSH
Transcriber