NATIONAL TRANSPORTATION SAFETY BOARD
OFFICE OF MARINE SAFETY

SUBJECT: Major Marine Accident, DCA 03 MM 032, Investigation Interviews

DATE OF INTERVIEW: Tuesday, May 27, 2003

INTERVIEWEE: John Cruys Magnus
Staff Chief Engineer, SS Norway

INTERVIEWERS: Tom Roth-Roffy, NTSB
Brian Curtis, NTSB
Ken Olsen, USCG
Carlos Paillacar, USCG
Steve Cmar, NCL
Richard Lehrer, Esq.
John Butchko, Miami-Dade Homicide
Nancy McAtee, NTSB

P R O C E E D I N G

(4:15 p.m.)

MR. ROTH-ROFFY: Okay, the time now is about fifteen minutes after four p.m., on the 27th of May, 2003, and my name is Tom Roth-Roffy. I'm with the National Transportation Safety Board. I'm a Marine Accident Investigator. I and several other investigators have come down to investigate the accident that occurred aboard the SS Norway on May 25, 2001. The reason why we've asked you to come talk to us is because we believe that you may have information, which may be helpful in our investigation of the accident.

The National Transportation Safety Board is a safety, accident investigation board and our interests are strictly safety. We do not concern ourselves with the legal aspects. We don't try to place blame on any person or any company. We're interested only in determining what happened, what caused the accident, and then to make recommendations aimed at preventing similar future accidents.

So, what I'd like to do now is go around the room and ask each interviewer to go ahead and state their name, and their affiliation.

MR. CURTIS: Brian Curtis, NTSB, Marine

Engineering Accident Investigator.

MR. PAILLACAR: Carlos Paillacar, U.S. Coast Guard -- investigation.

MR. OLSEN: Ken Olsen, Coast Guard, Washington, D.C., Casualty Analyst.

MS. MCATEE: Nancy McAtee, Fire and Explosion Specialist, NTSB.

MR. LEHRER: Richard Lehrer, on behalf of Engineer Magnus.

MR. BUTCHKO: John Butchko with the Miami-Dade Police Department, Homicide Unit.

MR. CMAR: Steven Cmar, Norwegian Cruise Line.

MR. ROTH-ROFFY: Okay, thank you. So, we'll go ahead and get started, sir, by asking you to think back to Sunday morning. If you could, please, tell us everything that happened on Sunday morning, from the time you woke up until a period of time after the accident when conditions were stabilized. Please try to give as much detail as you can. You know, if somebody told you something or if you told somebody to do something or you saw something or heard something, please give us that detail. It will help us. So, go ahead and start from the time you woke up on Sunday morning.

MR. MAGNUS: Sunday morning I was woken up by a phone call at two thirty by one of the 2nd engineers and they told me they had a small problem with one of the two generators to get the idle speed of that one. So, I went down, handled that one, so we could get that online -- powers.

MR. ROTH-ROFFY: Right.

MR. MAGNUS: And that was really fast, so I went down to my cabin and just waited. It was the standby time. And when I went down to the control room, and I was sitting there during the standby. During the standby, everything was normal. Sometime we had -- one time we had the alarm on the fuel temperature on one of the boilers. I can't remember which one it was, but that one was degraded down again, so it was back to normal again.

After this time I was finished and I looked over the boiler and everything was quite normal, nothing unusual about the temperature and things like that, so I went down to my cabin just to relax a little bit, turned on the T.V., got a box of coke, and drink a little there and as I was watching the T.V. about after a while, there was some rumbling in the ship and the poles were shaking in the ship, and then I ran out of my cabin. I heard Code Bravo over the walkie-talkie.

Who said that, I don't know. They didn't say where or anything like that. I went out of the ship, on the deck, and I saw people were swimming from the ship.

I run in again, I met Daniel -- and we took the elevator down to the Biscayne Deck, the forward engine room, went out on the starboard side there, and there was black smoke, blue smoke, steam, it was gray, everything was -- the sprinkler system had released there -- then I just stopped, walking out to the control room to see actually what was happening or where it was happening. When I passed the doors for the boiler room, from the Biscayne deck, I could see the smoke and steam was rising straight up the smokestack.

Other than that point, I can't remember. It was at that point I was calling the bridge radio and asking them to call the general alarm and Code Bravo from the ship. In the end, Daniel and me went together to the control room and there was -- everything was just shut down at that time.

So, me and Daniel -- we -- I first, I opened the door down to the engine room carefully, and looked in there, and everything seemed okay there. We started walking down. During that time -- down to the tank top -- between the main entrance -- I was looking into the

boiler room. I saw it was dark there and smoke there. I tried to get further forward to the boiler room and I found Mr. Rosall. He was coming out of the boiler room. I didn't see how much burned he was at the time. You could see that he had some black stuff around his body and his face. He told us -- he said he couldn't see. So, you know, softly bring him up -- pulled him up into the control room and then I called for a special team at that time.

During that time, the Chief Engineer was in the control room, and there were some other people also at that time. I didn't look so much in the boiler room because I wouldn't -- not be there. I couldn't see any fire or anything like that. Steam and smoke is what I could see.

So, after that, I went in the boiler room, asked for a ship's fire team down in the control room. The Chief Engineer was in place then. I am the on-scene Commander. I went out of the control room. There was the Chief Engineer -- he takes care of that part -- and I was taking together the prior teams, delegate them, what they are to do and where to go. That we had a meeting place in each ship on the portside.

MR. ROTH-ROFFY: And then -- sorry -- could

you go ahead and continue on what you did with the fire team?

The fire teams, then we have -- starting -- when we get those people with us now, then I was to delegate to them; one team into the engine room and then one team in the forward engine room and one into the boiler room. There was the possibility that we had some casualties in the boiler room -- very, very big. There are normally people in the boiler room too. I didn't know how many or which one either at that time, so we started searching. I also -- when I was down in the engine room for the first time there, next to the boiler room, I also called the bridge to close down the watertight doors in the whole engine room. I didn't get a confirm. I don't know whether it was stuck or.

Then the fire team came from shore side also. They got help from our own fire team to guide them down to the boiler room and helped us to search for people in there, and if there was a fire there -- and after that, we got the message -- the sea deck and the boiler room, so we had to get the ship's fire team to -- to get them out of the cabins and the boiler room.

MR. ROTH-ROFFY: During the initial entry by the ship's fire teams into the boiler room, did they find any casualties at that time?

MR. MAGNUS: I can't remember -- found them or it was the fire team from shore side. I can't recollect. There was so much -- around me at all times. I think one of the -- was found by our own team.

MR. ROTH-ROFFY: You mentioned that about two thirty in the morning you were called by a second engineer --

MR. MAGNUS: Yeah, from the control room.

MR. ROTH-ROFFY: Which second engineer was that?

MR. MAGNUS: That was -- no, no, no, no -- it was --

MR. PAILLACAR: This is Carlos Paillacar with the Coast Guard. Might it have been Mr. Tor Hoyland, the person that called you?

MR. MAGNUS: He was in the forward engine room when I came down.

MR. ROTH-ROFFY: Tom Roth-Roffy back. He called you and told you there was a problem with which turbo generator?

MR. MAGNUS: Turbo generator number eleven.

MR. ROTH-ROFFY: And what did he tell you was the nature of the problem?

MR. MAGNUS: They couldn't get the turbo up

to idle speed.

MR. ROTH-ROFFY: Did not get it to turn?

MR. MAGNUS: Yeah, it was running, but it was low evolutions.

MR. ROTH-ROFFY: So they could not get it above idle speed?

MR. MAGNUS: Yeah.

MR. ROTH-ROFFY: And, after you hung up the phone and you went down to the engine room, what did you do then?

MR. MAGNUS: I went up to the control room and found out what happened to the -- why they couldn't get it to the idle speed, so it was actually only a small problems to make it run -- so, if you have governors on those -- the cover that's before where they stopped it, they had the problem to have the idle speed down to normal. The cause of that was one of the nozzles was stuck. So, when they -- too much from the governor -- so they went down to minimum. That is a very, very low speed for it. So, actually, it was just putting up the governor back to normal again.

MR. ROTH-ROFFY: So, all you had to do was adjust the governor knob --

MR. MAGNUS: Uh, no. From the control room.

MR. ROTH-ROFFY: From the control room?

MR. MAGNUS: Because there you have the -- everything like that so you can see from the --.

MR. LEHRER: Richard Lehrer. I think I can help him remember the 2nd engineer. Was it a guy named, crew member named, Christianson in the control room, 2nd engineer? You took a full watch?

MR. MAGNUS: Yes, I took a full watch. It could be him.

MR. ROTH-ROFFY: Okay, so what was the problem? Why couldn't the crew figure out to raise the speed --

MR. MAGNUS: Why didn't -- I really don't know that. Maybe they didn't think it was that. They probably thought it was something else with the nozzles and from there it was their problem. So, they had the -- to move the nozzles on the turbines. But that was not the problem.

MR. ROTH-ROFFY: And how about how long were you down in the engine room?

MR. MAGNUS: I was down there for maybe five, ten minutes in the forward engine because I went up to the control room. I found out their -- were working good. You can run them manually and then get the evolution up and that the -- back --

MR. ROTH-ROFFY: When you were down there,

did the crew mention any other problems they were having with the boilers or any of the equipment?

MR. MAGNUS: No.

MR. ROTH-ROFFY: Why were they trying to start number eleven generator?

MR. MAGNUS: So we get extra power. Power for the first -- from the Navy yard out to sea because it’s a normal procedure that we have.

MR. ROTH-ROFFY: Okay, so, normally, at sea you have how many generators?

MR. MAGNUS: Normally, we have about one to three -- five -- we have now; one big mach, two small mach.

MR. ROTH-ROFFY: So, normally, at sea, all of those would be running?

MR. MAGNUS: Yeah.

MR. ROTH-ROFFY: And then --

MR. MAGNUS: Not at sea, but during standby.

MR. ROTH-ROFFY: Okay, how about normally at sea?

MR. MAGNUS: Normally, we have three, four turbine -- it depends on the situation we are in. We use mach generators and diesel generators.

MR. ROTH-ROFFY: Would all three diesel generators run normally at sea?

MR. MAGNUS: Normally, at sea, we are running those -- I'd say.

MR. ROTH-ROFFY: I'm sorry, could you say that again?

MR. MAGNUS: Normally, we are running these generators when we can run them at sea.

MR. ROTH-ROFFY: When you can run them?

MR. MAGNUS: Yes.

MR. ROTH-ROFFY: Are there times that you can't run them?

MR. MAGNUS: When we are troubleshooting on them, you have to stop them and, usually, stopping of the one and the other one -- have enough power.

MR. ROTH-ROFFY: All right, so, normally at sea, you'll have four turbine generators and the three diesel generators if they're available --

MR. MAGNUS: We have five diesel generators totally.

MR. ROTH-ROFFY: And how many turbo generators?

MR. MAGNUS: We have, totally, we have six, but two of them are in the -- with two of them mach diesel engines..

MR. ROTH-ROFFY: Can you tell me about the types of problems you have been having with the boilers

-- boilers in general and number twenty-three in particular -- in the past six months say?

MR. MAGNUS: Past six months -- boiler number twenty-three. We haven't any specific problems that I know about. We had the normal cleaning for two, three weeks. It's a normal cleaning we have on it. If they say you're cleaning the inside of the boiler, the pipes -- it's a kind of clay. You have to put water into the solution and at the rate of one dollar -- replace it.

MR. ROTH-ROFFY: When was that cleaning done, do you recall, on number twenty-three?

MR. MAGNUS: Two, three weeks ago. If nothing's wrong, it's about approximately two weeks we were --

MR. ROTH-ROFFY: And was that -- during the cleaning, was it out-of-service for a normal amount of time?

MR. MAGNUS: It was out-of-service normal.

MR. ROTH-ROFFY: About how long was it out-of-service?

MR. MAGNUS: Approximately one week.

MR. ROTH-ROFFY: Okay, I'm not trying to trap you, but the 2nd engineer said they had a problem with a blue ram. They said they had to wait for a delivery of some blue ram.

MR. MAGNUS: Yes.

MR. ROTH-ROFFY: And that actually delayed bringing the generator back into service. Do you recall that?

MR. MAGNUS: Was the generator in service?

MR. ROTH-ROFFY: I'm sorry, the boiler. I'm sorry.

MR. MAGNUS: Yes, we had to wait for the blue ram -- blue ram -- and we have to wait one week for the blue ram before it came. So, it took a longer time before we got --

MR. ROTH-ROFFY: Are you normally involved in the ordering of engine parts, spare parts and materials like blue ram and other parts?

MR. MAGNUS: No.

MR. ROTH-ROFFY: Who would normally do that?

MR. MAGNUS: That is normally the engine's -- keeper and the first engineer to maintain the maintenance. They make an accounting of those parts.

MR. ROTH-ROFFY: Okay, please describe any other problems with boiler number twenty-three that you recall.

MR. MAGNUS: We had some small problem with the airflow, but that was not a problem with the electric things on it. Something was running up on the

monolog adjustments for it.

MR. ROTH-ROFFY: Okay, so you had a problem with air-flow sensor?

MR. MAGNUS: Actually, what was the problem with it, I don't know. I can say specific things of what was the problem there, what cause was it.

MR. ROTH-ROFFY: Okay, so you say that, as a result of the problem, they had to run it on manual?

MR. MAGNUS: Sometimes they had to do that.

MR. ROTH-ROFFY: Was that problem ongoing at the time of the accident or had it been repaired?

MR. MAGNUS: It had been repaired, at that point -- the electronics and we had fixed it. It should be -- it was fixed during that time, yes.

MR. ROTH-ROFFY: Do you recall about when the problem started, when it ended, when it was fixed?

MR. MAGNUS: When it was fixed, it was maybe two weeks ago or something like that. One and-a-half, two weeks ago.

MR. ROTH-ROFFY: And do you recall about how long they had to run it on manual control?

MR. MAGNUS: No, I can't recall for how long.

MR. ROTH-ROFFY: And were they running it continuously on manual control?

MR. MAGNUS: No.

MR. ROTH-ROFFY: At what time would they have to run it manually?

MR. MAGNUS: During the run-up time.

MR. ROTH-ROFFY: During run-up?

MR. MAGNUS: Yes.

MR. ROTH-ROFFY: During light off maybe or?

MR. MAGNUS: During the light off?

MR. ROTH-ROFFY: Yeah. I'm trying to understand what you mean by run-up.

MR. MAGNUS: When we are running up speed on the ship.

MR. ROTH-ROFFY: Okay.

MR. MAGNUS: For the turbine.

MR. ROTH-ROFFY: And after they got up to sea speed, would they then resume automatic control?

MR. MAGNUS: Yes.

MR. ROTH-ROFFY: Okay, and that control was the damper control to the four-strap fan or what control are we referring to?

MR. MAGNUS: -- controller for the fans, upper and lower fans, in the boiler room.

MR. ROTH-ROFFY: Okay, which controller? For the electric motor?

MR. MAGNUS: Electric, yeah.

MR. ROTH-ROFFY: Control the speed of the

electric motor?

MR. MAGNUS: It is -- the motor is running -- connected to the speed, so the problem is adjusted through the flaps. The opening of more flaps, more air.

MR. ROTH-ROFFY: So, that's the control that they had to run on manual was the control of the flaps?

MR. MAGNUS: Yes.

MR. ROTH-ROFFY: Did they also have to run it manually when they slowed back down again?

MR. MAGNUS: Normally not, but I think they -- for that.

MR. ROTH-ROFFY: Okay, what other problems with number twenty-three boiler?

MR. MAGNUS: I can't recall.

MR. ROTH-ROFFY: Okay, do you recall any problems with any of the other boilers in the past six months?

MR. MAGNUS: The past sixth months -- boiler twenty-one -- pipes -- stop the boiler -- turn it off, open it under the leaking pipes

MR. ROTH-ROFFY: And when was that?

MR. MAGNUS: Oh, I can't recall the last time. The last time -- it is out-of-line now because of one leaking pipe they found. It -- three or four

days ago. That one should be ready for use this week.

MR. ROTH-ROFFY: And were there other problems in the past with boiler twenty-one leaks?

MR. MAGNUS: Yes.

MR. ROTH-ROFFY: Do you recall about how long ago?

MR. MAGNUS: No, because we had to -- the pipes -- that boiler so I can't recall -- then you have to go through the maintenance local for the boilers.

MR. ROTH-ROFFY: So, you had more problems with boiler twenty-one than the other boilers?

MR. MAGNUS: Yes.

MR. ROTH-ROFFY: Leaking pipes?

MR. MAGNUS: Yes.

MR. ROTH-ROFFY: Have you had other problems with leaks on the other boilers besides twenty-one?

MR. MAGNUS: We have had leaks on boiler twenty-four. There was leaking -- some small leaks -- on boiler twenty-two also, but not so much.

MR. ROTH-ROFFY: And this should all be in the maintenance log?

MR. MAGNUS: Yes.

MR. ROTH-ROFFY: Which maintenance log would that be?

MR. MAGNUS: That is for the boilers and the

first engineer, he also has a maintenance logs for the boiler.

MR. ROTH-ROFFY: Okay, it was a handwritten record or is it --

MR. MAGNUS: A handwritten record for the boilers.

MR. ROTH-ROFFY: Is there also a computer-based maintenance log for the boilers?

MR. MAGNUS: There is a computer, yes, but those are covering more on the safety box for the boiler. Nothing about cracking pipes or things like that. It's for checking the water level, shut-down with the feed -- when it shuts down during a high level in the drum -- maintenance.

MR. ROTH-ROFFY: That would be in the computer maintenance?

MR. MAGNUS: Yes.

MR. ROTH-ROFFY: But repairs you would normally just put them in some kind of a log book?

MR. MAGNUS: Yeah.

MR. ROTH-ROFFY: And the first engineer would make those entries?

MR. MAGNUS: Yes, and major work on board, it would be in the computer and you have paper files for that part.

MR. ROTH-ROFFY: Okay, could you describe your duties and responsibilities as Staff Chief Engineer?

MR. MAGNUS: I am day man. I -- in the morning and the evening, breaks, lunch-time, dinner time and I have the most with the hotel engineer, people to do work with them, the 2nd engineers -- with the company a long time --at the same time, I -- all of the maintenance -- that is my responsibility.

MR. ROTH-ROFFY: Do you supervise the first engineers? Do you give them work assignments?

MR. MAGNUS: No, I don't, except when I need help from other day man, repairman, to help us.

MR. ROTH-ROFFY: Are you involved in the maintenance of the boilers?

MR. MAGNUS: No.

MR. ROTH-ROFFY: So, your knowledge of previous problems, where would that come from?

MR. MAGNUS: It would come from the 2nd engineers. They would come to me with information from the 1st engineer about the problems they're having, and so what I can see from the control room and sometimes I see from the engine room also.

MR. ROTH-ROFFY: So, you're not directly involved in overseeing the maintenance work on the

boilers?

MR. MAGNUS: No, not directly.

MR. ROTH-ROFFY: Who's responsible for preparing the engine room watch bill?

MR. MAGNUS: What do you mean?

MR. ROTH-ROFFY: The duty assignments for the engine room watch. Does that change or is it always the same people on watch?

MR. MAGNUS: That is the 1st engineers -- several watch lists.

MR. ROTH-ROFFY: And your supervisor is who?

MR. MAGNUS: My supervisor is the Chief Engineer. I am his assistant. If he is away someplace, I have to also help him.

MR. ROTH-ROFFY: And your subordinates? Who works for you?

MR. MAGNUS: Actually, everyone under me, but for my area, is the-- , people --, yeah. Also, the hotel engineer is under me and I also run it with -- not so much. That is usually all that is told to him. If he needs help, sometimes he comes to me and I help him.

MR. ROTH-ROFFY: Who else would be working for you?

MR. MAGNUS: It would also be Polish day

people -- the repairmen. Also, the Philippine day people.

MR. ROTH-ROFFY: Did you say Polish day people?

MR. MAGNUS: Polish, yes. Repairmen. They are Polish repairmen.

MR. ROTH-ROFFY: And what do they normally work on?

MR. MAGNUS: They are normally daylight, eight in the morning to eight in the evening, working for 1st engineers.

MR. ROTH-ROFFY: They work for the 1st engineer, but they also work for you?

MR. MAGNUS: If I need help.

MR. ROTH-ROFFY: Oh, I see.

MR. MAGNUS: I go to the 1st engineer and he will give me some people, pull those people I need to have.

MR. ROTH-ROFFY: How long have you been aboard the Norway?

MR. MAGNUS: I started on the Norway in 1997.

MR. ROTH-ROFFY: 1997?

MR. MAGNUS: Yes.

MR. ROTH-ROFFY: And what was your position when you started?

MR. MAGNUS: 2nd Engineer.

MR. ROTH-ROFFY: And could you describe your subsequent assignments on board the vessel after your second -- when did you become a 1st and when did you become Staff Chief.

MR. MAGNUS: I was the 1st engineer on the Norway in 1999. I became a 1st engineer in 2001. A Staff Chief Engineer, I become in January.

MR. ROTH-ROFFY: January of this year?

MR. MAGNUS: This year, yes.

MR. ROTH-ROFFY: Well, you've moved up fairly quickly.

MR. MAGNUS: Yes.

MR. ROTH-ROFFY: And prior to coming aboard the Norway in 1999, where did you work before you came to the Norway?

MR. MAGNUS: In what time?

MR. ROTH-ROFFY: 1999. You say you came to the Norway, right?

MR. MAGNUS: 1997.

MR. ROTH-ROFFY: 1997. I'm very sorry. Before 1997, where did you work?

MR. MAGNUS: I was on a -- it was a -- ship -- the year 1996 to 1997 and then I was transferred to this ship.

MR. ROTH-ROFFY: And could you just go back a little bit further?

MR. MAGNUS: Before that I was in the Navy at home and I was -- there for three years and four years on a steam ship.

MR. ROTH-ROFFY: And did you go to a particular college?

MR. MAGNUS: Yes. I went to Maritime School in Norway. The last school -- in 1998 to 1997.

MR. ROTH-ROFFY: And when did you graduate from Maritime School?

MR. MAGNUS: That was in 1997 --

MR. ROTH-ROFFY: Okay, before that?

MR. MAGNUS: It was in 1993.

MR. ROTH-ROFFY: Okay, that's all I have for right now. I'm going to pass it to Brian Curtis.

MR. CURTIS: Thank you. Brian Curtis. Just to clarify back in the -- system. The maintenance there is only preventive maintenance that puts out its work orders and unscheduled repairs are not -- they are not logged in there?

MR. MAGNUS: No.

MR. CURTIS: What about the scheduled regulatory work, class work, boilers or anything anywhere in the plant is that --?

MR. MAGNUS: -- in a classification.

MR. CURTIS: Yes.

MR. MAGNUS: Instead of the --?

MR. CURTIS: Yes. In a classification work, does that come up as a work order that has to be recorded and logged in there?

MR. MAGNUS: I can't answer you that part because I haven't seen them.

MR. CURTIS: Okay, on boiler twenty-three, a couple of weeks ago when they did the work in the furnace, did you participate in that work at all?

MR. MAGNUS: No.

MR. CURTIS: So, you didn't see inside the furnace or the boiler?

MR. MAGNUS: I looked inside and I see inside. I just stuck my head in the boiler -- looking how --

MR. CURTIS: Was your opinion of the condition of the refactory in the furnace compared to the other boilers?

MR. MAGNUS: I would say --

MR. CURTIS: Same for the tubes in the furnace?

MR. MAGNUS: What I could see, yes.

MR. CURTIS: Following the explosion or

during the explosion, did you hear or hear anyone else mention that the boiler safety valves had released? Do you recall hearing a noise?

MR. MAGNUS: No.

MR. CURTIS: That's all I have right now.

MR. OLSEN: What types of boiler-related alarms sound in the engine control room?

MR. MAGNUS: Excuse me. One more time.

MR. OLSEN: If you have alarms related to the boilers --

MR. MAGNUS: Yes.

MR. OLSEN: -- high pressure, high super heat temperature, for example. What other types of alarms sound in the control room and are recorded?

MR. MAGNUS: It's high fuel temperature, low fuel temperature, -- temperature, high and low -- temperature.

MR. OLSEN: How about if the burner failed, would that alarm in the engine control room?

MR. MAGNUS: Yes. If it's a forty ounce -- if you have a -- stops burning, one of the burners will go out, we have an alarm for it.

MR. OLSEN: Have you seen that happen in your experience. I don't necessarily mean just recent, but since you've been on board, have you seen that happen

at any frequency, often or?

MR. MAGNUS: Sometimes, it has happened, yes.

MR. OLSEN: What is the cause of that? What causes that typically?

MR. MAGNUS: To be of that -- forty percent?

MR. OLSEN: Uh-huh.

MR. MAGNUS: Is something wrong with that burner and you get a failure message and then it's fallout and we get the signal to shut off that specific burner.

MR. OLSEN: If I wanted to keep that -- say I had a bad photo cell and if I wanted to keep that burner burning, how could I do that?

MR. MAGNUS: I don't know.

MR. OLSEN: Okay.

MR. MAGNUS: I wouldn't do it either.

MR. OLSEN: No, okay. When you were talking about the problems maintaining the fuel air ratio, when you came up to sea speed, how did that -- what were the first symptoms of that problem?

MR. MAGNUS: You get the black smoke all in the -- pushing up more air for the boilers so you can get more air into the boilers.

MR. OLSEN: So, it's just smoke? Did it every get -- did the air ratio ever get so bad where a

burner might drop out?

MR. MAGNUS: No.

MR. OLSEN: Have you ever been involved in preparing the shipyard work list for the boiler repairs?

MR. MAGNUS: No.

MR. OLSEN: How about when it's necessary to hire a contractor or a vendor to come on board like the seamen's representative, who makes those decisions to call somebody out?

MR. MAGNUS: What do you mean specific now?

MR. OLSEN: You have a problem and you realize you need a contractor --

MR. MAGNUS: Uh-huh.

MR. OLSEN: -- are you the one who makes the final decision on whether or not that contractor is allowed to meet your vessel in Miami?

MR. MAGNUS: No, that is a shore side.

MR. OLSEN: A shore side?

MR. MAGNUS: Yeah, a superintendent on shore.

MR. OLSEN: Okay, who communicates the shipyard problem to the shore side staff?

MR. MAGNUS: That is the Chief Engineer.

MR. OLSEN: The Chief Engineer. You've got a lot of history on board since 1997. When a new stoker

comes on board, how does he learn his job?

MR. MAGNUS: A new stoker, you don't get a new stoker directly on board. He can have a position as a stoker, yes, but he is not put directly on the boilers. He will follow the stage as waterman, a washman is what he's called.

MR. OLSEN: What was the second?

MR. MAGNUS: A watch-going. That is a waterman and we have a watch in the forward engine room.

MR. OLSEN: Uh-huh.

MR. MAGNUS: And then they have their own system to work with and so on and so on. So they would not be teaching directly on the boiler because they have to know a little bit along the area they are working in.

MR. OLSEN: I don't know the requirements of the flag, but as a person progresses from boiler tender up to stoker, are examinations necessary, flag state examinations, or is that just the engineers on board see that the person seems capable? How does he graduate officially to stoker?

MR. MAGNUS: Officially to stoker, that is actually, he's on the -- how he works. If you can trust the guy and he is doing what we are saying. If

we can trust him.

MR. OLSEN: He's not necessarily tested by the flag state or by the administration of the vessel?

MR. MAGNUS: What do you mean?

MR. OLSEN: Examination. You know, when you became Chief, you took an exam?

MR. MAGNUS: Yes. They -- I can't really answer that question just now.

MR. OLSEN: Okay, but if they have to test, they also have to get the blessing of the engineers?

MR. MAGNUS: Yes.

MR. OLSEN: Is there any documents, guidelines or checklists that are given to the stoker to help them do their job better, or to help them understand their work?

MR. MAGNUS: I -- they get trained. We have a specific -- age watch. What they have to do --

MR. OLSEN: But how about anything written down, written documentation?

MR. MAGNUS: Of what they're going to do?

MR. OLSEN: Yeah. Their job duties.

MR. MAGNUS: Yes, we have -- on the board in the boiler room.

MR. OLSEN: Okay.

MR. MAGNUS: For those stokers who's on duty.

MR. OLSEN: Are you aware of anything within the safety management system that might contain descriptions of responsibilities of the stokers?

MR. MAGNUS: I can't recall exactly for that part.

MR. OLSEN: Okay. When you were 2nd Assistant or 1st Assistant or 1st Assistant Senior, did you ever have to test the controls and sensors on the boiler front?

MR. MAGNUS: Testing the controllers?

MR. OLSEN: No, the controls. Like, you know how you mentioned you test the scanner, you got to clean the scanner -- well, you didn't mention that -- but, on occasion, you may have to test the scanner or test an igniter -- what type of -- I'm interested in anything you may have to do related to the equipment on the boiler front that might be part of a routine, either maintenance or preventative inspection.

MR. MAGNUS: For inspection for it, I have never done any testing of the equipment in the front of the boiler.

MR. OLSEN: Okay.

MR. MAGNUS: I've never done that.

MR. OLSEN: So, have you ever been 2nd Assistant in charge of those boilers?

MR. MAGNUS: No, never.

MR. OLSEN: Okay. All right. Technically, as 1st Assistant Senior, would you be aware of general problems with the combustion control system, other than what we talked about with the air --

(Whereupon, the parties went off the record momentarily for taping purposes and the interview subsequently resumed.)

MR. ROTH-ROFFY: Okay, the time is about seventeen minutes after five and we're resuming our interview of the Staff Chief Engineer, Mr. Magnus, and I believe, Ken Olsen was asking the questions.

MR. OLSEN: In your five or six years being assigned to the Norway, have you ever heard other engineers talk about the problems that they might have experienced with the combustion control systems, burner management systems and so on?

MR. MAGNUS: Do you mean specific things?

MR. OLSEN: Yeah. Other than tube failures, what other types of problems have you experienced? You mentioned excess air being a problem, and having to operate on manual, but other types of problems with the combustion control or even feed boiler system. Are you aware of other problems?

MR. MAGNUS: We haven't had any bigger

problems than that. Sometimes electric failures is coming up and you have to put it on manually -- head or maybe on the --

MR. OLSEN: Uh-huh.

MR. MAGNUS: But that is fixed the same day.

MR. OLSEN: Has any of those types of instances occurred recently, say within the last two or three months, other than excess air problem?

MR. MAGNUS: Excess air problem. We had problems with the regulator for the fuel pressure, but, usually, then it's been -- manually and is putting on the manual regulating the fuel.

MR. OLSEN: Is this for the starboard side boilers or would it be for -- which boiler did the fuel pressure regulate a problem effect?

MR. MAGNUS: It's usually affecting the starboard boilers.

MR. OLSEN: And when might have been the last time that type of problem occurred?

MR. MAGNUS: It could occur the last week here. We had to put it on manually regulating during this last week.

MR. OLSEN: Was there any times when the pressure went low? When the regulator was problematic, was it -- did it cause too much fuel pressure at the

boilers or too little?

MR. MAGNUS: It went up and down. It didn't regulate properly without the pressure and then it went down again.

MR. OLSEN: What do you think may have caused those problems with the regulator?

MR. MAGNUS: I can't tell you why this is happening.

MR. OLSEN: Okay, but it did occur -- some of these types of problems have occurred recently?

MR. MAGNUS: Sometimes.

MR. OLSEN: Okay. Were those instances, when that occurred, in your opinion, was it something that the stoker could know: I've got to switch to manual, or did it require an engineer to come in and correct it.

MR. MAGNUS: The stoker is knowing what to do when this is happening.

MR. OLSEN: In terms of the safety management system, are you aware of any non-conforming is reported related to either the boilers or the combustion control systems for those boilers?

MR. MAGNUS: No.

MR. OLSEN: And, in general, you've never heard of anyone speak of inadequacies of the combustion

control system?

MR. MAGNUS: What do you mean?

MR. OLSEN: Deficiency or bad design for whatever reason.

MR. MAGNUS: Bad design?

MR. OLSEN: Yeah, with the system in general; combustion control and burner management.

MR. MAGNUS: No.

MR. OLSEN: Okay, that's all I have.

MS. MCATEE: Just one quick question. I'm changing gears here a little bit. This is Nancy McAtee with NTSB. Were you aware of any fire alarms or smoke detectors that had gone off in the boiler area in say the week prior to the accident?

MR. MAGNUS: That's only when they're changing burners, it happens sometimes, but that is normal.

MS. MCATEE: Okay, that's all I have.

MR. PAILLACAR: I have no questions.

MR. CMAR: I have actually one point of clarification -- in the safety and management system, there is an F600, there's a familiarization training at the level of stoker that can be adapted by the Chief Engineer and the Chief Engineer is to ensure the person is trained for the position using that form.

One second, please. Also, just another point for clarification, It think, it's understood now that AMOS is only for scheduled maintenance as far as for things required by class. I could say -- although I can't say specifically -- I would expect that if something is required, it would be scheduled in AMOS in answer to your question, and I don't believe I have any questions specifically.

MR. ROTH-ROFFY: Okay, I have just a couple of follow-up questions. You described a problem with a pressure regulator through the starboard boilers, what were the indications of that problem? How did you know that was a problem?

MR. MAGNUS: You can see, in the control room, you can see the pressure gauge is going up and down.

MR. ROTH-ROFFY: Was it fluctuating?

MR. MAGNUS: No, it's digital.

MR. ROTH-ROFFY: Oh, it's digital?

MR. MAGNUS: Yes, and you can also see the boiler room with a normal gauge going up and down.

MR. ROTH-ROFFY: How fast was it going up and down?

MR. MAGNUS: It depends.

MR. ROTH-ROFFY: So, a couple of cycles per

second?

MR. MAGNUS: Yeah, maybe that, and it can go slower.

MR. ROTH-ROFFY: And did it ever stick in a particular setting or was it just a fluctuation problem?

MR. MAGNUS: What do you mean by that?

MR. ROTH-ROFFY: Did it ever jam or stick?

MR. MAGNUS: No, not that I know.

MR. ROTH-ROFFY: Did this problem ever cause a high steam pressure condition?

MR. MAGNUS: No.

MR. ROTH-ROFFY: Or low steam pressure condition?

MR. MAGNUS: No.

MR. ROTH-ROFFY: We've been told that boiler number twenty-three was overhauled or had a major repair in 1999. Were you on board at that time?

MR. MAGNUS: No, I was not on board.

MR. ROTH-ROFFY: Do you know whether or not these are the original boilers on the vessel from when it was built or were they replaced?

MR. MAGNUS: They have replaced and replaced the same construction of the boiler. It had been retubed, and the front have been changed. Before they

had -- looking through the joints, you can see before they had six burners -- every one in the center. They changed that to five burners.

MR. ROTH-ROFFY: And do you know the manufacturer's name of the boiler?

MR. MAGNUS: Babcock. What I know now is that they went bankrupt. I think it was last year or the year before that.

MR. ROTH-ROFFY: Did you say Babcock?

MR. MAGNUS: Babcock, yes.

MR. ROTH-ROFFY: Is that a French company?

MR. MAGNUS: English.

MR. ROTH-ROFFY: English company. Has Norwegian Cruise Lines given you any training on boiler automation control systems since you've been working with them?

MR. MAGNUS: No.

MR. ROTH-ROFFY: Do you know if other engineers have received such training?

MR. MAGNUS: No.

MR. ROTH-ROFFY: Have you received any training from Norwegian Cruise Lines in engineering matters of any kind?

MR. MAGNUS: What kind of training do you mean?

MR. ROTH-ROFFY: For example, switchboard operations or automation systems of any sort.

MR. MAGNUS: What do you mean, from shore side?

MR. ROTH-ROFFY: Yeah, from shore side.

MR. MAGNUS: No.

MR. ROTH-ROFFY: Have you received training on board the ship?

MR. MAGNUS: I received some small training -- like two weeks. Look through my notes.

MR. ROTH-ROFFY: Sure. Okay, I think that's all I have. We'll go around one more time.

MR. CURTIS: I have just a few more questions. Will low fuel oil pressure give an alarm in the engine control room?

MR. MAGNUS: If it gets too low --

MR. CURTIS: Yeah.

MR. MAGNUS: -- the standby pump will start and you have an alarm for that pump.

MR. CURTIS: Okay, so has there been times in the recent past where that standby pump has started?

MR. MAGNUS: Not that I know.

MR. CURTIS: So, you wouldn't know during the casualty the other day that two pumps were running?

MR. MAGNUS: No.

MR. CURTIS: The fact that pump comes on, is that captured in your data logger system, the running of a standby pump or an alarm indicating as such?

MR. MAGNUS: Yes.

MR. CURTIS: So, that could be --?

MR. CURTIS: So, that could be ---?

MR. MAGNUS: That could be.

MR. CURTIS: Where are the -- you mentioned the fuel oil regulating valve -- where was that positioned on the boiler, generally?

MR. MAGNUS: Which -- was it for a fuel pump or for the boiler?

MR. CURTIS: For the boiler, for the combustion control?

MR. MAGNUS: That stands between boiler twenty-one and twenty-three.

MR. CURTIS: Okay. With respect to the people you call the electronics, have you ever had concern when you were assigned an electronic to do a job on a system that they have enough knowledge of the entire system or that they’re knowledge is only limited to electronics?

MR. MAGNUS: No, I can’t say I can.

MR. CURTIS: Okay.

MR. BUTCHKO: I have one question. John

Butchko, Metro-Dade Police. As far as any employees or crew members, has any crew member come to you or any supervisor or any other engineer come to you expressing that they had some sort of concern with the boilers, even if it was a minor concern that they were a little worried about, and maybe didn't have a knowledge of what would happen, but it was a problem?

MR. MAGNUS: Do you think for those years or present?

MR. BUTCHKO: No, present time, within a couple weeks, maybe a month, before the explosion.

MR. MAGNUS: No.

MR. BUTCHKO: Okay, no further questions.

MR. ROTH-ROFFY: Okay, the time is about five thirty p.m. That concludes our interview of the Staff Chief Engineer. Thank you very much, sir, for talking with us. You've been very helpful.

MR. MAGNUS: Thank you.

(Whereupon, at 5:30 p.m., the interview of Staff Chief Engineer Magnus was concluded.)