A-179

NUCLEAR REGULATORY COMMISSION

Docket No. 50-424/425-OLA-3 EXHIBIT NO. II - 179

In the matter of Georgia Power Co. et al., Vogtle Units 1 & 2

☐ Staff ☑ Applicant ☐ Intervenor ☐ Other

☐ Identified ☑ Received ☐ Rejected Reporter SD

Date 9/7/95 Witness George Bockhold

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BOCKHOLD EX. X

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OFFICIAL TRANSCRIPT OF PROCEEDINGS

Agency: Nuclear Regulatory Commission

Title: Telephone Conference: IIT, Licensee, Region II (CLOSED)

Docket No.

LOCATION: Bethesda, Maryland

DATE: Friday, April 6, 1990 **PAGES:** 1 - 34

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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In the Matter of: :

Telephone Conference: IIT, :

Licensee, Region II :

(CLOSED) :

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Nuclear Regulatory Commission

Operations Center

7735 Old Georgetown Road

Bethesda, Maryland

Friday, April 6, 1990

The above-entitled matter commenced at 10:12 o'clock a.m., when were present:

Alfred Chaffee, Incident Investigation Team Leader

Ken Brockman, NRC Region II

Rick Kendall, NRC

George Bockhold, Vogtle

Lewis Ward, Vogtle

PROCEEDINGS

[10:12 a.m.]

MR. CHAFFEE: It's April 6th, at 10 o'clock. This is of IIT Vogtle.

Now, what I want to do is talk about a little bit about the diesel generator. I guess maybe the first thing we should talk about is the following:

Rick has been trying to pull together, from all the various information sources, what exactly the history is in some of these sensors, and what he is finding is that there is a lot of -- in fact, Rick, why don't you begin the talk?

MR. KENDALL: Okay.

What I have tried to do is take the different sources of information that we had that discusses the history of the sensors, and there are basically four sources of information.

The first source are the notes from the blackboard or dry board, whatever you call it, in the large conference room, that Al wrote up during our meetings on the diesel.

The second source was the document that was given to us, I guess, the day before we left. It was called "Global Diesel Generator Sensor History: A Summary". And the first page of that had some information concerning diesel reliability and some other stuff on it.

The third source was a telefax that you sent up here, and it was a copy of a note from Mark Briney to George Bockhold. It was dated April 3, 1990.

And the fourth source of information was a second telefax that gave us sensor history for the other quarantine sensors.

And when you look at all these pieces of information, there is a lot of contradicting information just concerning when it was last calibrated, concerning what maintenance work order was associated with it, differing dates. It's impossible, from all these sources, to try to put together a complete story.

So, what I did was I developed a matrix, and I put in one example, on one of the temperature switches, of the type of information that we would like, and we'd just like to telefax you a copy of the matrix, and then have you fill in the holes.

MR. BOCKHOLD: That would be good. And in parallel with what you're doing, yesterday I talked to Mark Briney about -- his letter to me is probably the most detailed and most accurate information, and it takes him a period of time to pull that information together, and on the temperature switch items, he was going to work those as a higher priority and pull that information together.

The differing dates you saw is the relationship to

when the work order was closed, in comparison to when the calibration itself was done. So, I'm sure that caused some confusion. And some of the other words there were the job got changed and assigned to a different person for a period of time, and he started to use different words.

So, why don't you telecopy what you want us to fill in? We'll give it to Mark Briney, and Mark Briney will fill that in and supply any information that way.

MR. KENDALL: Okay. That sounds great, and we realize it's going to take a couple of days, probably, to do it.

MR. BOCKHOLD: Okay?

MR. KENDALL: Fantastic.

MR. CHAFFEE: Okay. Then let's go on to the diesel generators themselves.

Maybe the first thing we should do is talk about this dew point situation and what you guys believe with regard to that, and then I guess -- I thought we'd go in and talk a little bit about what you found on the testing and where you're going with the testing.

MR. BOCKHOLD: Okay. On the dew point situation, yesterday afternoon it came to my attention that on the 29th of March we had run a test, and the test on the dew point was unsatisfactory. So, you know, we had some concern about why the test on the A Diesel was unsatisfactory on the 29th,

and we're pulling in together a bunch of information.

At this point -- and this is speculation on my part -- the evidence is tending to point to a bad instrument, a bad dew-point sensor instrument, and we only have one onsite, and we're getting another one, and other than that, you can speculate seven different dozen ways on this thing, but that's what the evidence is starting to point to, because when we test air at similar conditions, it all appears to be higher right now. Okay?

And it's at a significantly different condition, like our instrument air in the turbine building. The instrument does appear to work correctly, but at the diesel temperature pressure dew point, the instrument may not be working correctly.

MR. KENDALL: This is a test instrument.

MR. BOCKHOLD: So, basically, what happened is we got this information; put the jacket water test, basically, on hold until we could determine what we had; and what we did in the meantime is that the appropriate procedure that the vendors and our experts tell us to use if you have a higher dew point in the diesel storage tanks is basically to do a feed-and-bleed on the tank, and over a day or so, the air will clean up to -- the dew point will clean up to the required quality.

We started that. We checked the instrument lines

at one of the low points on the A Diesel. We also checked the receiver by blowing it down. We haven't really gotten any real water out of the receiver in blowing it down. The comment was that we haven't seen any water coming out of the bottom of the receiver, and there's a drain valve right -- there's a drain pipe right on the bottom. Further, the diesel system engineer blew one of the drain points down on -- and this is the A Diesel -- on the control air system, and he didn't see any moisture come out of that line.

And we've run some other tests. Like we ran one test quickly on the B Diesel. That showed bad. We're off to run a test in a few minutes on one of Unit 2's diesels. I expect that's going to show bad, because right at this point, what I believe is that the instrument is bad.

In parallel with this, we're going to buy -- we're going to find another instrument, so we can do this test with a different instrument and see what that tells us.

In parallel with this, when the Cooper people get in in the morning, which I guess is about 11 o'clock or so, we'll give them a call. Given the indication that we have on the air and the dew point that this instrument is reading, we believe we can probably do the jacket-water test without doing any damage to the control or instrument air system.

We believe that even at an elevated dew point,

this is a long-term problem and not an immediate problem for -- associated with the controls on the diesel. We believe the diesels are operable right now, for example, and we believe this is -- you wouldn't want to run like this for months, if you had an elevated dew point.

So, we want to verify our belief with the Cooper people. If we do verify our belief with the Cooper people, we will go ahead and run the jacket-water test.

MR. CHAFFEE: When do you expect to have the new instrument onsite to do the dew point?

MR. BOCKHOLD: Don't know. Maintenance was off this morning to go find one from one of our fossil plants or maybe even buy one in Augusta.

MR. CHAFFEE: Okay.

MR. BOCKHOLD: I'm not sure we can get exactly the same instrument that we have. The one that we have has a radioactive source in it, and you have to be, you know, appropriately licensed to have this instrument.

So, we'll get something that's equivalent, but it probably won't be exactly the same instrument.

MR. CHAFFEE: But you'll get one that meets whatever the standards are for its readings being -- felt to be correct, one that's calibrated and that's -- I don't know if there's any industry standards in that area for that type of test instrument or not.

You will ensure that your test instrument is properly pedigreed.

MR. BOCKHOLD: Yes.

MR. CHAFFEE: Okay.

Well, okay. I guess as far as doing the test before you have satisfied yourself, through a test, that the dew point of the air is within spec or not, I guess you're probably right that it wouldn't cause any damage to the diesel. It obviously would be preferable that you get that thing all resolved and clean up before you ran the diesel.

As far as that goes, George, I think what we'll do is, after the call, Region II and we will talk about Cox a little bit and decide what our feelings are on that. I understand where you're coming from.

MR. BOCKHOLD: We've basically put the test on hold until we could resolve the issues with dew point. Okay?

And one of the parallel paths was that our engineers, our folks believe that the air quality that we are actually seeing in the instrument controls and in the receiver, even if the dew point was a little bit high, would not be of concern for operability of the diesel engines, would not affect the control systems. We are verifying that with Cooper. If Cooper agrees with those opinions, we would be prepared to go ahead and run the test.

In the meantime, in parallel, we are doing the appropriate procedure with the air receiver and the air dryer that if the dew point is not correct, we'll go ahead and lower the dew point in the air tank. But we're not seeing the dew point in the air tank getting any better. So, we're starting to believe, more and more, we have a bad instrument, and the instrument has somehow failed.

MR. CHAFFEE: I see. Okay. I understand.

[Pause.]

MR. CHAFFEE: George, Rick is going to talk to you a little bit at Catawba.

MR. KENDALL: It's our understanding that Catawba is the only other plant with TDI diesels that has a refrigerant-type dryer, and there were some problems at Catawba with their dew point and moisture affecting their Calcon pressure switches, and we understand that you don't think you have a dew-point problem, and we understand that you've also got a different model of pressure switch that may not be subject to the same types of problems that they had at Catawba.

However, when we go back and look at this thing, one of the tests that was run was on jacket-water pressure disconnecting the sense line, and the diesel tripped after 80 seconds, which was one of the timeframes during the event, and just putting everything together, one of the

things that we would like to either prove or disprove is that the problems that Catawba had are not the same problems that you have or that you don't have the same problem that they had at Catawba.

MR. WARD: This is Lewis Ward.

We talked to Catawba yesterday afternoon, after this question came up, and the problem that they had was associated -- they also have a desiccant in their dryer system. They attributed their problems to an incident where the desiccant became saturated, and they got desiccant into their air system, and they saw some corrosion on carbon steel surfaces due to the desiccant.

MR. KENDALL: Okay. Appreciate that. We had some bad information then.

MR. CHAFFEE: So, Vogtle does not use desiccant?

MR. WARD: No. We just have a straight refrigeration system.

MR. CHAFFEE: And Catawba has a refrigeration system and desiccant?

MR. WARD: That's what they told us, yes.

MR. CHAFFEE: Okay. We were also told -- I think I was told this -- that the model -- I'm not sure this is right -- that the Calcon switches that you have at Vogtle are a newer model than those that existed somewhere else where problems existed, and I think it was Catawba. Does

that make any sense?

MR. BOCKHOLD: The pressure switches that Catawba had a problem with and they changed to a newer model, we changed to the same newer model.

MR. CHAFFEE: Okay. Do you happen to know what the new model -- you know, what the change was?

MR. BOCKHOLD: I believe the change was a clearance change in the switch itself.

MR. CHAFFEE: Okay.

MR. BOCKHOLD: That comes from a brief conversation that I had with the guy at Catawba -- Wally Greene.

MR. CHAFFEE: Okay. The other thing you should be aware of is -- we received from you the Part 21 on Calcon switches dated April '88. We have also been told, but we haven't gotten the document yet, that there was a supplement to that Part 21 that was dated May 12, '88. We'd like to get our hands on that, and I guess we'd also like to make sure that you're aware of it. I would assume that you guys must have it in your records, as well.

MR. BOCKHOLD: Yes, we do have the Part 21. I gave copies to Rick Kendall.

MR. CHAFFEE: I know we got a copy of the April '88 Part 21, but did you give us the supplement, also? There's a supplement to it that was dated May 12th of '88.

MR. BOCKHOLD: I gave you the April one.

MR. CHAFFEE: Right. That's my point. Apparently there is not only the April '88 Part 21 but there's a supplement to that Part 21. It's the supplement to the Part 21 that I personally haven't seen. I wanted to make sure you guys were aware of it, and we also want to see it.

MR. BOCKHOLD: We'll send it to you.

MR. CHAFFEE: Okay.

Okay. Let's see.

Question: On your testing that you've done so far, you've been collecting some data, and we had some questions yesterday, and where we left off yesterday was -- well, maybe, at this point, I should just ask you. Can you run through where you are in collecting data -- I would assume that you've continued collecting data over some period of time -- and what you've found, and is there anything new in that regard, lube oil and that sort of stuff?

MR. WARD: What are you looking for?

MR. CHAFFEE: I want to get a mental picture of things like have you continued to see that the -- okay. First, how long have you been taking data now? Have you continued taking data since you started the test? Has the temperature continued to remain steady at 163 degrees for the sensor? Have you looked into the lube oil system to see

how its temperature varies as a function of time? Have you found any new hotter spot than the 170 degrees that existed on the lube oil heat exchanger? Information like that.

MR. WARD: We have continued to take the readings since yesterday. That temperature has not varied more than probably a degree and a half.

We have monitored the lube oil heater. The lube oil heater turns on and off at about a 50-minute cycle. And if you look at lube oil temperature, the lube oil temperature, in and out, averages about 155 degrees when it turns on. It turns off when you get an inlet temperature of about 167 degrees. Then it stays off for 50 minutes. Meanwhile, the temperature comes down to about 155 or so and repeats the same cycle.

MR. CHAFFEE: So, the cycle, as I understand it, is when the temperature gets down to 155 degrees, the lube oil heater comes on. It stays on for about how long?

MR. WARD: Fifty minutes.

MR. CHAFFEE: It stays on for 50 minutes. And that then heats up the temperature to 167 degrees, and at that point, it turns off, and it remains off for how long?

MR. WARD: Almost identical time -- 50 minutes.

MR. CHAFFEE: Fifty minutes. And then it repeats the cycle. So, the temperature cycles between 55 degrees and 167 degrees.

MR. WARD: Correct.

MR. CHAFFEE: And that temperature that you're measuring is the temperature at the inlet to the warmup pump for the lube oil system which takes a suction close to the heater?

MR. WARD: Temperatures that we're reading are the temperatures on the engine panel, which is called lube oil in and lube oil out -- lube oil into the engine and lube oil out of the engine.

MR. CHAFFEE: Okay. How do those temperature readings relate to the temperature that the jacket-water system sees when the system is in the warmup condition?

MR. WARD: Jacket water is used to cool the lube oil.

MR. CHAFFEE: Right. I understand that. But with the diesel secured and the warmup systems working -- you know, what we said yesterday was the hottest place you saw --

MR. WARD: Was at the inlet to that heat exchanger, which those two temperatures match up. You've got two thermometers that are next to each other, and they read the same. The inlet jacket water and the lube oil reads about 167.

MR. CHAFFEE: I see. Okay. So, where you're reading the lube oil heat exchanger inlet temperature and

the jacket-water temperature for -- where you were monitoring that are the same location.

MR. WARD: Yes.

MR. CHAFFEE: Okay. I understand.

Okay. What that suggests, then, is if the max temperature they saw was 167 degrees in the lube oil, it sounds like the lube oil system and the jacket-water systems were both designed to control their temperatures around the same values.

MR. WARD: Yes. The jacket-water heater has not turned off at all since that once cycle we seen early in the test. It's been on continuously.

MR. CHAFFEE: Okay. Well, this is unrelated to the event, but I guess the one thought that has run through our minds up here was do you have a problem with the strength of that jacket-water heater, in the sense that it's -- if you're in the middle of a very cold period of time, you know, like in the winter or something, that it wouldn't be able to provide the necessary heat to keep the jacket-water system --

MR. WARD: Diesel building is maintained at a temperature, so they shouldn't change any. We maintain the diesel building at a temperature. It's not like the diesel building gets colder in the wintertime. We've got heaters in.

MR. CHAFFEE: Okay.

So, I guess what you conclude from all of that is that at least the initial conditions for the -- okay.

The next question is this: Based on all this data you've taken, what do you believe and how confident are you that what you believe is right, in terms of the temperature distribution of the water that exists in the jacket-water system and the lube-oil system, such that what's your expectation that you're going to see when you do a start in the diesel?

Have you got a feeling for that yet, from all the data you've taken?

MR. WARD: Be a few degrees rise, I, at this point, don't expect much.

MR. CHAFFEE: So, your impression is that the temperature of the jacket-water system and the temperature of the lube-oil system is pretty evenly distributed by the warmup system such that there's not much variation in temperature and that when the diesel starts, you should think of it sort of as a homogeneously mixed -- mixture of water from a temperature standpoint in both systems at the time the diesel starts?

MR. WARD: It appears like now. Won't know until after we do the test.

MR. CHAFFEE: So, you haven't found any hot or

cold spots in these two systems relative to the average temperature.

MR. WARD: No.

MR. CHAFFEE: Okay. Have you taken enough -- you know, looking around the system, taking temperatures on pipes or whatever -- to be satisfied that you'd be very surprised to find a hot or a cold spot?

MR. WARD: Only place that I know right now of where we'd find anything warmer is that lube-oil heat exchanger.

MR. CHAFFEE: Okay.

MR. WARD: That goes up to 167.

MR. CHAFFEE: So, basically, it's only about 4 degrees warmer than what the sensors are saying.

MR. WARD: Yes.

MR. CHAFFEE: Okay. I have a question. When the diesel is sitting there and it gets called upon to call a safety function, initially, I guess, as far as ultimately removing heat from the diesel, that's done by this nuclear service cooling water. I guess I have been told that, at least, when the diesel gets its initial start signal, although the nuclear service cooling water system, whether or not the pump is running or not, they don't actually get flow to the heat exchanger because there is some sort of a temperature control that prevents that.

The question I have is sort of some of the details. Does that start off, then, with the valves completely shut or are they partially by-passed? How long does it take before those -- is there any kind of a timer that insures that they don't open for a period of time or what temperature do they have to begin to see before they begin to open. How long does it take them to open?

MR. BOCKHOLD: What I was told -- and Ken Burr, correct me if I am wrong -- is this is basically kind of like a throttling by-pass valve. It is fully open at 170 degrees and fully shut at 152. Is that correct? So, with jacket water at 163 that valve is partially open, or partially closed, at about halfway.

MR. CHAFFEE: What's the temperature of nuclear service cooling water?

MR. BOCKHOLD: It will vary but anywhere, I guess, from 45 degrees to 85 degrees.

MR. CHAFFEE: And at this point, right now, today, it's what?

MR. BOCKHOLD: Well, my pool is about 62 degrees, so I would say it's about that.

MR. CHAFFEE: Okay. Then let's assume that if the jacket water system is at 168 degrees, then that oil must be flowing through that heat exchanger and right now it must be being cooled, to some extent, by this nuclear service

cooling water because it's colder, and there is some flow through there.

MR. BOCKHOLD: The jacket water has its own nuclear service cooling water cooler. The low boil has its own separate nuclear service belt.

What's your question?

MR. CHAFFEE: What I'm trying to understand is what the heat balance is here. It sounds like what we've got is the low boil is cooled by the jacket water, the jacket water is cooled by the nuclear service cooling water and it sounds like if this nuclear service cooling water system is running which it is right now, if the valve is partially open it's going through and cooling off the water that's in the jacket water so one of the things that's occurring right now in terms of heat loss that the jacket water system is trying to make up for is the energy that's being removed due to the nuclear service cooling water system being partially cooling that heat exchanger. I just want to make sure my understanding is correct.

MR. BOCKHOLD: It's being mixed up in your head. We've got -- in standby, we have a small jacket water pump that pumps about 90 gallons a minute around the system but it by-passes the nuclear service cooling water. The main shaft pump which pumps anywhere from, let's say, 1200 to 1800 gallons per minute, okay, it flows through a large

nuclear service cooling water heat exchanger.

MR. CHAFFEE: Well probably the coldest point in the jacket water system is the water that's in that heat exchanger because it's probably at 62 degrees.

MR. BOCKHOLD: Yes.

MR. CHAFFEE: And that cold slug of water, then, will first be introduced into the system when the diesel starts and then that cold slug of water is going to find its way through until it hits these sensors -- unless it's heated up as it goes through the engine -- it hits the sensors once the diesel starts. So, I guess we would expect that we are probably going to see, when the diesel starts up, a dip in temperature before it then goes back up. At least, based on what we just talked about.

MR. BOCKHOLD: You might see a dip in temperature.

MR. CHAFFEE: Might see one. Okay.

Are there any other dynamics of any other portions of the jacket water system or the lube oil system where you have something else going on, it's either hotter or colder. I think it's important that people understand going into the test what they might expect to see. Granted, at this point, it sounds like we may see a cold slug go in. I guess what we said yesterday is perhaps it's not that significant because your testing yesterday showed that the rate of temperature change shouldn't have that much of an impact but

it sounds like, from what you just said we shouldn't be surprised to see the temperature of the jacket water temperature probes dip down fairly -- could be all the way down to 62 degrees for a period of time, followed by an increase back up as the engine heats up.

MR. BOCKHOLD: I expect a decrease in temperature because most of the flow will be going around that heat exchanger.

MR. CHAFFEE: Okay.

MR. BOCKHOLD: You know, we are speculating. There is a potential for temperature to drop and then come back up. It really depends on how that three-way valve is going to respond to temperature changes and how fast it is going to respond, and how fast the heat input from the diesel, you know, heats up.

MR. CHAFFEE: Say that one more time, George.

MR. BOCKHOLD: The shaft-driven pump delivers some by-pass flow around the cooler, some flow to the cooler. Then it comes back together and mixes so that temperature is going to go down. But then that cool water is going to come up and be right next to the cylinders in the diesel and it's going to pick up heat from the diesel at that particular point. Then it's going to come up to the temperature probes where we got it instrumented, okay? So, you know, my reaction is probably the temperature will drop some and then

come up but, you know, you have got a good bit of dynamics here working where you have got a control valve working and you have heat input from the diesel cylinders working so we will see what happens.

MR. CHAFFEE: Okay. Again, the only thing that I'm pointing out is I think it's important that people have it clear in their minds how all that integrated system activity is going to occur in the start so that people can be looking for expected parameter changes and recognize what kinds of things they should be looking for in terms of something that's abnormal, to make sure that people are as prepared as possible to, you know, look for things going right or going wrong as the test occurs.

In addition, what's true is in thinking through some of these dynamics it would -- maybe you guys have done all this, but to the extent you haven't in thinking through the dynamics it then can make it clearer to you what sort of parameters you need to make sure are established so that the test itself will be an effective test demonstrating that you don't have any problems.

For example, I understand that there will be a couple of differences between this test and a true simulation of what happened in the event because you are not going to be loading onto the buss and having certain load sequence. What we have been told and I don't necessarily

disagree with is that that difference has no impact because it's not going to have any significant impact on the portions of the system that are being tested. And I don't disagree with that but I would think that to reach that conclusion the people that are reaching that conclusion would have to make sure they understood what all the different phenomena that are going to be occurring to make sure that those parameters that aren't going to be the same would have no impact.

So, understanding the dynamics like you were just describing of how this cold water or other things, you know, how the water is going through the different components leading to the sensor, in terms of seeing how the inner system interaction is, will be important for them to understand. If they have not fully done that, what we're saying is they need to complete that process because you would be a little concerned, I would think, that if after you did the test and people were studying the results and stuff they found that oh, woops! Actually, it turns out that one of the things we didn't have established was one that was critical to make sure that this was an effective test and, therefore, we need to do the test again.

MR. BOCKHOLD: We understand what you're saying.

MR. CHAFFEE: Okay.

We understand. I guess it sounds like you are

probably going to be doing that test sometime late today. Is that sort of your guess, George?

MR. BOCKHOLD: I hope to be able to do the test this afternoon.

MR. CHAFFEE: Okay.

Region II, did you have any comment?

MR. BROCKMAN: I've got none from here in the headquarters.

MR. MILLER: I understand they will start the first test this afternoon. Assuming that test goes well, do we have any testing beyond that.

MR. CHAFFEE: I'm sorry, Ken. Could you say that one more time.

MR. BROCKMAN: I understand the first test is to start this afternoon. If things go well on that test, I am interested in any hypothesized schedules for subsequent testing after that so that I can have my resources at the site appropriately marshalled.

MR. BOCKHOLD: At this point, Ken, we have no more diesel tests that we plan to do unless something unusual comes out of this test or we think of something in the meantime. The next test being, I believe, on the temperature switches and Lewis Ward will be coordinating that with a lab someplace and probably, Lewis, you might speak to what schedule, if any schedule, you have been able

to think about.

MR. BROCKMAN: George, you've got a function schedule after you put in the MWO.

MR. BOCKHOLD: Yes, but I believe the IAT was not interested in that.

MR. BROCKMAN: But I am.

MR. BOCKHOLD: That would occur immediately after that.

MR. BROCKMAN: After what?

MR. BOCKHOLD: After the jacket water test.

MR. BROCKMAN: You won't have the MWO in that. You can't do the functional until you've got those trips taken care of with that MWO.

MR. BOCKHOLD: We have the MWO. It is approximately four to six hours duration and we would then go do the functional immediately after that.

MR. BROCKMAN: So you would anticipate that that is probably an activity to be done this evening, then?

MR. BOCKHOLD: Probably, yes. We have already done that on the B Diesel.

MR. BROCKMAN: Okay.

MR. CHAFFEE: Okay. George, on the one test that you are going to be doing later today. The one thing that, I guess, we are particularly interested that you focus on is making sure that the dynamics of that nuclear cooling

service water system is well understood. We know in the event that that thing got cycled on later on and -- the same thing. Just make sure that -- it would be very disappointing to find out afterwards that somehow you had to do it again because the parameters weren't exactly right.

Okay. Why don't we go on ahead to Lewis Ward and what his --

MR. WARD: Okay. On the temperature switches, I talked to Wyley Labs yesterday and, basically, briefed them on what had happened at the plant and what some of the concerns were. They were, obviously, willing to put together a test program for us. Their approach would be to do a design review of the switches in a paper-type review first. Do a failure-type analysis on materials in the switches that would be most subject to either failure or corrosion or degradation and then examine a new switch destructively, or at least take it apart and look at the inside and confirm that their engineering review was on the right track and then design us a sequence for examining and testing these switches to establish what had happened to them or see what kind of drift or erratic operation we might have seen out of these particular switches.

I am getting a proposal. They are faxing a proposal to me this morning to do that. They had indicated if we elected to go that sequence the first part of that,

the engineering review and the test sequence they could have in about a three-week time frame.

MR. CHAFFEE: Okay.

MR. WARD: I did inform them that the NRC and Calcon and several other people would be interested in looking at the test plan ahead of time and probably witnessing the test.

MR. CHAFFEE: Okay. Just a second.

I think a couple of people just joined in this line. For those people that did just join, we have another conference call on this line at 11:00, so if you will just hold on for a second we will finish. This is Al Chaffee with IAT. We will finish this dialogue we are having here and then go on to that. So if you would just be patient for a few minutes.

Okay. I understand, Lewis.

Okay.

MR. WARD: Was that what you were looking for?

MR. CHAFFEE: Yes. I would have been nice if they could have, here in the short term, just done some -- what would you call them? Sort of a repeatability study, where they just take one of these switches and run it through a number of tests. Let me say it differently.

It would have been helpful if they could have, up front, before they did a lot of some of this other stuff,

simply take a switch or maybe two switches and simply do the following type of testing, to give us some initial information: Do a test where they were to demonstrate how repeatable the switch's performance was. You know, they just took a switch and did like four or five occurrences where they did carefully-controlled temperature increases and see where the switch tripped and see if it repeated itself with good reproduceability.

Do the kind of tests that George had his people did onsite, where they varied the rate of temperature change and see how the switch's set-point changes in regards to that. And then maybe do a set of tests where they would try to introduce through the air some particles of different sizes and see if that had any impact on that switch.

And if they could do that testing fairly quickly here, like in the next week, then they could see what kind of results they got with that and then follow that up with some of this more exhaustive testing. The advantage of that would be that we could get some quicker-term type of information in terms of these switches, with the more detailed analysis being done later.

[Pause.]

MR. CHAFFEE: Well, anyway, we're in the process with the agency of contacting some group -- and we're not sure who it's going to be -- to sort of follow on to all of

this.

Again, what I just said, I recognize that what Wyle is proposing is probably the long, exhaustive thing that needs to be done to get to the bottom line on all this, and for what it's worth, what I'm saying is that if there is some way that they can provide some short-term feedback in terms of some information about these switches, in terms of their reliability, reproduceability of their results, and some information in terms of their sensitivity to certain types of variations of the environment they were in, that would be helpful, to try to get a feeling for how the problems with these switches could have contributed to what happened here at Vogtle.

But again, it's not clear to me that we're going to have all these answers before the IIT report is issued. But to the extent we can, the IIT report will be being published, I think, sometime around May 7th. So, again, what our interest sort of is is to try to see what information we can get before that, to have it in the report, but I recognize that some of this stuff isn't going to be worked out until after the report is published, and it will end up being, probably, something generic that will be handled over the longer term.

So, do you understand what I'm saying? If there is a way to get some information --

MR. BROCKMAN: They are willing to do whatever we want them to do. If you want to release some of these quarantined switches -- and I'd send it to them this weekend or this coming Monday -- they'll be happy to take them.

MR. CHAFFEE: What I'm proposing, what I just talked about is propose that they do just some switches off the shelves, because at this point, what I want to try to make sure we put to bed is to what extent are they just dealing with a switch problem?

In other words, if you can take a switch off the shelf and just, you know, run it through its paces, repetitively, the same test and you get good reproduceability, that tells you at least one thing. It tells you that its characteristics don't change just as a matter of sitting there in the bath.

And then if you do a couple of tests like they did at the site, where they varied the temperature over a bigger range than what they were able to do at the site, then you put to bed the fact of how sensitive the switch is to the rate of temperature change.

If you then do a couple of tests with a switch off the shelf where you go through and maybe introduce some varying size particles and get a feeling for to what extent that can cause a problem in a switch, then what you've done is you've then sort of tested the environment for a good

switch that you got from the manufacturer in terms of sort of the parameters that it will work with, and then at that point, once that's done, then you can do that with -- in conjunction with the other study that they wanted to do to set yourself up for them going out and looking at what the specific failure mode was on the switches that are quarantined.

But at least it puts to bed some of the folklore that exists. I mean, you know, some people have told us that the rate of temperature change impacts the set-point on the switch. The results that George had done at the site tends to repudiate that.

We've also been told that if you get some particulate in there, perhaps that could impact the switch. Well, it would be nice to know if that, in fact, is true or not.

It would also be nice to know -- we've also had situations where the licensees calibrated the switch, only to find a day later it's not calibrated. Well, it would be nice to know whether or not that is because the switch is just poor repeatability, that it can drift all over the place on its own, or in fact, it's something of above and beyond that. It would be nice to put to bed the fact that a switch does have good repeatability and, therefore, that if the calibration is changing, it must be due to something

occurring to that switch from the time it's calibrated until the time it's installed. Another thing might be to see -- you know, maybe somehow try to see if there is some way handling could cause problems.

So, there's some type of tests that Wyle could do that could be done, you know, sort of leading into some of these detailed material analyses that they want to do, but there's some of the type of tests that they could do, you know, perhaps in the short term, to try to quantify the problems we're dealing with.

At this point, from what we saw at the site, you know, we're up here having the suspicion that perhaps a lot of the big problem is just the fact that it turns out that the bottom of that sensor -- you can rotate the bottom of the sensor, and if you can rotate the bottom of the sensor, it has exactly the same equivalent effect as if you were doing a reset in the calibration. By that, I mean one rotation of the sensor bottom is equivalent to 100 degrees change in calibration set-point, which is identical to an action being done at the top.

So, you know, sort of almost like a rehearsal of how the things are calibrated might much more quickly lead to what's going on in terms of these sensors than some of the more exhaustive things that may still need to be done.

If they find that reproduceability is really bad,

then that's when you get into looking at the materials and things of that nature.

MR. BROCKMAN: Okay. I will approach them with that today.

MR. CHAFFEE: You have the drift of what I'm talking about.

MR. BROCKMAN: Okay.

MR. CHAFFEE: Okay. We need to have a fax number to send this stuff down that Rick has for the matrices of switch data.

MR. WARD: I will call Cherie and give her the fax number.

MR. CHAFFEE: Okay.

Again, Lewis, if all this stuff I just said -- if you guys don't agree with that -- this has to be your test program, not my test program, and I've only thrown out ideas of things that I think you should consider.

You guys, in conjunction with your own organization, need to think through in your own minds what sort of test program you need, and I appreciate the fact that, where you can, it would be the concept of trying to make it responsive to the IIT, and I think you can do that, but still, you know, you need to use your own technical expertise in terms of deciding what sort of testing is appropriate, in discussions with Wyle.

MR. WARD: Okay. What's your extension number, Al?

MR. CHAFFEE: It's 492-7229.

MR. WARD: Okay.

All right. I understand what you're driving at, and I'll apply my expertise, but I do want to run it back by you before we go charging off.

MR. CHAFFEE: Okay. And I'd like you, when you do that, to talk to Rick Kendall. He is the one on the team who has the lead on the diesel, and his number is 492-7318.

MR. WARD: Okay. Sure will.

MR. CHAFFEE: Okay.

Thanks. That's all we had, unless somebody else has any comments.

MR. BOCKHOLD: No comments from the site.

MR. CHAFFEE: Okay. Thank you.

MR. WARD: Thank you.

[Whereupon, at 11:02 a.m., the teleconference was concluded.]

REPORTER'S CERTIFICATE

This is to certify that the attached proceedings before the United States Nuclear Regulatory Commission

in the matter of:

NAME OF PROCEEDING: Telephone Conference

DOCKET NUMBER:

PLACE OF PROCEEDING: Bethesda, Maryland

were held as herein appears, and that this is the original transcript thereof for the file of the United States Nuclear Regulatory Commission taken by me and thereafter reduced to typewriting by me or under the direction of the court reporting company, and that the transcript is a true and accurate record of the foregoing proceedings.

Jon Hundley

JON HUNDLEY
Official Reporter
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