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OFFICIAL TRANSCRIPT OF PROCEEDINGS

Agency: Nuclear Regulatory Commission
Incident Investigation Team

Title: Nine Mile Point Nuclear Power Plant
Interview of: EARL SCOTT "TOM"
TOMLINSON III

Docket No.

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Exhibit 3-1 (continued)

ADDENDUM TO INTERVIEW OF Tom Taylinson/Reactor Engineering Supv
(Name/Position)

Page	Line	Correction and Reason for Correction
7	9	Senses not sends cooling values closed
9	23	Should be ~~CNM-A001~~ CNM-A0V101 and CNM-A0V109
9	25	heater string not heater stream
15	3	should be heater bay
17	19	in the
21	24	above and below refuel
24	13	reject to the condenser
24	15	automatically open
24	23	in opening to bypass the tower
27	1	heater string
27	20	open not to open
28	21	heat removal not head removal
29	20	technical manager

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

INCIDENT INVESTIGATION TEAM

- -

Interview of :

EARL SCOTT "TOM" TOMLINSON III :

(Closed) :

- -

Conference Room B
Administration Building
Nine Mile Point Nuclear
Power Plant, Unit Two
Lake Road
Scriba, New York 13093
Monday, August 26, 1991

The interview commenced, pursuant to notice, at 2:10 p.m.

PRESENT FOR THE IIT:

John Kauffman, NRC

Jose Ibarra, NRC

Richard Conte, NRC

PROCEEDINGS

[2:10 p.m.]

MR. KAUFFMAN: Good afternoon. It's August 26, 1991 at 2:10 p.m. My name is John Kauffman, I'm here conducting an interview of Tom Tomlinson at the Niagara Mohawk Power Company, Unit Two, P Admin Building.

We're investigating a plant event and transient of August 13, 1991 and we'll be interviewing Tom Tomlinson.

MR. IBARRA: I'm Jose Ibarra from the IIT team.

MR. CONTE: Rich Conte, NRC, Region One.

MR. TOMLINSON: I'm Tom Tomlinson from Unit Two, Reactor Engineering Operations Department.

MR. KAUFFMAN: Okay, Tom, we would like you to start by telling us a little bit about your background and experience that you bring to your present job and a little bit about your involvement here with the event investigation?

MR. TOMLINSON: I've been with Niagara Mohawk since 1984 when I graduated from RPI with a degree in nuclear engineering. I've been in the reactor engineering department since that time. And I now hold the position of supervisor, reactor engineering.

As part of that position I'm responsible for the plant scram response and post-trip review. In the operations department, the reactor engineer reports to the

operations manager. I currently hold an SRO license for Unit Two and I have a PE license from the State of New York.

MR. KAUFFMAN: Tom, when did you get licensed? How long have you held a license and did you stand on shift time?

MR. TOMLINSON: I have not stood on shift time. No, I'm a staff license and I received that license approximately a year ago.

MR. KAUFFMAN: Okay, Rich, you have a list of specific questions, you may as well start on your list.

MR. CONTE: Okay. First, what involvement did you have in the day's events? When did you first hear about the event and where were you? Were you coming in?

MR. TOMLINSON: I was in my car and I got a phone call in my car at 6:30 in the morning from the on-shift STA. The STA's report to me in the operations organization. The on-shift STA, Tom Tuttle, called me and told me that we were in a site area emergency and that they were having trouble identifying the position of six control rods and I arrived on site approximately a quarter of seven.

I first proceeded to the control room to try and help with the rod position indication problems, by that time they had all-rod-in indications and they were having intermittent problems with one rod, 1431. I then, because we were in a site area emergency, proceeded to the technical

support center and took up the role of reactor analyst coordinator in the TSC. I spent all day there until we terminated the event later that night.

MR. CONTE: What issues did you get involved in as reactor analyst coordinator at the tech support center? What broad issues were you working on with your people?

MR. TOMLINSON: Well, by that time we had ascertained that we did have all rods in so the core conditions were known at that time. Indications had already been restored. Typically my position down there does things like fuel damage, core damage calculations, and all that and that was not necessary, so I spent most of my time helping the site emergency director with operational type concerns, trying to help him, lead him through the emergency plan and understanding plant conditions as they arose throughout the day.

MR. CONTE: And the site emergency director was Marty McCormick?

MR. TOMLINSON: That's correct.

MR. CONTE: He was stationed at the STS -- at the TSC?

MR. TOMLINSON: That's correct.

MR. CONTE: Okay. One of the concerns throughout the day was getting the UPS back on its normal supply; were you involved in that at all in terms of giving advice

whether they should do it or not do it?

MR. TOMLINSON: Not directly. That was the SED's decision and I'm not sure who else was involved in that decision.

MR. CONTE: Okay. All right, I guess I'm ready to move into some of the more specific questions about equipment problems that we've been tracking as a team. And I guess for each of these items, I would like, if you can remember, four basic questions on each of them; whether or not it's addressed in your assessment report, and I guess for the record we ought to identify that you're also the group leader for the licensees assessment group and you're looking into the area of plant response, primarily the post-trip review. Is that correct?

MR. TOMLINSON: That's correct.

MR. CONTE: Okay. If it's in your report or not, to the best of your ability why it happened, include, you know -- identify if it's any speculation or not, and whether or not you know whether there's corrective actions in terms of work requests out, startup issues -- whether it's a startup issue or not. Okay.

The first one that we have a question about is the -- the event where there was a loss of drywell cooling. Coupled with that, I guess, there was some issue with a LOCA bypass switch associated with that control circuit, could

you explain that or do you know why there was a loss of drywell cooling? Is that a consequential failure from the UPS failure?

MR. TOMLINSON: To the best of my knowledge the failure of drywell cooling was caused by a optical isolator that provides information to the interlocks for drywell cooling. The drywell cooling fans trip off if a signal -- if they get a signal that the cooling water valves are closed. And in that logic there is an optical isolator it has both safety related and black power on it. Losing the black power side of that optical isolator, I believe the logic signal -- the logic for the fans believe that those drywell cooling valves were closed, and therefore tripped the fans off.

MR. IBARRA: Tom, do you know what UPS this is out of?

MR. TOMLINSON: I do not know.

There are LOCA bypass switches which -- which bypass that interlock. I know that the on-shift ASSS, Mike Eron, investigated that during the event, identified the fact that there was black power needed in that LOCA bypass switch circuit somewhere and was making preparations for a temp mod to bypass that circuit or jumper out that logic if needed. I don't know specifics.

MR. CONTE: What's being done with that LOCA

bypass switch?

MR. TOMLINSON: There's a -- I believe there's a plant change request that has been put in the system to reevaluate that logic scheme.

MR. CONTE: Okay. So it's sound to me like there's some understanding as to why drywell cooling failed because of the loss of power -- not failed, but tripped, the loss of power to optical isolators, apparently its circuit or the logic circuits sends cooling valves closed, shut down the fan and when you attempted or considered using the LOCA bypass switches to get them started you also found they wouldn't work?

MR. TOMLINSON: That's correct.

MR. CONTE: And you identified, I guess it was Mr. Eron identified, that black power was needed for those switches to work?

MR. TOMLINSON: That's correct.

MR. CONTE: In the control circuit?

MR. TOMLINSON: That's correct.

MR. CONTE: Any questions?

MR. IBARRA: Is that going to be part of your event assessment?

MR. TOMLINSON: That is mentioned in my report, yes.

MR. KAUFFMAN: In the event, how were the fans

restored?

MR. TOMLINSON: They were restored when the power was restored.

MR. KAUFFMAN: Was it automatic?

MR. TOMLINSON: No. You have to manually start those.

MR. CONTE: I guess a specific question on the safety relief valves: Does anybody know when they were first identified to have lifted? It's our understanding from the operator's viewpoint that wasn't something that they noticed in light of all the others things that they had to verify. Do you know from the sequence in time when it was first identified that there had been two valves lifted?

MR. TOMLINSON: What I know of that event is that later in the day Tom Tuttle, the shift technical advisor, was reviewing indications in the control room and found on the strip chart recorder for SRV tailpipe temperatures that we did have indication that two SRVs lifted.

MR. CONTE: Do you know about what time he was doing that?

MR. TOMLINSON: I do not know. It was not right away.

MR. CONTE: Is it safe to say that it was after 7 o'clock?

MR. TOMLINSON: It was after 7 o'clock.

MR. CONTE: Okay.

MR. KAUFFMAN: For a transient that was the type of transient that was experienced in the plant's initial conditions and your knowledge level and training, would you expect SRVs to lift on this type of a trip?

MR. TOMLINSON: Yes, I would. I would expect SRVs to lift on a load reject from high power. It was not surprising to me.

MR. CONTE: Do you remember what the highest pressure you saw on your review was?

MR. TOMLINSON: Yes, 1070 pounds was the highest pressure we saw.

MR. CONTE: Okay.

Another question: It's our understanding that by design the condensate demineralizer's bypass valve opens on a trip from 100 percent power. Is that correct?

MR. TOMLINSON: That's correct. There are two valves that open on a turbine trip from high power. I believe the setpoint is 30 percent; a turbine trip from greater than 30 percent power -- no, that's not correct. It's 80 percent.

MR. CONTE: What are they?

MR. TOMLINSON: That's CNM AOV-101 and AOV-109. Those are the condensate demineralizer bypass valves and the low pressure heater stream bypass valve.

MR. KAUFFMAN: Why do those valves open? What's the function?

MR. TOMLINSON: They open to allow 115 percent nuclear design boiler flow on the event of a turbine trip to maintain level. Both those valves are designed to go open in the scenario, and both valves did open, as designed.

MR. CONTE: You say the designators on these valves were CNM. Is that containment monitoring?

MR. TOMLINSON: That's condensate system.

MR. CONTE: Oh, it's condensate system.

I want to get the numbers again. AOV-101 and 109?

MR. TOMLINSON: That's correct.

MR. CONTE: That 101 is the bypass; the 109 is the feedwater?

MR. TOMLINSON: I'm not positive.

MR. CONTE: You're not sure. Okay.

MR. KAUFFMAN: Does your investigation look at whether the loss of the UPS might have also caused these to go open if the automatic signal hadn't worked?

MR. TOMLINSON: My investigation did not. I can't speak for the UPS investigation.

MR. CONTE: I need to understand this. I really didn't understand what you said; my mind was drifting. At 115 percent of flow -- say that again, as to why those valves go open.

MR. TOMLINSON: In order to provide extra flow to the reactor in the case where you take a high-power turbine trip.

MR. CONTE: Oh, extra feed.

MR. TOMLINSON: Extra feed.

MR. CONTE: To mitigate the effects of the level drop.

MR. TOMLINSON: Correct.

MR. CONTE: I see. Okay.

Reactor core isolation cooling, RCIC, the auto-controller, is that a real problem? Has it been a problem in the past?

MR. TOMLINSON: That controller was identified earlier -- I can't say how earlier -- that the controller needed tuning, and there is an outstanding WR to troubleshoot that. It was a problem we knew about.

MR. CONTE: There was an outstanding work request on it?

MR. TOMLINSON: I believe it was a work request waiting to be worked.

MR. KAUFFMAN: Can you describe to me the decision process the operators would go through when there is an outstanding work request on an item of known equipment problem on their operability determination, their decision on whether or not they should enter an LCO? Do they wait

until the work is done or started?

MR. TOMLINSON: I guess I don't understand your question.

MR. KAUFFMAN: I guess my question is, there's a work request on this controller; RCIC is in tech specs; it has certain functions it's supposed to do. How would the operator determine whether this problem makes it inoperable or not? I'm really looking to understand the process, not necessarily specifics in this case.

MR. TOMLINSON: I guess what you're asking me is the thought process for an operability determination from the SSS point of view.

MR. KAUFFMAN: Right, maybe the review process that the work request would get to make sure that that's all done and documented.

MR. TOMLINSON: I don't think I can speak for the work control process. I know from an SSS point of view he would review the concern that was brought up on the work request and make a decision at that point based on his knowledge of the system, as to whether that would affect its operability. In cases were something just needs to be tuned, that may or may not affect its operability.

MR. KAUFFMAN: Okay.

MR. IBARRA: As far as RCIC, has Niagara Mohawk determined that it is a generic type problem, or what have

you all done as far as researching the kind of problems you're having?

MR. TOMLINSON: For this particular event, we have not completed the troubleshooting effort. I can't answer your question for generic implications. A system engineer would be better qualified to answer that type of question.

MR. CONTE: Does that go for the position indicator problem with the check valves also?

MR. TOMLINSON: As to whether it's a generic problem?

MR. CONTE: Right.

MR. TOMLINSON: A system engineer would be able to track those types of problems.

MR. CONTE: Are these two items or equipment problems mentioned in your report?

MR. TOMLINSON: Both of those are mentioned in my report, yes.

MR. CONTE: I guess it's my understanding you really don't know what the position problem is, also. I think there are outstanding work requests on that, too.

MR. TOMLINSON: I do not know if those work requests have been closed out yet or not.

MR. CONTE: Okay.

The performance of the condensate valve, 84 -- I guess for the record would you give me the official

designator for the 84 valve?

MR. TOMLINSON: That would be CNM MOV-84.

MR. CONTE: That's A, B, and C?

MR. TOMLINSON: A, B, and C. Those are the feed pump suction valves.

MR. CONTE: Those valves were shut, I guess, in the startup process of getting condensate, and then they couldn't be opened. Is there any understanding of why they couldn't be opened?

MR. TOMLINSON: I believe we're still troubleshooting that -- system engineers are troubleshooting that to try and determine exactly why those valves would not reopen. They were shut in an effort to restart the condensate booster pumps. That is a procedural requirement. Then they would not reopen.

MR. CONTE: Do you have an understanding of why those valves are to be shut by procedure?

MR. TOMLINSON: I believe the reason we shut those valves is that we have had a history of problems with the feed pump suction pressure relief valves, and the procedure was changed a while back to require closing those valves so you didn't pop those suction relief valves.

I know the system engineer is reviewing that procedure requirement and considering changing that.

MR. IBARRA: Tom, what's the location of this

valve?

MR. TOMLINSON: I believe those valves are in the heater base.

MR. CONTE: Any other questions on 84?

MR. KAUFFMAN: Well, my understanding of the general problem was that there was a high DP across the valve, and the valves couldn't open because of the high DP. Is that generally correct?

MR. CONTE: I know that that's a standing theory, but I don't know whether there has been anything yet to prove that or not.

MR. CONTE: Is this in in your report?

MR. TOMLINSON: That is covered in my report, yes.

MR. KAUFFMAN: I know when we talked to the system engineer he said that the valves were tested, or are tested, during startup against the kind of DPs that were seen in this event.

MR. TOMLINSON: And they were also tested in the factory.

MR. KAUFFMAN: Do you have any theories, or can you share with us the theories, for why the valves may not have opened?

MR. TOMLINSON: This is one of those specific technical issues that I delegate out to system engineers to troubleshoot, so I don't know anything other than what

they've already told me.

MR. KAUFFMAN: Okay.

MR. CONTE: Condenser vacuum and off-gas: Was off-gas isolation a consequential failure of the UPS power supply via the radiation monitoring failure?

MR. TOMLINSON: That's what I believe, that RE-13-Alpha and Bravo lost power and caused an isolation in the off-gas system.

MR. CONTE: RE meaning --?

MR. TOMLINSON: Radiation element.

MR. CONTE: Alpha and Bravo.

MR. TOMLINSON: Correct.

MR. CONTE: Lost power, and that caused the isolation.

So I guess the condenser vacuum didn't taper off too bad, but the operators were concerned about getting the hoggers on line; is that correct?

MR. TOMLINSON: That's true.

MR. CONTE: Did the hoggers perform acceptably? I should say that the hoggers are mechanical pumps; is that correct?

MR. TOMLINSON: That's correct.

MR. CONTE: How many of those mechanical vacuum pumps do you have?

MR. TOMLINSON: We have two.

MR. CONTE: They were using both of them.

MR. TOMLINSON: I don't know that for sure.

MR. CONTE: Do they bypass any radiation monitoring?

MR. TOMLINSON: Yes. They bypass the whole off-gas system.

MR. CONTE: Is there effluent monitored at all? Where do they go out -- the main stack?

MR. TOMLINSON: Yes. It still goes out the main stack.

MR. CONTE: And they were in use for how long? Do you know?

MR. TOMLINSON: I don't know.

MR. CONTE: Is there anything mentioned in your report about condenser vacuum, the off-gas isolation, and the mechanical vacuum pumps? I think what I'm hearing is that everything performed normally.

MR. TOMLINSON: The off-gas isolation is mentioned int he report, and there was a lot of trouble in this area in regard to maintaining turbine seal steam. There was a known problem with the pressure control valve that provides aux steam to the clean-steam reboiler; that valve would not work. Then they were required to swap over to steam from the auxiliary boiler to the clean steam reboiler, and they had a problem with that valve. It took some field effort in

order to get that valve open, so there was a lot of effort focused in that area early on in the event. Those things are included in my report.

MR. CONTE: The trip of the Division 2 hydrogen and oxygen sampling pump, is there an understanding of why that happened? Supposedly that's safety-grade power. It should not have been affected. Is that correct?

MR. TOMLINSON: That's true. It should not have been affected, and we are still investigating that one.

MR. CONTE: Okay.

Is that in your report?

MR. TOMLINSON: That is mentioned in my report, yes, and an explanation, whenever we get that, will also be included.

MR. IBARRA: Do we know the time frame of when they might come up with a possible explanation?

MR. TOMLINSON: We are currently working on it. I don't know when we're going to finish.

MR. CONTE: The GEM system, the gaseous effluent monitoring system -- I guess there are two, one on the --

MR. TOMLINSON: There are two, the stack GEMS and the vent GEMS.

MR. CONTE: Okay. Were they both powered off as a result of UPS? Were they affected?

MR. TOMLINSON: The vent GEMS, which is the

reactor building vent, was not operable, was out of service, before the event. That was out of service for normal calibration, so that was not in service prior to or after the event.

The stack GEMS was in service prior to the event, did lose power; then, when power was restored, the computer did not properly reboot itself. That was found by chem techs out in the plant, reported to the control room. If you look through the SSS log, you'll find that at 8:05 it was recorded in the SSS log as "stack GEMS inop." Really what that is is, that was reported from the field that it was still not functioning properly, that in fact it had been out since the loss of power. At that point the computer department got involved, rebooted the system, and it was finally restored to normal operation at approximately 8:47.

MR. CONTE: What was monitoring the stack with GEMS out?

MR. KAUFFMAN: I guess there were two times we're interested in, right? Before UPS was restored and after UPS was restored.

MR. CONTE: Yes.

MR. KAUFFMAN: If there's a different.

MR. TOMLINSON: I think chemistry is best suited to answer that question. I know that they had an in-line particulate filter that was discussed in the TSC during the

event that, after we thought things had finally stabilized, was removed and analyzed to ensure that, during the entire event, nothing was released of that nature.

We did have downwind teams out looking for releases. Chemistry, I believe, was doing their normal grab samples.

MR. KAUFFMAN: Do you recall when the field teams were dispatched and in place in the field?

MR. TOMLINSON: I don't know that detail.

MR. IBARRA: Can you tell me what other radiation monitors you have that would have been operable during this time?

MR. TOMLINSON: That's a big question.

MR. IBARRA: Do you have safety-related rad monitors?

MR. TOMLINSON: There are safety-related rad monitors in the control building ventilation system.

MR. IBARRA: And those did not go down?

MR. TOMLINSON: Those did not go down.

I'm sure there are a lot of others, but I just can't name them for you right now.

MR. CONTE: Before we leave the stack GEMS, off-gas is an input, that isolated, is that correct?

MR. TOMLINSON: That's off a separate rad monitor.

MR. CONTE: That is a separate rad monitor so

anything going out off-gas could have been monitored?

MR. TOMLINSON: Well, off-gas was isolated right away.

MR. CONTE: Okay, so --

MR. TOMLINSON: Off it's own rad monitor.

MR. CONTE: All right. What else -- at the time that -- after the event, what else is feeding that main stack from a ventilation point of view? Reactor building ventilation, or is that a separate --

MR. TOMLINSON: That's separate. Turbine building ventilation goes out through that stack.

MR. CONTE: Main stack?

MR. TOMLINSON: Yes.

MR. CONTE: Okay. Is there a monitor upstream that was operable? From an instrument point of view that are not in line and downwind or the grab sampling, do you know?

MR. TOMLINSON: I do not know.

MR. CONTE: Okay. Just -- I'm trying to get a little bit of understanding of the design -- how about what's going in the reactor building -- is the reactor building, the effluent, monitored by safety grade radiation monitoring, that was not affected by this power outage?

MR. TOMLINSON: There are, above and below refill floor rad monitors, HVR RE-14's and 32's that do monitor

that.

MR. CONTE: So, if there's anything going out of the reactor building, you could have gotten something from those radiation monitors?

MR. TOMLINSON: Yes.

MR. CONTE: That you just mentioned.

MR. TOMLINSON: And they would automatically isolate the building and start the standby gas treatment system.

MR. CONTE: Okay. Is there any information -- I'm done on the radiation monitoring, by the way. Is there any information when the first indication of the RCIC valve position problem was noted? In other words, when the operators first -- is there any records to indicate or based on operator statements, personnel statements or logs that when RCIC was injecting and they had the controller problem that there was something abnormal with the position indications on that testable check valves?

MR. TOMLINSON: The first I know of any abnormal indications on that testable check was after the system had been secured, the operators then noticed abnormal indications.

MR. KAUFFMAN: You say "after it was secured", does that mean within five or 10 minutes after it was secured or an hour or two hours after it was secured? I'm

just trying to get a ballpark for the time.

MR. CONTE: It's my understanding that it was placed in standby like an hour after the event or an hour and a half. Do you have any idea when that -- when that was first indicated?

MR. TOMLINSON: I can't recall, no.

MR. CONTE: Okay. The reports of water hammer, I guess you were down in the TSC when those reports came in, did you have any involvement in those reports, with the emergency director?

MR. TOMLINSON: There were two different reports for water hammer. The -- I can't remember which order they came in now. One of the concerns was in the RHR system, when we were warming up the lines preparing it for shutdown cooling, there was word from the field that they heard loud banging noises in one of the RHR heat exchanger rooms and I was involved at some point in the TSC in the discussions about, you know, providing engineering walkdown of that system prior to continuing with placing it in service and engineering was directed, at that point, during the event, to actually go out and do a walkdown of accessible piping and I believe that was done. That is included in my report and the engineering paperwork. It's just a letter saying that no problems were found. It's in my report.

There was also water hammer noises heard from

trying to place the reactor water cleanup system back in service. I believe the walkdown of that piping was actually deferred until after the event had been terminated, later on in the evening. Engineering did a walkdown of the system that was accessible and found no problems. And provided me with a write up on that.

MR. CONTE: Do you have -- from a response point of view, do you have an understanding of why they occurred? Or is it speculation, or you just don't have any idea?

MR. TOMLINSON: I can speculate that the cleanup system was in trying to place a hot system in reject to the condenser. You took a very large DP across the pressure control valve for a reject of the condenser and caused that cavitation. I don't know about the RHR system.

MR. CONTE: Okay. The cooling tower bypass valve, 52 valve, went open, is that a consequential failing?

MR. TOMLINSON: There are three gates in the cooling tower that open -- that bypass the cooling tower. Those gates -- motor-operated gates, aromatically open on low basin temperature. The temperature -- the temperature instruments lost power, failed low giving the control circuit a signal that we had low basin temperature and therefore those MOG's acted properly in opening the bypass tower.

MR. CONTE: So that's a consequential failure with

the UPS?

MR. TOMLINSON: Yes.

MR. CONTE: Okay.

MR. TOMLINSON: We did, however, look at that and decided that we would write a plant change request to evaluate whether loosing one power supply to those temperatures switches should cause the valves to open. We thought that that needed further evaluation and there is a plant change request to evaluate that.

MR. CONTE: And this is addressed in your report?

MR. TOMLINSON: Yes.

MR. CONTE: Good. Reactor coolant sample sink the temperature control valve, apparently there was -- it was initially thought that the isolation valve was not opened, operators did open the isolation valve? Was there a malfunction in the temperature control valve at the sink, or what?

MR. TOMLINSON: That was a chem tech at the sample sink and I talked to the chemistry supervisor, Tim Kurtz, he told me that the reset pushbutton down in the sink -- I don't fully understand the setup down there -- needs to be held in for something like five seconds. And in the heat of the battle the chem techs just did not hold the button in long enough and that was the only problem down there.

MR. CONTE: Did they eventually get a sample?

MR. TOMLINSON: Yes. I believe they did. The corrective action on Tim Kurtz's part was to make up an operator aid to remind people that the button needed to be held in for five seconds, and he's working on getting that installed.

MR. CONTE: Okay. We also go information that apparently there was an overflow in two sumps in the reactor building. Is there an understanding why that happened, is that another consequential failure or malfunction?

MR. TOMLINSON: We don't know. There was a slight backup and there was water on the floor in there -- in two of the sumps, I should say. And we, I guess, just assumed that the water came from that sump. Rad waste can't give us any indications of why that may have happened, and the sumps are operating properly now, so.

MR. CONTE: Those sump pumps are powered from what?

MR. TOMLINSON: I don't know for sure. They would be black power.

MR. CONTE: There's an item -- I guess Mr. Helker had an item on one of his lists that he presented in his interview. He talks about CNM AOV-101 open, needs to be shut pre-startup. Is that the bypass valve?

MR. TOMLINSON: That's the bypass valve around the

heater strain.

MR. CONTE: Oh, okay. And that's just --

MR. TOMLINSON: It's 101 -- back to our previous question at 101, is the bypass from the heater strain, 109 is our bypass around the condensate deminizers.

MR. CONTE: Okay. And he's just tickling himself to make sure that the valve is --

MR. TOMLINSON: That open item is identified in my report.

MR. CONTE: It is?

MR. TOMLINSON: That that valve needs to be shut prior to startup.

MR. CONTE: But as far as what you're -- what I'm hearing is that valve function normally as designed?

MR. KAUFFMAN: Tom, another question on condensate was one of the condensate booster pumps tripped and the standby pump started early in the event, do you have an understanding of why that happened?

MR. TOMLINSON: We know the min flow valves failed to open. Systems engineering, again, addressed this particular issue. I believe that the system -- the whole condensate feed water system just took a very high flow rate due to all these valves being opened and caused low suction pressure. That's why the feed pumps tripped we believe and it's easy to understand why the booster pumps would also

have some lower suction pressure, so we believe that caused that to trip also.

MR. CONTE: The reactor vessel upset range, it's not on the process computer, it was apparently lost because of not being powered from safety related buses, what is it's function in the safety scheme of things here, the reactor vessel upset range?

MR. TOMLINSON: I guess I can't answer the question on its design basis from the plant.

MR. CONTE: Is that being looked into by the --

MR. TOMLINSON: My report did submit a plant change request to evaluate that and I requested that be placed on the process computer and evaluate placing it on safety grade power.

MR. CONTE: What range does it cover on the vessel? Do you know? Inches to inches?

MR. TOMLINSON: I believe it's upper range is approximately 325. I'm not quite sure where the lower band is.

MR. CONTE: Two more items. We're almost done here. The residual hand removal system, MOV-142 apparently did not open. There's an outstanding work request on it; we have a number, 193350, this is the RHR discharge to the rad waste line. Is there any -- is that the -- is that a -- could that valve have been the cause of the water hammer or

is there a different problem as to why it didn't open? Is that an MOV problem or what?

MR. TOMLINSON: That problem was fixed early on in the day. That was some type of problem with the operator, dirty contacts, or something in the MOV and by the time the day was done, that valve was operating properly. That valve is -- I don't believe that valve is used for the initial part of the heat up, so I don't know whether it was involved in that water hammer or not.

MR. CONTE: Okay. Any -- in your report, any view on rod position indication? It's my understanding that the design is that the read switches are powered from one of the UPS's and the display lights are on another UPS in the control room. Is there any recommendation -- is that considered a problem at this point? Is there any thought to any design changes on that?

MR. TOMLINSON: That whole issue is identified in my report. The initial discrepancies have all been explained by the system engineer.

I know that our technical man, John Conway, is very concerned over rod position information not being safety grade power. Although that's the common design in the industry for that to be non-safety power. I don't know where we're going with that issue, I know we will discuss that as part of our SORC review.

Your specific question about being off two different UPS's, I wasn't aware of that.

MR. CONTE: Okay.

MR. TOMLINSON: The system engineer would have been more heavily involved in that. He basically just -- again, this is an issue that I just of pawned off to system engineering and they resolved it for me and told me that all the indications were explainable and I don't know whether they have any continued open items to review of that nature.

MR. IBARRA: The UPS loading, our investigation has shown to be heavily on the one or not equally distributed, that might have helped the situation, or not the situation because all UPS went down, but it might help in the future if only one UPS goes down. Is that an issue that you all will be reviewing?

MR. TOMLINSON: UPS loading is not a new issue. That has been going on in this plant for quite some time. We've already done several things to the UPS's to change the loadings. Stripped some of the loads off and there are other plans in the works to change out some of the UPS's and to change some of the loadings. So it's been an on going issue for some time now.

MR. IBARRA: But in the light of what happened, will that be reviewed?

MR. TOMLINSON: I'm sure it's already being

reviewed. That's not my area, I don't know.

MR. IBARRA: Okay.

MR. CONTE: One of the, just kind of summary questions -- or comment, it was very difficult to find out what loads were off those UPS's. As an individual who was probably trying to review the plant response and getting answers to questions about what happened and why that happened I'm sure you must have been somewhat frustrated by that. Why do you think that exists? Why doesn't the plant have a good drawing with loads lists or whatever that reflect what the loads are off the UPS?

MR. TOMLINSON: I guess I'm not really -- I don't really know why and I know we do have load lists for our safety related UPS's. Maybe it was just a matter of priority and operations has asked for that in the past, but that, as you know, is a very difficult task. It may just come down to priority.

MR. IBARRA: In the scenario that was run yesterday where you loose one of the UPS, UPS 1B, apparently there might still be some discrepancy as to what powers want, because there was some inconsistencies. Do you know anything about that?

MR. TOMLINSON: About the loss of the UPS, yesterday?

MR. IBARRA: Yes.

MR. TOMLINSON: Very little.

MR. IBARRA: Okay.

MR. KAUFFMAN: Earlier you mentioned your report was going to SORC, can you tell us when you anticipate the SORC meeting review?

MR. TOMLINSON: I know they're meeting right now to discuss some of the preliminary stuff. I don't know when the report is going to actually be reviewed in detail by SORC. It was supposed to be this past weekend and it didn't happen, so I don't know.

MR. CONTE: Who's going to make the decision on what issues need to be resolved by startup or not, is it the assessment groups or is it plant management, SORC?

MR. TOMLINSON: I would have to say it would be SORC to make that decision.

MR. CONTE: So in your report you really don't make recommendations in terms of this needs to be resolved by startup?

MR. TOMLINSON: No.

MR. CONTE: Okay. You're just identifying --

MR. TOMLINSON: Identify all of the issues and make sure something is happening to address each issue. Safety assessment may do some of that assessment of what needs to be resolved, I don't know.

MR. CONTE: I don't have anything else.

MR. IBARRA: I don't either.

MR. KAUFFMAN: I just have one kind of a general question. Are there any things that you think that came out of this event or that we haven't quizzed you about and talked about here today or are all the relatively major single handed things here on the table here at this meeting?

MR. TOMLINSON: Well, there's a long list of deficiencies that were identified and I think we've talked about most of the big ones.

MR. KAUFFMAN: A list of deficiencies that you identified, is that typical for the number of failures or problems experienced by say following a normal plant trip versus kind of unusual?

MR. TOMLINSON: The number of deficiencies?

MR. KAUFFMAN: Well, we had problems in feedwater, problems in --

MR. TOMLINSON: The number of deficiencies for this one is no more than normally is. Usually my number of deficiencies is maybe a half dozen. Things on the entire event, didn't work like they should have worked or something like that.

MR. CONTE: Now, that's taking away the consequential factors, I mean the things that happened because of UPS? If you take away the stuff because of the loss of UPS failure, how -- what does that list come down

to, is that a half a dozen, a dozen, in your mind, without counting them?

MR. TOMLINSON: It get significantly smaller. By eliminating all the things that happened because of UPS failure and transformer failure it's probably down to fairly normal type of a list.

MR. CONTE: Half a dozen list?

MR. TOMLINSON: That sounds about right.

MR. CONTE: For normal post-trip review?

MR. TOMLINSON: Yes.

MR. KAUFFMAN: Okay. If there are no more questions, that's the end of the interview.

MR. CONTE: Let's go off the record.

[Whereupon, at 2:55 p.m. the taking of the interview 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:	Interview of Earl Scott "Tom" Tomlinson III
DOCKET NUMBER:	(Not applicable)
PLACE OF PROCEEDING:	Scriba, New York

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.

Mark Handy

Mark Handy
Official Reporter
Ann Riley & Associates, Ltd.

07-159B-91

OFFICIAL TRANSCRIPT OF PROCEEDINGS

Agency: Nuclear Regulatory Commission
Incident Investigation Team

Title: Nine Mile Point Nuclear Power Plant
Interview of: EARL SCOTT "TOM"
TOMLINSON III

Docket No.

LOCATION: Scriba, New York

DATE: Monday, August 26, 1991 PAGES: 1 - 34

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Exhibit 3-1 (continued)

ADDENDUM TO INTERVIEW OF Tom Taylinson / Reactor Engineering Supv
(Name/Position)

Page	Line	Correction and Reason for Correction
7	9	Senses not sends cooling values closed
9	23	Should be ~~CNM-A001~~ CNM-AOV101 and CNM-AOV109
9	25	heater string not heater stream
15	3	should be heater bay
17	19	in the
21	24	above and below refuel
24	13	reject to the condensor
24	15	automatically open
24	23	in opening to bypass the tower
27	1	heater string
27	20	open not to open
28	21	heat removal not head removal
29	20	technical manager

Page 1 of 1 Signature [signature] Date 6/26/91

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

INCIDENT INVESTIGATION TEAM

- - - - - - - - - - - - - - - - - - - -

Interview of :

EARL SCOTT "TOM" TOMLINSON III :

(Closed) :

- - - - - - - - - - - - - - - - - - - -

Conference Room B
Administration Building
Nine Mile Point Nuclear
Power Plant, Unit Two
Lake Road
Scriba, New York 13093
Monday, August 26, 1991

The interview commenced, pursuant to notice, at 2:10 p.m.

PRESENT FOR THE IIT:

John Kauffman, NRC

Jose Ibarra, NRC

Richard Conte, NRC

PROCEEDINGS

[2:10 p.m.]

MR. KAUFFMAN: Good afternoon. It's August 26, 1991 at 2:10 p.m. My name is John Kauffman, I'm here conducting an interview of Tom Tomlinson at the Niagara Mohawk Power Company, Unit Two, P Admin Building.

We're investigating a plant event and transient of August 13, 1991 and we'll be interviewing Tom Tomlinson.

MR. IBARRA: I'm Jose Ibarra from the IIT team.

MR. CONTE: Rich Conte, NRC, Region One.

MR. TOMLINSON: I'm Tom Tomlinson from Unit Two, Reactor Engineering Operations Department.

MR. KAUFFMAN: Okay, Tom, we would like you to start by telling us a little bit about your background and experience that you bring to your present job and a little bit about your involvement here with the event investigation?

MR. TOMLINSON: I've been with Niagara Mohawk since 1984 when I graduated from RPI with a degree in nuclear engineering. I've been in the reactor engineering department since that time. And I now hold the position of supervisor, reactor engineering.

As part of that position I'm responsible for the plant scram response and post-trip review. In the operations department, the reactor engineer reports to the

operations manager. I currently hold an SRO license for Unit Two and I have a PE license from the State of New York.

MR. KAUFFMAN: Tom, when did you get licensed? How long have you held a license and did you stand on shift time?

MR. TOMLINSON: I have not stood on shift time. No, I'm a staff license and I received that license approximately a year ago.

MR. KAUFFMAN: Okay, Rich, you have a list of specific questions, you may as well start on your list.

MR. CONTE: Okay. First, what involvement did you have in the day's events? When did you first hear about the event and where were you? Were you coming in?

MR. TOMLINSON: I was in my car and I got a phone call in my car at 6:30 in the morning from the on-shift STA. The STA's report to me in the operations organization. The on-shift STA, Tom Tuttle, called me and told me that we were in a site area emergency and that they were having trouble identifying the position of six control rods and I arrived on site approximately a quarter of seven.

I first proceeded to the control room to try and help with the rod position indication problems, by that time they had all-rod-in indications and they were having intermittent problems with one rod, 1431. I then, because we were in a site area emergency, proceeded to the technical

support center and took up the role of reactor analyst coordinator in the TSC. I spent all day there until we terminated the event later that night.

MR. CONTE: What issues did you get involved in as reactor analyst coordinator at the tech support center? What broad issues were you working on with your people?

MR. TOMLINSON: Well, by that time we had ascertained that we did have all rods in so the core conditions were known at that time. Indications had already been restored. Typically my position down there does things like fuel damage, core damage calculations, and all that and that was not necessary, so I spent most of my time helping the site emergency director with operational type concerns, trying to help him, lead him through the emergency plan and understanding plant conditions as they arose throughout the day.

MR. CONTE: And the site emergency director was Marty McCormick?

MR. TOMLINSON: That's correct.

MR. CONTE: He was stationed at the STS -- at the TSC?

MR. TOMLINSON: That's correct.

MR. CONTE: Okay. One of the concerns throughout the day was getting the UPS back on its normal supply; were you involved in that at all in terms of giving advice

whether they should do it or not do it?

MR. TOMLINSON: Not directly. That was the SED's decision and I'm not sure who else was involved in that decision.

MR. CONTE: Okay. All right, I guess I'm ready to move into some of the more specific questions about equipment problems that we've been tracking as a team. And I guess for each of these items, I would like, if you can remember, four basic questions on each of them; whether or not it's addressed in your assessment report, and I guess for the record we ought to identify that you're also the group leader for the licensees assessment group and you're looking into the area of plant response, primarily the post-trip review. Is that correct?

MR. TOMLINSON: That's correct.

MR. CONTE: Okay. If it's in your report or not, to the best of your ability why it happened, include, you know -- identify if it's any speculation or not, and whether or not you know whether there's corrective actions in terms of work requests out, startup issues -- whether it's a startup issue or not. Okay.

The first one that we have a question about is the -- the event where there was a loss of drywell cooling. Coupled with that, I guess, there was some issue with a LOCA bypass switch associated with that control circuit, could

you explain that or do you know why there was a loss of drywell cooling? Is that a consequential failure from the UPS failure?

MR. TOMLINSON: To the best of my knowledge the failure of drywell cooling was caused by a optical isolator that provides information to the interlocks for drywell cooling. The drywell cooling fans trip off if a signal -- if they get a signal that the cooling water valves are closed. And in that logic there is an optical isolator it has both safety related and black power on it. Losing the black power side of that optical isolator, I believe the logic signal -- the logic for the fans believe that those drywell cooling valves were closed, and therefore tripped the fans off.

MR. IBARRA: Tom, do you know what UPS this is out of?

MR. TOMLINSON: I do not know.

There are LOCA bypass switches which -- which bypass that interlock. I know that the on-shift ASSS, Mike Eron, investigated that during the event, identified the fact that there was black power needed in that LOCA bypass switch circuit somewhere and was making preparations for a temp mod to bypass that circuit or jumper out that logic if needed. I don't know specifics.

MR. CONTE: What's being done with that LOCA

bypass switch?

MR. TOMLINSON: There's a -- I believe there's a plant change request that has been put in the system to reevaluate that logic scheme.

MR. CONTE: Okay. So it's sound to me like there's some understanding as to why drywell cooling failed because of the loss of power -- not failed, but tripped, the loss of power to optical isolators, apparently its circuit or the logic circuits sends cooling valves closed, shut down the fan and when you attempted or considered using the LOCA bypass switches to get them started you also found they wouldn't work?

MR. TOMLINSON: That's correct.

MR. CONTE: And you identified, I guess it was Mr. Eron identified, that black power was needed for those switches to work?

MR. TOMLINSON: That's correct.

MR. CONTE: In the control circuit?

MR. TOMLINSON: That's correct.

MR. CONTE: Any questions?

MR. IBARRA: Is that going to be part of your event assessment?

MR. TOMLINSON: That is mentioned in my report, yes.

MR. KAUFFMAN: In the event, how were the fans

restored?

MR. TOMLINSON: They were restored when the power was restored.

MR. KAUFFMAN: Was it automatic?

MR. TOMLINSON: No. You have to manually start those.

MR. CONTE: I guess a specific question on the safety relief valves: Does anybody know when they were first identified to have lifted? It's our understanding from the operator's viewpoint that wasn't something that they noticed in light of all the others things that they had to verify. Do you know from the sequence in time when it was first identified that there had been two valves lifted?

MR. TOMLINSON: What I know of that event is that later in the day Tom Tuttle, the shift technical advisor, was reviewing indications in the control room and found on the strip chart recorder for SRV tailpipe temperatures that we did have indication that two SRVs lifted.

MR. CONTE: Do you know about what time he was doing that?

MR. TOMLINSON: I do not know. It was not right away.

MR. CONTE: Is it safe to say that it was after 7 o'clock?

MR. TOMLINSON: It was after 7 o'clock.

MR. CONTE: Okay.

MR. KAUFFMAN: For a transient that was the type of transient that was experienced in the plant's initial conditions and your knowledge level and training, would you expect SRVs to lift on this type of a trip?

MR. TOMLINSON: Yes, I would. I would expect SRVs to lift on a load reject from high power. It was not surprising to me.

MR. CONTE: Do you remember what the highest pressure you saw on your review was?

MR. TOMLINSON: Yes, 1070 pounds was the highest pressure we saw.

MR. CONTE: Okay.

Another question: It's our understanding that by design the condensate demineralizer's bypass valve opens on a trip from 100 percent power. Is that correct?

MR. TOMLINSON: That's correct. There are two valves that open on a turbine trip from high power. I believe the setpoint is 30 percent; a turbine trip from greater than 30 percent power -- no, that's not correct. It's 80 percent.

MR. CONTE: What are they?

MR. TOMLINSON: That's CNM AOV-101 and AOV-109. Those are the condensate demineralizer bypass valves and the low pressure heater stream bypass valve.

MR. KAUFFMAN: Why do those valves open? What's the function?

MR. TOMLINSON: They open to allow 115 percent nuclear design boiler flow on the event of a turbine trip to maintain level. Both those valves are designed to go open in the scenario, and both valves did open, as designed.

MR. CONTE: You say the designators on these valves were CNM. Is that containment monitoring?

MR. TOMLINSON: That's condensate system.

MR. CONTE: Oh, it's condensate system.

I want to get the numbers again. AOV-101 and 109?

MR. TOMLINSON: That's correct.

MR. CONTE: That 101 is the bypass; the 109 is the feedwater?

MR. TOMLINSON: I'm not positive.

MR. CONTE: You're not sure. Okay.

MR. KAUFFMAN: Does your investigation look at whether the loss of the UPS might have also caused these to go open if the automatic signal hadn't worked?

MR. TOMLINSON: My investigation did not. I can't speak for the UPS investigation.

MR. CONTE: I need to understand this. I really didn't understand what you said; my mind was drifting. At 115 percent of flow -- say that again, as to why those valves go open.

MR. TOMLINSON: In order to provide extra flow to the reactor in the case where you take a high-power turbine trip.

MR. CONTE: Oh, extra feed.

MR. TOMLINSON: Extra feed.

MR. CONTE: To mitigate the effects of the level drop.

MR. TOMLINSON: Correct.

MR. CONTE: I see. Okay.

Reactor core isolation cooling, RCIC, the auto-controller, is that a real problem? Has it been a problem in the past?

MR. TOMLINSON: That controller was identified earlier -- I can't say how earlier -- that the controller needed tuning, and there is an outstanding WR to troubleshoot that. It was a problem we knew about.

MR. CONTE: There was an outstanding work request on it?

MR. TOMLINSON: I believe it was a work request waiting to be worked.

MR. KAUFFMAN: Can you describe to me the decision process the operators would go through when there is an outstanding work request on an item of known equipment problem on their operability determination, their decision on whether or not they should enter an LCO? Do they wait

until the work is done or started?

MR. TOMLINSON: I guess I don't understand your question.

MR. KAUFFMAN: I guess my question is, there's a work request on this controller; RCIC is in tech specs; it has certain functions it's supposed to do. How would the operator determine whether this problem makes it inoperable or not? I'm really looking to understand the process, not necessarily specifics in this case.

MR. TOMLINSON: I guess what you're asking me is the thought process for an operability determination from the SSS point of view.

MR. KAUFFMAN: Right, maybe the review process that the work request would get to make sure that that's all done and documented.

MR. TOMLINSON: I don't think I can speak for the work control process. I know from an SSS point of view he would review the concern that was brought up on the work request and make a decision at that point based on his knowledge of the system, as to whether that would affect its operability. In cases were something just needs to be tuned, that may or may not affect its operability.

MR. KAUFFMAN: Okay.

MR. IBARRA: As far as RCIC, has Niagara Mohawk determined that it is a generic type problem, or what have

you all done as far as researching the kind of problems you're having?

MR. TOMLINSON: For this particular event, we have not completed the troubleshooting effort. I can't answer your question for generic implications. A system engineer would be better qualified to answer that type of question.

MR. CONTE: Does that go for the position indicator problem with the check valves also?

MR. TOMLINSON: As to whether it's a generic problem?

MR. CONTE: Right.

MR. TOMLINSON: A system engineer would be able to track those types of problems.

MR. CONTE: Are these two items or equipment problems mentioned in your report?

MR. TOMLINSON: Both of those are mentioned in my report, yes.

MR. CONTE: I guess it's my understanding you really don't know what the position problem is, also. I think there are outstanding work requests on that, too.

MR. TOMLINSON: I do not know if those work requests have been closed out yet or not.

MR. CONTE: Okay.

The performance of the condensate valve, 84 -- I guess for the record would you give me the official

designator for the 84 valve?

MR. TOMLINSON: That would be CNM MOV-84.

MR. CONTE: That's A, B, and C?

MR. TOMLINSON: A, B, and C. Those are the feed pump suction valves.

MR. CONTE: Those valves were shut, I guess, in the startup process of getting condensate, and then they couldn't be opened. Is there any understanding of why they couldn't be opened?

MR. TOMLINSON: I believe we're still troubleshooting that -- system engineers are troubleshooting that to try and determine exactly why those valves would not reopen. They were shut in an effort to restart the condensate booster pumps. That is a procedural requirement. Then they would not reopen.

MR. CONTE: Do you have an understanding of why those valves are to be shut by procedure?

MR. TOMLINSON: I believe the reason we shut those valves is that we have had a history of problems with the feed pump suction pressure relief valves, and the procedure was changed a while back to require closing those valves so you didn't pop those suction relief valves.

I know the system engineer is reviewing that procedure requirement and considering changing that.

MR. IBARRA: Tom, what's the location of this

valve?

MR. TOMLINSON: I believe those valves are in the heater base.

MR. CONTE: Any other questions on 84?

MR. KAUFFMAN: Well, my understanding of the general problem was that there was a high DP across the valve, and the valves couldn't open because of the high DP. Is that generally correct?

MR. CONTE: I know that that's a standing theory, but I don't know whether there has been anything yet to prove that or not.

MR. CONTE: Is this in in your report?

MR. TOMLINSON: That is covered in my report, yes.

MR. KAUFFMAN: I know when we talked to the system engineer he said that the valves were tested, or are tested, during startup against the kind of DPs that were seen in this event.

MR. TOMLINSON: And they were also tested in the factory.

MR. KAUFFMAN: Do you have any theories, or can you share with us the theories, for why the valves may not have opened?

MR. TOMLINSON: This is one of those specific technical issues that I delegate out to system engineers to troubleshoot, so I don't know anything other than what

they've already told me.

MR. KAUFFMAN: Okay.

MR. CONTE: Condenser vacuum and off-gas: Was off-gas isolation a consequential failure of the UPS power supply via the radiation monitoring failure?

MR. TOMLINSON: That's what I believe, that RE-13-Alpha and Bravo lost power and caused an isolation in the off-gas system.

MR. CONTE: RE meaning --?

MR. TOMLINSON: Radiation element.

MR. CONTE: Alpha and Bravo.

MR. TOMLINSON: Correct.

MR. CONTE: Lost power, and that caused the isolation.

So I guess the condenser vacuum didn't taper off too bad, but the operators were concerned about getting the hoggers on line; is that correct?

MR. TOMLINSON: That's true.

MR. CONTE: Did the hoggers perform acceptably? I should say that the hoggers are mechanical pumps; is that correct?

MR. TOMLINSON: That's correct.

MR. CONTE: How many of those mechanical vacuum pumps do you have?

MR. TOMLINSON: We have two.

MR. CONTE: They were using both of them.

MR. TOMLINSON: I don't know that for sure.

MR. CONTE: Do they bypass any radiation monitoring?

MR. TOMLINSON: Yes. They bypass the whole off-gas system.

MR. CONTE: Is there effluent monitored at all? Where do they go out -- the main stack?

MR. TOMLINSON: Yes. It still goes out the main stack.

MR. CONTE: And they were in use for how long? Do you know?

MR. TOMLINSON: I don't know.

MR. CONTE: Is there anything mentioned in your report about condenser vacuum, the off-gas isolation, and the mechanical vacuum pumps? I think what I'm hearing is that everything performed normally.

MR. TOMLINSON: The off-gas isolation is mentioned int he report, and there was a lot of trouble in this area in regard to maintaining turbine seal steam. There was a known problem with the pressure control valve that provides aux steam to the clean-steam reboiler; that valve would not work. Then they were required to swap over to steam from the auxiliary boiler to the clean steam reboiler, and they had a problem with that valve. It took some field effort in

order to get that valve open, so there was a lot of effort focused in that area early on in the event. Those things are included in my report.

MR. CONTE: The trip of the Division 2 hydrogen and oxygen sampling pump, is there an understanding of why that happened? Supposedly that's safety-grade power. It should not have been affected. Is that correct?

MR. TOMLINSON: That's true. It should not have been affected, and we are still investigating that one.

MR. CONTE: Okay.

Is that in your report?

MR. TOMLINSON: That is mentioned in my report, yes, and an explanation, whenever we get that, will also be included.

MR. IBARRA: Do we know the time frame of when they might come up with a possible explanation?

MR. TOMLINSON: We are currently working on it. I don't know when we're going to finish.

MR. CONTE: The GEM system, the gaseous effluent monitoring system -- I guess there are two, one on the --

MR. TOMLINSON: There are two, the stack GEMS and the vent GEMS.

MR. CONTE: Okay. Were they both powered off as a result of UPS? Were they affected?

MR. TOMLINSON: The vent GEMS, which is the

reactor building vent, was not operable, was out of service, before the event. That was out of service for normal calibration, so that was not in service prior to or after the event.

The stack GEMS was in service prior to the event, did lose power; then, when power was restored, the computer did not properly reboot itself. That was found by chem techs out in the plant, reported to the control room. If you look through the SSS log, you'll find that at 8:05 it was recorded in the SSS log as "stack GEMS inop." Really what that is is, that was reported from the field that it was still not functioning properly, that in fact it had been out since the loss of power. At that point the computer department got involved, rebooted the system, and it was finally restored to normal operation at approximately 8:47.

MR. CONTE: What was monitoring the stack with GEMS out?

MR. KAUFFMAN: I guess there were two times we're interested in, right? Before UPS was restored and after UPS was restored.

MR. CONTE: Yes.

MR. KAUFFMAN: If there's a different.

MR. TOMLINSON: I think chemistry is best suited to answer that question. I know that they had an in-line particulate filter that was discussed in the TSC during the

event that, after we thought things had finally stabilized, was removed and analyzed to ensure that, during the entire event, nothing was released of that nature.

We did have downwind teams out looking for releases. Chemistry, I believe, was doing their normal grab samples.

MR. KAUFFMAN: Do you recall when the field teams were dispatched and in place in the field?

MR. TOMLINSON: I don't know that detail.

MR. IBARRA: Can you tell me what other radiation monitors you have that would have been operable during this time?

MR. TOMLINSON: That's a big question.

MR. IBARRA: Do you have safety-related rad monitors?

MR. TOMLINSON: There are safety-related rad monitors in the control building ventilation system.

MR. IBARRA: And those did not go down?

MR. TOMLINSON: Those did not go down.

I'm sure there are a lot of others, but I just can't name them for you right now.

MR. CONTE: Before we leave the stack GEMS, off-gas is an input, that isolated, is that correct?

MR. TOMLINSON: That's off a separate rad monitor.

MR. CONTE: That is a separate rad monitor so

anything going out off-gas could have been monitored?

MR. TOMLINSON: Well, off-gas was isolated right away.

MR. CONTE: Okay, so --

MR. TOMLINSON: Off it's own rad monitor.

MR. CONTE: All right. What else -- at the time that -- after the event, what else is feeding that main stack from a ventilation point of view? Reactor building ventilation, or is that a separate --

MR. TOMLINSON: That's separate. Turbine building ventilation goes out through that stack.

MR. CONTE: Main stack?

MR. TOMLINSON: Yes.

MR. CONTE: Okay. Is there a monitor upstream that was operable? From an instrument point of view that are not in line and downwind or the grab sampling, do you know?

MR. TOMLINSON: I do not know.

MR. CONTE: Okay. Just -- I'm trying to get a little bit of understanding of the design -- how about what's going in the reactor building -- is the reactor building, the effluent, monitored by safety grade radiation monitoring, that was not affected by this power outage?

MR. TOMLINSON: There are, above and below refill floor rad monitors, HVR RE-14's and 32's that do monitor

that.

MR. CONTE: So, if there's anything going out of the reactor building, you could have gotten something from those radiation monitors?

MR. TOMLINSON: Yes.

MR. CONTE: That you just mentioned.

MR. TOMLINSON: And they would automatically isolate the building and start the standby gas treatment system.

MR. CONTE: Okay. Is there any information -- I'm done on the radiation monitoring, by the way. Is there any information when the first indication of the RCIC valve position problem was noted? In other words, when the operators first -- is there any records to indicate or based on operator statements, personnel statements or logs that when RCIC was injecting and they had the controller problem that there was something abnormal with the position indications on that testable check valves?

MR. TOMLINSON: The first I know of any abnormal indications on that testable check was after the system had been secured, the operators then noticed abnormal indications.

MR. KAUFFMAN: You say "after it was secured", does that mean within five or 10 minutes after it was secured or an hour or two hours after it was secured? I'm

just trying to get a ballpark for the time.

MR. CONTE: It's my understanding that it was placed in standby like an hour after the event or an hour and a half. Do you have any idea when that -- when that was first indicated?

MR. TOMLINSON: I can't recall, no.

MR. CONTE: Okay. The reports of water hammer, I guess you were down in the TSC when those reports came in, did you have any involvement in those reports, with the emergency director?

MR. TOMLINSON: There were two different reports for water hammer. The -- I can't remember which order they came in now. One of the concerns was in the RHR system, when we were warming up the lines preparing it for shutdown cooling, there was word from the field that they heard loud banging noises in one of the RHR heat exchanger rooms and I was involved at some point in the TSC in the discussions about, you know, providing engineering walkdown of that system prior to continuing with placing it in service and engineering was directed, at that point, during the event, to actually go out and do a walkdown of accessible piping and I believe that was done. That is included in my report and the engineering paperwork. It's just a letter saying that no problems were found. It's in my report.

There was also water hammer noises heard from

trying to place the reactor water cleanup system back in service. I believe the walkdown of that piping was actually deferred until after the event had been terminated, later on in the evening. Engineering did a walkdown of the system that was accessible and found no problems. And provided me with a write up on that.

MR. CONTE: Do you have -- from a response point of view, do you have an understanding of why they occurred? Or is it speculation, or you just don't have any idea?

MR. TOMLINSON: I can speculate that the cleanup system was in trying to place a hot system in reject to the condenser. You took a very large DP across the pressure control valve for a reject of the condenser and caused that cavitation. I don't know about the RHR system.

MR. CONTE: Okay. The cooling tower bypass valve, 52 valve, went open, is that a consequential failing?

MR. TOMLINSON: There are three gates in the cooling tower that open -- that bypass the cooling tower. Those gates -- motor-operated gates, aromatically open on low basin temperature. The temperature -- the temperature instruments lost power, failed low giving the control circuit a signal that we had low basin temperature and therefore those MOG's acted properly in opening the bypass tower.

MR. CONTE: So that's a consequential failure with

the UPS?

MR. TOMLINSON: Yes.

MR. CONTE: Okay.

MR. TOMLINSON: We did, however, look at that and decided that we would write a plant change request to evaluate whether loosing one power supply to those temperatures switches should cause the valves to open. We thought that that needed further evaluation and there is a plant change request to evaluate that.

MR. CONTE: And this is addressed in your report?

MR. TOMLINSON: Yes.

MR. CONTE: Good. Reactor coolant sample sink the temperature control valve, apparently there was -- it was initially thought that the isolation valve was not opened, operators did open the isolation valve? Was there a malfunction in the temperature control valve at the sink, or what?

MR. TOMLINSON: That was a chem tech at the sample sink and I talked to the chemistry supervisor, Tim Kurtz, he told me that the reset pushbutton down in the sink -- I don't fully understand the setup down there -- needs to be held in for something like five seconds. And in the heat of the battle the chem techs just did not hold the button in long enough and that was the only problem down there.

MR. CONTE: Did they eventually get a sample?

MR. TOMLINSON: Yes. I believe they did. The corrective action on Tim Kurtz's part was to make up an operator aid to remind people that the button needed to be held in for five seconds, and he's working on getting that installed.

MR. CONTE: Okay. We also go information that apparently there was an overflow in two sumps in the reactor building. Is there an understanding why that happened, is that another consequential failure or malfunction?

MR. TOMLINSON: We don't know. There was a slight backup and there was water on the floor in there -- in two of the sumps, I should say. And we, I guess, just assumed that the water came from that sump. Rad waste can't give us any indications of why that may have happened, and the sumps are operating properly now, so.

MR. CONTE: Those sump pumps are powered from what?

MR. TOMLINSON: I don't know for sure. They would be black power.

MR. CONTE: There's an item -- I guess Mr. Helker had an item on one of his lists that he presented in his interview. He talks about CNM AOV-101 open, needs to be shut pre-startup. Is that the bypass valve?

MR. TOMLINSON: That's the bypass valve around the

heater strain.

MR. CONTE: Oh, okay. And that's just --

MR. TOMLINSON: It's 101 -- back to our previous question at 101, is the bypass from the heater strain, 109 is our bypass around the condensate deminizers.

MR. CONTE: Okay. And he's just tickling himself to make sure that the valve is --

MR. TOMLINSON: That open item is identified in my report.

MR. CONTE: It is?

MR. TOMLINSON: That that valve needs to be shut prior to startup.

MR. CONTE: But as far as what you're -- what I'm hearing is that valve function normally as designed?

MR. KAUFFMAN: Tom, another question on condensate was one of the condensate booster pumps tripped and the standby pump started early in the event, do you have an understanding of why that happened?

MR. TOMLINSON: We know the min flow valves failed to open. Systems engineering, again, addressed this particular issue. I believe that the system -- the whole condensate feed water system just took a very high flow rate due to all these valves being opened and caused low suction pressure. That's why the feed pumps tripped we believe and it's easy to understand why the booster pumps would also

have some lower suction pressure, so we believe that caused that to trip also.

MR. CONTE: The reactor vessel upset range, it's not on the process computer, it was apparently lost because of not being powered from safety related buses, what is it's function in the safety scheme of things here, the reactor vessel upset range?

MR. TOMLINSON: I guess I can't answer the question on its design basis from the plant.

MR. CONTE: Is that being looked into by the --

MR. TOMLINSON: My report did submit a plant change request to evaluate that and I requested that be placed on the process computer and evaluate placing it on safety grade power.

MR. CONTE: What range does it cover on the vessel? Do you know? Inches to inches?

MR. TOMLINSON: I believe it's upper range is approximately 325. I'm not quite sure where the lower band is.

MR. CONTE: Two more items. We're almost done here. The residual hand removal system, MOV-142 apparently did not open. There's an outstanding work request on it; we have a number, 193350, this is the RHR discharge to the rad waste line. Is there any -- is that the -- is that a -- could that valve have been the cause of the water hammer or

is there a different problem as to why it didn't open? Is that an MOV problem or what?

MR. TOMLINSON: That problem was fixed early on in the day. That was some type of problem with the operator, dirty contacts, or something in the MOV and by the time the day was done, that valve was operating properly. That valve is -- I don't believe that valve is used for the initial part of the heat up, so I don't know whether it was involved in that water hammer or not.

MR. CONTE: Okay. Any -- in your report, any view on rod position indication? It's my understanding that the design is that the read switches are powered from one of the UPS's and the display lights are on another UPS in the control room. Is there any recommendation -- is that considered a problem at this point? Is there any thought to any design changes on that?

MR. TOMLINSON: That whole issue is identified in my report. The initial discrepancies have all been explained by the system engineer.

I know that our technical man, John Conway, is very concerned over rod position information not being safety grade power. Although that's the common design in the industry for that to be non-safety power. I don't know where we're going with that issue, I know we will discuss that as part of our SORC review.

Your specific question about being off two different UPS's, I wasn't aware of that.

MR. CONTE: Okay.

MR. TOMLINSON: The system engineer would have been more heavily involved in that. He basically just -- again, this is an issue that I just of pawned off to system engineering and they resolved it for me and told me that all the indications were explainable and I don't know whether they have any continued open items to review of that nature.

MR. IBARRA: The UPS loading, our investigation has shown to be heavily on the one or not equally distributed, that might have helped the situation, or not the situation because all UPS went down, but it might help in the future if only one UPS goes down. Is that an issue that you all will be reviewing?

MR. TOMLINSON: UPS loading is not a new issue. That has been going on in this plant for quite some time. We've already done several things to the UPS's to change the loadings. Stripped some of the loads off and there are other plans in the works to change out some of the UPS's and to change some of the loadings. So it's been an on going issue for some time now.

MR. IBARRA: But in the light of what happened, will that be reviewed?

MR. TOMLINSON: I'm sure it's already being

reviewed. That's not my area, I don't know.

MR. IBARRA: Okay.

MR. CONTE: One of the, just kind of summary questions -- or comment, it was very difficult to find out what loads were off those UPS's. As an individual who was probably trying to review the plant response and getting answers to questions about what happened and why that happened I'm sure you must have been somewhat frustrated by that. Why do you think that exists? Why doesn't the plant have a good drawing with loads lists or whatever that reflect what the loads are off the UPS?

MR. TOMLINSON: I guess I'm not really -- I don't really know why and I know we do have load lists for our safety related UPS's. Maybe it was just a matter of priority and operations has asked for that in the past, but that, as you know, is a very difficult task. It may just come down to priority.

MR. IBARRA: In the scenario that was run yesterday where you loose one of the UPS, UPS 1B, apparently there might still be some discrepancy as to what powers want, because there was some inconsistencies. Do you know anything about that?

MR. TOMLINSON: About the loss of the UPS, yesterday?

MR. IBARRA: Yes.

MR. TOMLINSON: Very little.

MR. IBARRA: Okay.

MR. KAUFFMAN: Earlier you mentioned your report was going to SORC, can you tell us when you anticipate the SORC meeting review?

MR. TOMLINSON: I know they're meeting right now to discuss some of the preliminary stuff. I don't know when the report is going to actually be reviewed in detail by SORC. It was supposed to be this past weekend and it didn't happen, so I don't know.

MR. CONTE: Who's going to make the decision on what issues need to be resolved by startup or not, is it the assessment groups or is it plant management, SORC?

MR. TOMLINSON: I would have to say it would be SORC to make that decision.

MR. CONTE: So in your report you really don't make recommendations in terms of this needs to be resolved by startup?

MR. TOMLINSON: No.

MR. CONTE: Okay. You're just identifying --

MR. TOMLINSON: Identify all of the issues and make sure something is happening to address each issue. Safety assessment may do some of that assessment of what needs to be resolved, I don't know.

MR. CONTE: I don't have anything else.

MR. IBARRA: I don't either.

MR. KAUFFMAN: I just have one kind of a general question. Are there any things that you think that came out of this event or that we haven't quizzed you about and talked about here today or are all the relatively major single handed things here on the table here at this meeting?

MR. TOMLINSON: Well, there's a long list of deficiencies that were identified and I think we've talked about most of the big ones.

MR. KAUFFMAN: A list of deficiencies that you identified, is that typical for the number of failures or problems experienced by say following a normal plant trip versus kind of unusual?

MR. TOMLINSON: The number of deficiencies?

MR. KAUFFMAN: Well, we had problems in feedwater, problems in --

MR. TOMLINSON: The number of deficiencies for this one is no more than normally is. Usually my number of deficiencies is maybe a half dozen. Things on the entire event, didn't work like they should have worked or something like that.

MR. CONTE: Now, that's taking away the consequential factors, I mean the things that happened because of UPS? If you take away the stuff because of the loss of UPS failure, how -- what does that list come down

to, is that a half a dozen, a dozen, in your mind, without counting them?

MR. TOMLINSON: It get significantly smaller. By eliminating all the things that happened because of UPS failure and transformer failure it's probably down to fairly normal type of a list.

MR. CONTE: Half a dozen list?

MR. TOMLINSON: That sounds about right.

MR. CONTE: For normal post-trip review?

MR. TOMLINSON: Yes.

MR. KAUFFMAN: Okay. If there are no more questions, that's the end of the interview.

MR. CONTE: Let's go off the record.

[Whereupon, at 2:55 p.m. the taking of the interview 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:	Interview of Earl Scott "Tom" Tomlinson III
DOCKET NUMBER:	(Not applicable)
PLACE OF PROCEEDING:	Scriba, New York

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.

Mark Handy

Mark Handy
Official Reporter
Ann Riley & Associates, Ltd.