07-452A-91

ORIGINAL

OFFICIAL TRANSCRIPT OF PROCEEDINGS

Agency: U.S. Nuclear Regulatory Commission
Incident Investigation Team

Title: IIT Exit Meeting Nine
Mile Point, Unit Two

Docket No.

LOCATION: Scriba, New York

DATE: Tuesday, August 27, 1991 PAGES: 1 - 17

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Washington, D.C. 20006
(202) 293-3950

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

INCIDENT INVESTIGATION TEAM

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In the Matter of: :

: :

IIT Exit Meeting :

Nine Mile Point, Unit Two :

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Security Conference Room
Unit One Security Building
Nine Mile Point Nuclear
Power Station
Lake Road
Scriba, New York 13093
Tuesday, August 27, 1991

The meeting convened, pursuant to notice, at 3:30 p.m.

PARTICIPANTS:

For the Incident Investigation Team:

Jack Rosenthal, Team Leader, Office for Analysis and Evaluation of Operational Data
Michael Jordan, Deputy Team Leader, Office of Nuclear Reactor Regulation
Richard Conte, Region I, Boiling Water Reactor Section
Walton Jensen, Office of Nuclear Reactor Regulation
Jose Ibarra, Office of Nuclear Reactor Regulation
John Kauffman, Office for Analysis and Evaluation of Operational Data
Cherie Siegel, Office for Analysis and Evaluation of Operational Data

For Niagara Mohawk Power Corporation:

B. Ralph Sylvia, Executive Vice President
Joseph F. Firlit, Vice President, Nuclear Generation
Martin J. McCormick, Jr., Plant Manager, Nine Mile Point, Unit Two
Richard B. Abbott, Manager, Engineering, Nine Mile Point, Unit Two

P R O C E E D I N G S

[3:30 p.m.]

MR. ROSENTHAL: Why don't we start our exit. I don't know all the people in the room, but I assume that they're all NRC or Niagara Mohawk people.

[Hand raised in audience.]

MR. ROSENTHAL: You're not.

MR. FIRLIT: He's a consultant that's working with us from California.

MR. ROSENTHAL: He's okay with you.

MR. FIRLIT: Yes.

MR. ROSENTHAL: Okay.

My goal is to spend an hour or less. I know everybody is busy.

I would ask that the first time people speak they identify themselves by name -- my name is Jack Rosenthal -- so that the transcriber can recognize us.

First, let me say thank you for the cooperation that you've given us and support in conducting our investigation. We have completed this stage of our field work, and we'll now be going back to Washington and interviewing NRC people to try to see where we should or shouldn't go.

I think our minds are just plain not made up about generic actions. I'll give you an example. Clearly, the

rod position indicator in the control room is non-1E. All the indicators, I guess, come off UPS 1A, and then there's a backup from 1B, but there's only one stack of read switches, which come off 1A again. I'm sure that every other boiler in the nation is exactly that way.

Reg guide 197, which you conform you to, does not require anything of that instrument; in fact, your installation is above the minimum requirements in that area. Nevertheless, the operators really do use that instrument, and in this case it puts them into a tight little box on their ATWS procedure. By following that procedure, they want to know rod position indication and move on, but from the APRMs, LPRMs, they think that they're scrammed. They know that they're subcritical; in fact, the rationale at the time was that the direct indication that you've turned off the reaction is that you monitor the neutron flux, and that's the direct indication, rather than the indirect one that the rods are in. That's a glitch, and I think all boilers would have the same problem.

We also said to the owner's groups developing the emergency procedures, Hey, put everything into those procedures that you realistically need to run the plant, no matter what their qualification was. We knew that, if we didn't say that, we'd have two sets of procedures: the real procedures and our hokey procedure, one to satisfy a

regulation and another one that's really used. We didn't want that, so we're between a -- that's clearly a generic thing that I'm going to worry about. I don't know what's going to come out.

That probably crosses a half dozen branches in the NRC in terms of responsibility, so now we're going to have to go back to them and say, What was the rationale? Why did you do it this way? I think I know. Okay. So we've still got a lot of our work cut out for us.

Depending on how this circuit board analysis comes out, I may want to send somebody out to California, so I need you to keep us informed. I doubt if you'll be cutting apart the transformer in the next month, but if you are I'll send somebody out to McGraw-Edison. Okay.

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MR. SYLVIA: Ralph Sylvia.

We will give them a status of each of those tomorrow, when we meet with the region. A number of those were due to the UPS failure.

MR. ROSENTHAL: Right. That was a challenge to

us, to figure out which were random -- which were independent and which were consequential. I think we've got it down about right now. I think it was a learning process for everybody.

I don't think we have to go over these one by one, but I do want to pick some examples, okay?

MR. SYLVIA: Okay.

MR. ROSENTHAL: Let's take MOV-84. I think that, in regulatory space, the '85 generic letter and the '89 generic letter pertain to safety-related equipment; that's my memory.

MR. SYLVIA: Are you talking about MOV?

MR. ROSENTHAL: MOVs.

Do you have valves like MOV-84 in your -- do you routinely them? I mean when you work on them.

MR. McCORMICK: This is Marty McCormick.

There is a very extensive MOVATS program. Unfortunately, those particular valves, as I understand it now, are butterfly-type valves, and the MOVATS device doesn't work to test those. You test them with a torque-level arm. We're confirming that they were set the way they should have been set, and we'll confirm and continue to test those valves to see why they didn't come open.

There is a very extensive MOVATS program, and it covers just about everything that's motor-operated in the

plant; it was done from startup, and it's very well maintained. We have the equipment, and we have expertise on site to keep those in proper preventive maintenance.

MR. ABBOTT: Rick Abbott.

Just a couple things. As of the latest information this afternoon, we went and further inspected one of the operators. We found the operator somewhat loose, and that would have affected the applied torque that that operator could do, so we're going to continue our hardware investigation of those three valves.

We've also learned that the VOTE company has a tool, a device, that can measure rotational torque, and we're looking into using that for our butterfly valves, that rotate, rather than the standard thrust equipment that MOVATS supplies.

MR. ROSENTHAL: And you can talk to Millstone about that. They have VOTES equipment.

MR. ABBOTT: We can talk to FitzPatrick about that, right.

MR. ROSENTHAL: There clearly is not a regulatory requirement in terms of what's loaded on what UPS, but we all in this room know that, if UPS 1A fails or the cable outside -- you know, the mythical copper-rat scenario -- if that goes, you end up with a plant trip, loss of the feedwater system, loss of the control rods, and loss of some

but not all annunciators, and you're back in virtually the same event. I think you ought to think about that, about how you might choose bus loadings.

MR. SYLVIA: We are doing that.

MR. ROSENTHAL: I think at this point I believe that, in terms of communications, loss of one of the UPS's does not take out all. That's my impression.

I was surprised that you didn't have load lists. Maybe I'm naive.

MR. ABBOTT: There was a request to engineering during our refueling outage, because we wanted to take one of the UPS's out. A request went in, and it has not been acted on yet, but, as you're aware, we did that for the B unit while you were here; we're now working on the A unit, to develop that list.

MR. SYLVIA: It's desirable, clearly, to have them.

MR. ROSENTHAL: At the press conference, as we rolled through this exercise, I did tell them that you had planned to replace two of them that were running hot and that that had begun prior to the event, to your credit.

I'm still concerned over just temperature degradation within the UPS's. The room temperature may be okay, but it's hot in there, and you may have to run down just what they mean by environmental temperature. Do they

mean the room temperature a nominal foot from the surface of the box, or do they mean the air that's inside of it. I think we have a fair amount of operational experience that says that a lot of these have been heat-related failures.

Now, I'm not saying that that is what killed it this time, but it can precondition equipment -- just heat and aging -- such that it runs it down. Again, this is non-1E stuff. I know that I'm not talking in regulatory space now.

MR. McCORMICK: Based on our knowledge of the environment, we were well within that criteria for the manufacturer's specification.

MR. ROSENTHAL: But it is hot in there.

MR. McCORMICK: No question.

MR. SYLVIA: We are concerned about the temperature, and that's one of the reasons for our replacement program. We're going beyond what just meets specifications, because we had the same concern.

MR. ROSENTHAL: I'll even say my own experience is that it's not unique to this plant that that sort of equipment tends to run hot. I know I've been in more than one plant where they floor fans blowing on breakers during an outage to try to keep stuff cool, but heat does kill electronics, and we all know that. And heat may have killed these batteries, whose significance we're arguing over but

would be a contributing factor.

We did a lot of interviewing, and we wanted to satisfy ourselves that you didn't luck out. I think that that's our impression -- that is, in terms of who was around at the time. It was important to us to know that lots of people knew how to flip the breaker and get that into maintenance mode, and we believe that lots of your people knew, so it wasn't just the luck of the draw of who was there. I guess you were fortunate that the system engineer was present, but my overall impression is that you would have coped successfully with the event had he not been there. That was an important thing for us to find out, and enough interviewing of operators to assess general knowledge.

I guess what you say is that you do the training to impart knowledge, and then they use that knowledge for the event that comes along, and the event that comes along is never going to be exactly what they were trained for. I understand that you were trained for loss of instrument air, which I think is a good one, because a lot of stuff goes on at that time -- you know, simultaneously. You hadn't given specific training on, let's say, loss of all annunciators; you had given training on loss of specific annunciators and specific instruments. That's something that you might consider.

Similarly, you're going to have to at least brief the operators -- have some sort of training -- on loss of UPS's, I think -- without my saying what the extent is and what not.

MR. McCORMICK: Certainly we'll plan on the event.

[Laughter.]

MR. ROSENTHAL: On this one, knowing it'll never come again.

Let me give an example, just to belabor it. What they had here, if I just take the feedwater side, is a loss of feedwater and the loss of the associated instruments, as distinct from a loss of feedwater, where you could see the other indicators on that very board. It is, in that sense, different.

We looked at the pump head curves. I'm not ready to swear to it, but I think that the condensate booster pump bypass valve opening runs back the water to the feedwater pumps, and the feedwater pumps trip out consequential on the condensate booster. It's a relay race, except that it's important to know which one if you're thinking about doing something about it. We believe that it's the condensate booster pumps, when you opened up the bypass valve -- when that failed to open -- that didn't provide enough flow. I don't know what you want to do about that. Maybe you don't want that to fail full open.

MR. McCORMICK: That will be looked at. That's one of the items we've identified as a review, to say, Do we want those valves to fail open; they protect the equipment, but they do some other things. It will be part of our follow-up review.

MR. ROSENTHAL: While it looked like, when you opened up the dump off the feedwater pumps, you just run back on the curve a little bit more. At least that's what the first shot was.

It wasn't clear in our minds for a few days about whether you had a monitored release. We knew that you had the area rad monitors. We knew that you had lost GEMS. I think that we now have it resolved that you did have a stack monitor on one of the safety divisions from the stack.

MR. McCORMICK: Yes.

MR. ROSENTHAL: People running around are really taking particulate samples rather than gaseous effluent that goes up the stack, so I think that it's very good that you had it. I don't know that the people who were running the plant at the time knew that they knew that they had it, and, when you put the hoggers on, if they understood that they still had a monitored release, as distinct from -- I mean, they had lots of other indicators -- you know, the high-rad alarms, the area monitors, et cetera -- to believe that they weren't having a release, but I don't know about

specifically monitoring the stack, because your general knowledge would say, Hey, that's off the GEMS system, which is down. That's like knowledge-based performance.

MR. ABBOTT: My understanding is that we had a chem tech at the stack; he was able to read locally the stack GEMS output at the skid out at the stack, and he was placed there intentionally and in communication with the control room prior to the starting of the hoggers, the mechanical vacuum pumps. That was a pre-planned evolution.

MR. ROSENTHAL: Fantastic.

MR. ABBOTT: If you need more than that, I'm sure I could get you some more.

MR. ROSENTHAL: We know that now. Okay. By the hour I'm learning. Okay.

In terms of the report that I intend to right, I really pretty much plan to stick to the event and not all these peripheral issues, as distinct from communicating some of the stuff to Region I.

What else?

Okay. There's a general area that I just wanted to mention to you. That is that it seems to us that, for the feedwater condensate system and the UPS, as examples, they are really using startup procedures to do what is essentially a restoration task.

There may be a million ways that it goes down, so

I'm not quite sure how to do it, but it's something that it may be very appropriate to think of. I don't think the UPS goes out on you all the time, but restoring feedwater shouldn't be that unusual -- I think from hot conditions rather than from cold.

MR. SYLVIA: Are there some features of a startup test procedure that didn't apply, or you just don't think we're calling it the right thing?

MR. ROSENTHAL: Well, I don't know that you would have necessarily wanted to close MOV-84 in the first place, and then have to reopen it, but I don't know that.

MR. ABBOTT: What he's talking about is, system startup procedures inside the FOPs presume that the system has been shut down and idle for some plant maintenance.

MR. SYLVIA: Right.

MR. ABBOTT: We were using sections like these for the UPS and feedwater, to restore it, in this time frame. The procedures don't have a restoration section in them.

MR. SYLVIA: The initial conditions are different.

MR. ABBOTT: Yes.

MR. ROSENTHAL: The problem there, I recognize, is that it becomes almost an infinite set.

MR. SYLVIA: Right. That's the problem.

MR. McCORMICK: We have to make some judgement, and we'll look at that to see, bound it a little bit, but

the dilemma is, if I write it for this emergency, it isn't the emergency I have, any more than the one that says, I know how to start the equipment, so, if I have an emergency, I should know how to operate to contend with the emergency. I mean, it's, where do you go with that. We'll look at that.

MR. SYLVIA: I understand what you're getting at.

MR. ROSENTHAL: We flipped it to what went right -- We had symptom-oriented emergency procedures, followed the procedures. You had put in the post-accident monitoring system, and I guess in terms of pressure and level that's what you were down to, but it was there, and there are two of them. I mean, there are lessons learned from prior events that were learned here. The operators clearly coped, and I said things like that at this press conference.

There are ways of looking at this event in terms of it also being the success, in terms of having put in systems, which were then used to cope -- half full, half empty.

Let me give the floor to you.

[Pause.]

MR. SYLVIA: Are you through, Jack?

MR. ROSENTHAL: Yes.

MR. SYLVIA: The main thing I'd like to say is

that we've tried to give you everything you need. If you get back to White Flint and you need anything else, we'll be happy to give you whatever you need. As new developments come up, we will make the point to share those with you, because I think there are a lot of things yet that we don't know. As I mentioned to you, I'm not at all satisfied that we know exactly what tripped the UPS's or how they tripped. We still want to do more to try to find out.

I think, as far as anything that we know, you know, and vice versa, but if there's something that you may not know that we discover, we will share that with you, too.

MR. ROSENTHAL: Good.

I need a point of contact for this document flow.

MS. SIEGEL: We've got it, Jack.

MR. ROSENTHAL: We have it.

[Pause.]

MR. ROSENTHAL: Our plan would be to fax up a list, rather than doing it over the phone, and do it in a more systematic fashion, because I know it was pretty diverse early on.

I think that's it.

MR. JORDAN: Your report, when can we expect that?

MR. McCORMICK: The report of the team that reviewed the event?

MR. JORDAN: Yes.

MR. McCORMICK: I would say that we should have that in a reasonable form to pass on by the end of the week. This is the summary. We'll be going to the region tomorrow, and much of that detail will be included in that. We'll get that to you post haste.

It's still being put in final form, as we speak. We of course reviewed all the incidents typical of a scram. What we're doing would be part of the routine before we would return the plant to service, so we identify those things which were anomalies in the scram. They have to be cleared, understood, approved by SORC, and then justified so we can go back. That process is under way, and it's part of the evolution of this report.

I think in that process we've covered all the items which we have shared from your review, along with our own.

[Pause.]

MR. ROSENTHAL: Meeting adjourned.

MR. SYLVIA: Thank you.

MR. ROSENTHAL: Thank you.

[Whereupon, at 4:00 p.m., the meeting was concluded.]

REPORTER'S CERTIFICATE

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

in the matter of:

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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.

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MR. ROSENTHAL: On this one, knowing it'll never come again.

Let me give an example, just to belabor it. What they had here, if I just take the feedwater side, is a loss of feedwater and the loss of the associated instruments, as distinct from a loss of feedwater, where you could see the other indicators on that very board. It is, in that sense, different.

We looked at the pump head curves. I'm not ready to swear to it, but I think that the condensate booster pump bypass valve opening runs back the water to the feedwater pumps, and the feedwater pumps trip out consequential on the condensate booster. It's a relay race, except that it's important to know which one if you're thinking about doing something about it. We believe that it's the condensate booster pumps, when you opened up the bypass valve -- when that failed to open -- that didn't provide enough flow. I don't know what you want to do about that. Maybe you don't want that to fail full open.

MR. McCORMICK: That will be looked at. That's one of the items we've identified as a review, to say, Do we want those valves to fail open; they protect the equipment, but they do some other things. It will be part of our follow-up review.

MR. ROSENTHAL: While it looked like, when you opened up the dump off the feedwater pumps, you just run back on the curve a little bit more. At least that's what the first shot was.

It wasn't clear in our minds for a few days about whether you had a monitored release. We knew that you had the area rad monitors. We knew that you had lost GEMS. I think that we now have it resolved that you did have a stack monitor on one of the safety divisions from the stack.

MR. McCORMICK: Yes.

MR. ROSENTHAL: People running around are really taking particulate samples rather than gaseous effluent that goes up the stack, so I think that it's very good that you had it. I don't know that the people who were running the plant at the time knew that they knew that they had it, and, when you put the hoggers on, if they understood that they still had a monitored release, as distinct from -- I mean, they had lots of other indicators -- you know, the high-rad alarms, the area monitors, et cetera -- to believe that they weren't having a release, but I don't know about

specifically monitoring the stack, because your general knowledge would say, Hey, that's off the GEMS system, which is down. That's like knowledge-based performance.

MR. ABBOTT: My understanding is that we had a chem tech at the stack; he was able to read locally the stack GEMS output at the skid out at the stack, and he was placed there intentionally and in communication with the control room prior to the starting of the hoggers, the mechanical vacuum pumps. That was a pre-planned evolution.

MR. ROSENTHAL: Fantastic.

MR. ABBOTT: If you need more than that, I'm sure I could get you some more.

MR. ROSENTHAL: We know that now. Okay. By the hour I'm learning. Okay.

In terms of the report that I intend to right, I really pretty much plan to stick to the event and not all these peripheral issues, as distinct from communicating some of the stuff to Region I.

What else?

Okay. There's a general area that I just wanted to mention to you. That is that it seems to us that, for the feedwater condensate system and the UPS, as examples, they are really using startup procedures to do what is essentially a restoration task.

There may be a million ways that it goes down, so

I'm not quite sure how to do it, but it's something that it may be very appropriate to think of. I don't think the UPS goes out on you all the time, but restoring feedwater shouldn't be that unusual -- I think from hot conditions rather than from cold.

MR. SYLVIA: Are there some features of a startup test procedure that didn't apply, or you just don't think we're calling it the right thing?

MR. ROSENTHAL: Well, I don't know that you would have necessarily wanted to close MOV-84 in the first place, and then have to reopen it, but I don't know that.

MR. ABBOTT: What he's talking about is, system startup procedures inside the FOPs presume that the system has been shut down and idle for some plant maintenance.

MR. SYLVIA: Right.

MR. ABBOTT: We were using sections like these for the UPS and feedwater, to restore it, in this time frame. The procedures don't have a restoration section in them.

MR. SYLVIA: The initial conditions are different.

MR. ABBOTT: Yes.

MR. ROSENTHAL: The problem there, I recognize, is that it becomes almost an infinite set.

MR. SYLVIA: Right. That's the problem.

MR. McCORMICK: We have to make some judgement, and we'll look at that to see, bound it a little bit, but

the dilemma is, if I write it for this emergency, it isn't the emergency I have, any more than the one that says, I know how to start the equipment, so, if I have an emergency, I should know how to operate to contend with the emergency. I mean, it's, where do you go with that. We'll look at that.

MR. SYLVIA: I understand what you're getting at.

MR. ROSENTHAL: We flipped it to what went right -- We had symptom-oriented emergency procedures, followed the procedures. You had put in the post-accident monitoring system, and I guess in terms of pressure and level that's what you were down to, but it was there, and there are two of them. I mean, there are lessons learned from prior events that were learned here. The operators clearly coped, and I said things like that at this press conference.

There are ways of looking at this event in terms of it also being the success, in terms of having put in systems, which were then used to cope -- half full, half empty.

Let me give the floor to you.

[Pause.]

MR. SYLVIA: Are you through, Jack?

MR. ROSENTHAL: Yes.

MR. SYLVIA: The main thing I'd like to say is

that we've tried to give you everything you need. If you get back to White Flint and you need anything else, we'll be happy to give you whatever you need. As new developments come up, we will make the point to share those with you, because I think there are a lot of things yet that we don't know. As I mentioned to you, I'm not at all satisfied that we know exactly what tripped the UPS's or how they tripped. We still want to do more to try to find out.

I think, as far as anything that we know, you know, and vice versa, but if there's something that you may not know that we discover, we will share that with you, too.

MR. ROSENTHAL: Good.

I need a point of contact for this document flow.

MS. SIEGEL: We've got it, Jack.

MR. ROSENTHAL: We have it.

[Pause.]

MR. ROSENTHAL: Our plan would be to fax up a list, rather than doing it over the phone, and do it in a more systematic fashion, because I know it was pretty diverse early on.

I think that's it.

MR. JORDAN: Your report, when can we expect that?

MR. McCORMICK: The report of the team that reviewed the event?

MR. JORDAN: Yes.

MR. McCORMICK: I would say that we should have that in a reasonable form to pass on by the end of the week. This is the summary. We'll be going to the region tomorrow, and much of that detail will be included in that. We'll get that to you post haste.

It's still being put in final form, as we speak. We of course reviewed all the incidents typical of a scram. What we're doing would be part of the routine before we would return the plant to service, so we identify those things which were anomalies in the scram. They have to be cleared, understood, approved by SORC, and then justified so we can go back. That process is under way, and it's part of the evolution of this report.

I think in that process we've covered all the items which we have shared from your review, along with our own.

[Pause.]

MR. ROSENTHAL: Meeting adjourned.

MR. SYLVIA: Thank you.

MR. ROSENTHAL: Thank you.

[Whereupon, at 4:00 p.m., the meeting was concluded.]

REPORTER'S CERTIFICATE

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

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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

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Official Reporter
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