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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

PRESS CONFERENCE

ON

THREE MILE ISLAND

Middletown, Pennsylvania

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4:00 p.m. to 4:52 p.m.

Pages 1-2

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P R O C E E D I N G S

MR. POUCHARD: Good afternoon. I'm sorry to keep you waiting again.

Mr. Denton is here to give you a roundup of today's activities. He's brought with him Mr. Victor Stello, S-t-e-l-l-o, who grew up about 60 miles from here in the Keiser in the Pennsylvania area. Mr. Stello is director of the Division of Operating eactors in the Office of Nuclear Reactor Regulation.

So, Harold, if you want to tell them what we've been up to today.

MR. DENTON: Today was not quite as routine as yesterday. I'll hit the highlights briefly and then take questions either on the status or plan or on the chronology of the accident. We can answer those kinds of questions.

Let me cover first the status of our efforts to pump back into the containment building those waste gases which were in the tanks in the auxiliary building.

That effort started about six o'clock this morning During the effort it was found that there was a leak in the plumbing system somewhere. This was noticed by an increase in radiation levels in the auxiliary building. The pumping was stopped; the leaking was identified; the pumping started again about nine o'clock.

So these waste gas decay tanks are being pumped back into the containment at a rate of about three -- a rate which corresponds to a decrease in tank pressure of about three pounds an hour. These tanks started out at about 90 pounds psi, so it will take quite a while, maybe a day. But in essence this will pump back into the containment those noble gases which have been the cause of continuing release to the environment and public exposure.

Another unusual event today was the tripping of the recirculation pump which is used to circulate water from the reactor vessel to the steam generator. This pump tripped at about 1:15 due to a malfunction of the cooling system, from the motor. The pump coasted down. The contingency plans were followed. The other pump in that group was started up. This is Loop A, I believe. So it would be pump 2A was started for a total duration of about two minutes. The other pump was running.

The status of the original pump that is now functional has been restored so it can be started again if need be.

I guess one last item is industrial waste treatment water. This is the water that was stopped by the State and ourselves several days ago for increased sampling. I don't believe there were any releases of that water yesterday. Releases were started this morning for a couple of hours. It

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was released at a rate of about 100 gallons a minute for a couple of hours. This was based on sampling, and the State and ourselves are satisfied that the release was within those limits permitted during normal operation.

So with that quick overview, I will turn to questions.

MR. FOUCHARD: Maybe we ought to have Vic just run down the chronology that you got this morning and get the high spots, so that we all know from whence the questions come.

Vic, do you want to just hit the high spots on that chronology?

I believe you all have it. If not, they do have it back in the press room.

MR. STELLO: Okay.

Yesterday we issued a bulletin which will require other B&W plants to take certain actions related to the information we learned in looking back at what happened here at Three Mile Island.

I think if you look at the sequence of events that you have, you have a pretty detailed listing by time of what happened throughout the accident. I won't try to go through step by step, but rather hit what I think are the important events that happened.

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Let's start with the accident began by a trip of the condensate feedwater pumps, which is a transient that is anticipated in the plant and which it is designed for. The way things normally would happen is the turbine would trip, the reactor would scram. The auxiliary feedwater systems would have come on and the transient would have essentially been terminated.

You keep that in mind as I try to go through some of the other events that have happened and you'll see that a number of other things happened which caused this transient to degrade, and this is how we've had the accident we've now had.

In about three to fifteen seconds following the trip of the feedwater pumps, the primary circuit pressure began to rise, which opens the relief valve on the pressurizer. And the opening of the relief valve is again a pretty important event because as the pressure of the primary system dropped it should have closed, but it did not.

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About 30 seconds following the transient, the auxiliary feedwater pumps I mentioned a moment ago started up, but they were unable to supply water to the steam generators because their two independent flow paths were blocked by valves that were closed.

They were later started to deliver flow to the steam generators about eight minutes after the transient began. The sudden increase that was observed in pressurizer levels about one minute after the transient is significant because it provided information to the operator that again caused an action to be taken that was significant in determining the course of the accident.

About two minutes into the accident the emergency core cooling systems came on. All of the systems came on and were supplying water to the core, but apparently because of the change in pressurizer levels that was observed, the operator began to trip the pumps.

The tripped the first pump at about four minutes following the accident. He tripped the second pump 11 minutes after the accident. He left the third pump on, supplying some water to the core. The main circulating pumps were continuing to provide circulation to the primary coolant through the steam generators until approximately somewhat over an hour -- from about one hour to about one hour and 40 minutes,

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at which time all the pumps in the primary circuit were tripped because of observed conditions of those pumps.

After about two hours into the transient is when damage started to occur in the core. The fuel rods at that point apparently began to fail, releasing fission products to the primary circuit. The fission products got on the primary circuit, were going over it to the containment. The apparent release of radioactivity to the environment was caused by a pump which was pumping the fluid from the sump over into tanks in the auxiliary building.

Those tanks in turn overflowed and caused water to go into the auxiliary building which in turn caused the release.

The next several hours resulted in various attempts by the operators to first of all release the pressure and put the plant on its residual heat removal system. Failing to accomplish this, a decision was made to increase the pressure in an attempt to get a circulating pump back on and remove the heat through the steam generators, which is the normal heat flow path. That was accomplished after about 16 hours.

The plant has been in essentially that condition since that time operating in the mode that's been described here in the past.

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We're ready for questions.

QUESTION: Mr. Stello, did the operator have any indicator on the control panels in front of him that the valves were closed that let water in when the auxiliary feedwater pumps came on?

MR. STELLO: It is my he did.

QUESTION: He did?

MR. STELLO: That those valves are indicated in the control room as being opened or closed.

QUESTION: Is there also an indicator that tells when the sump pump comes on?

MR. STELLO: Yes, there is.

QUESTION: And when the ruptured disk blew on the first tank, was there an indication also?

MR. STELLO: I don't know if there would be an indicator on it. You could see it as a rise in containment pressure.

QUESTION: Is there -- was there any other indication that there might have been a leak out of the -- out of this relief valve? What evidence might he have had at that early point that there was a leak, that the relief valve had not closed and he was losing pressure that way?

MR. STELLO: I believe there might be some thermocouples on the exhaust, on the pipe that shows it's still flowing fluid, but he would also be seeing it again in

pressure in the containment.

QUESTION: Was there any sort of strategic reason if he knew that valve was open for leaving it open rather than trying to close it as he finally did after a couple of hours?

MR. STELLO: A question like that is very difficult to answer until you've had time to produce the various transients and look at an awful lot of very detailed information. He has what you can consider to be two conflicting pieces of information.

He had is pressurizer level rising which would cause him to react that he was filling up the system too quickly. At the same time the pressure in the system was dropping, which is indicative of the valve staying open. So it would be quite some time, I think, before we complete our analysis, until we know pretty completely what happened.

QUESTION: If the transfer of the gases from the auxiliary building to the containment building isn't completed by sometime tomorrow, at that point will it be considered safe for those people who have voluntarily evacuated themselves from the area?

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MR. DENTON: There are two sources that I'd like to see cleaned up in the plant. One is the noble gases, which the progress I've reported on today, and I want to watch the operation to be sure it all goes smoothly and the gases that are in those tanks do get back. And I want to be sure that those tanks represent a significant fraction of the contributors to the doses which are occurring from noble gases.

The other isotope that I'm interested in immediate containment on is iodine, because iodine is coming from the water in the auxiliary building. We've had plans and procedures under review to add chemicals to that water which will in effect immobilize chemically the iodine in the water. Those actions have not yet been taken.

So I guess I'd like to see the noble gas releases and the iodine releases come down.

As I've said earlier, I've advised the Governor each night, and I prefer to postpone the decision until I've gotten back to see how effective these measures are before going on.

QUESTION: Mr. Denton, it is your advice to the Governor?

MR. DENTON: I'm continuing to advise him.

QUESTION: That's what I mean. In other words, you're continuing to advise him that this five mile situation

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should prevail?

MR. DENTON: I guess I'm trying to restrict my advice to technical advice, and what the doses might be as a result of either noble gases or iodines. And I realize what his restriction is and what his recommendations have been in the past.

QUESTION: You're not saying directly.

MR. DENTON: He is the agent in charge of evacuation in the State of Pennsylvania.

QUESTION: Are you saying Please do not bring these people back, or are you using a phrase like that, a direct statement, I do not think you should bring them back?

MR. DENTON: I give him a technical recommendation and let him balance the social cost.

QUESTION: The pump that tripped at 1:15, would you elaborate on that as to exactly what happened and how serious that was?

MR. DENTON: This is a contingency that we have been planning for. It's the kind of thing that we thought might happen until procedures are written for just this type of event.

The procedures call for starting up a second pump. So what happens in the core is the flow coasts down because power is lost in the first pump. There's a period of

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about a minute or two during which natural circulation patterns are being established. The other pump was turned on, and then it came up to speed.

So the total duration of one pump running to have the other pump running was two to three minutes. What happens in the core during that time is that some of the elements are running perhaps cooler than others and may have gone up a little bit, and it appears that some of the hotter elements may have come down because of the changes of flow distribution in the core. In essence, the temperature in the core is essentially unchanged and we are just now pulling out of the computer the change of temperature data.

QUESTION: Since steps were taken to halt the leakage -- where did you trace the leakage at six o'clock that night? Where did you trace it to, and what steps did you have to take?

MR. DENTON: I don't know exactly. And this is a line, a half inch line which has been installed in the past few days to permit venting of these tanks back to the containment.

This is not a normal type of practice. And so extra equipment had to be -- valves, needle valves, and control valves -- installed in this line. We also installed a flame arrester in the line. The line was checked out with

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nitrogen under pressure in an attempt to make sure it was leak-tight.

Early in the morning when they first started venting, they did notice, in the radiation monitors in those buildings, that there was a leak. I'm not sure exactly what steps were taken, but I would expect they were tightening the flanges and tightening the valve stems.

QUESTION: How long was the radiation released into the atmosphere? What was the extent of it, and what was the impact on the population?

MR. DENTON: Very little change. I went back and had someone integrate the total amount of activity that had been released as of about twelve o'clock, and compared it to previous days.

The total amount on a cumulated basis so far today is about 60 percent of the amount which had been released over the same time period for the past four days. So it's down compared to the average of the last four days. It's ten to twenty percent higher than the amount that had been released yesterday as of the same time.

So in essence the total amount of activity that has gotten out today is about the same as yesterday. The general trend is down. And the amount of release, while it's a puff, doesn't change the overall total amount released.

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The maximum dose rate in the plume as detected by our helicopter is about .3 milligram during the peak.

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QUESTION: What is the status of your evaluation of the B & W plan? Are you satisfied that the core is not damaged to the extent it would prevent the natural circulation that that plant calls for?

MR. DENTON: That evaluation is still ongoing. We're having our Bethesda office run a lot of calculations in that regard. I think we will issue a safety evaluation report and give our views formally on that in a few days. I still expect our outlook to be favorable, but we haven't completed the review of the selected temperatures and pressures that the applicant would propose to go to.

QUESTION: Yes, I have a question for Mr. Stello. Going all the way back to the beginning of this incident, was the loss of the condensate pump connected to the maintenance that was being performed on that system or was it an inadvertent closing of the valve?

MR. STELLO: I don't know which category that belongs in. I believe there was some maintenance that normally does go on; I could not identify the specific cause. I don't know.

QUESTION: It can't be directly tied to the maintenance that was going on?

MR. STELLO: I said I don't know. I don't want to put it in either category.

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QUESTION: Mr. Stello, have you interviewed the operator on duty at the time of the -- of the --

MR. DENTON: Neither Vic nor I have, but we have people who are, investigators from our inspection and enforcement office, and they have interviewed the operators on both of the shifts, the midnight to 8:00 -- the two shifts over which this accident occurred, and all the operators have been interviewed.

QUESTION: What did they tell you about their reasons for taking the actions that they did?

MR. DENTON: I don't know. I haven't looked at it.

QUESTION: This is sort of a two part question. I wonder, maybe Mr. Stello and Mr. Denton could comment on it.

Reports about two things that the NRC had several months before this accident: they cited the erroneous pressurizer as a problem in B&W reactors; and that five years ago NRC criticized the fact that containment did not isolate during emergency conditions.

I wondered if you could comment first on the fact that they were or were not cited, and why nothing was done to follow up.

MR. DENTON: Well, we -- you have to understand that we operate on a risk aversion basis, and that no matter what happens in any plant, you can find a thick stack of

documents where we've been attempting to improve that area. I'm familiar with those documents, but I haven't gone back and studied them to see whether or not with hindsight we should have picked up something and done it differently. But that would be part of our overall investigation.

I think there were people in the Commission who were concerned about some of these things earlier.

QUESTION: Those two things particularly do you recall.

MR. DENTON: Let me ask Vic if he recalls.

MR. STELLO: The first one, the level, I'm aware of.

MR. DENTON: Certainly, with regard to the level indicator, it was discussed -- it was a subject of discussion prior to the accident.

QUESTION: How long was the core partially uncovered, and if you knew that -- was it continued to be uncovered or did it go up and down?

MR. STELLO: That is a question again that you need to do an awful lot of analyses before you can determine; principally there are two questions of concern: how much the core was uncovered and for how long.

The transients that went on are going to require considerable analysis before you're going to be able to determine

completely the answer to that question. We do know it was uncovered. We do know the fuel did fail. Fission products were released, and that some of the fuel in the core did get to high temperatures.

QUESTION: I thought someone had projected it at three hours; is that a possibility?

MR. STELLO: I don't think I'd want to venture a guess. I'd prefer to have the analyses and not work on conjecture.

QUESTION: Did any safety problems or mechanical problems arise that prevented the robot from taking that sample?

MR. STELLO: None to my knowledge.

In order to look at how they would set up, they had set up mock ups of the actions that he would have to do and practices going through those actions in this mock up situation before he would go in and actually perform the operation.

Why the decision to not go that far and take the sample yet is unknown to me.

QUESTION: Does Mr. Denton know?

MR. DENTON: The only reason that I've heard was that there are other activities going on in that same room which were considered of higher priority. Until those changes

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were made, Herman would be a second priority.

QUESTION: Mr. Stello, is there any point in the chronology here when, as things are understood now, you could point your finger there and say once it got this far it was sort of inevitable that it was going to be a pretty bad situation, things could get worse?

In other words, is there a point beyond which it goes down hill?

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MR. STELLO: Well, I think at the point that the auxiliary feedwater pumps did not come on to perform their function, we began going into what I consider to be still a transient, a very serious transient. Had they been restored earlier, this transient probably could have been terminated.

When the emergency core cooling systems were activated, again, one could have considered, and from the information we now have there was a probability -- a certainty I don't think we'll know until the analysis is complete -- that that could have been a mechanism by which to successfully terminate the accident, perhaps even without fuel failure.

I think at the point at which the two pumps were turned off is the point which set up a situation where core damage was likely to occur.

QUESTION: When is the chemical treatment for iodine going to begin, and how long will that last?

MR. DENTON: I was hoping it would have begun days ago.

I just left the trailer with people who are planning it, and I'm --

MR. FOUCHARD: We're talking about in the plant, right?

QUESTION: Yes.

MR. DENTON: Apparently it's all together and

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might begin today sometime.

QUESTION: How long will it take?

MR. DENTON: I don't know for sure. But the issues originally were selection of the proper chemicals to spray and identification of which compartments should really be sprayed. And it just seemingly has taken a lot of time for everyone to settle down on how to do it.

But I'm optimistic that it's going to be accomplished now and in the near future.

QUESTION: Do you happen to have any figures concerning the amounts of radiation that were emitted overall?

Also, what was the highest amount of radiation that was emitted from the plant at one particular time?

MR. DENTON: I can give it to you in terms of dose easier than I can quantities.

We calculate each day the total population exposure as a result of the accident from noble gases. And I think our estimates sort of came through midnight of yesterday. So it was about 2100 manrem -- which is a term I've used before. That's the accumulated total of added exposure to everyone within a 20 mile radius or so up.

And yesterday or the day before the incremental exposure from releases was another 70 manrem. So the total

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exposure to the public was a result of radiation, the bulk of that exposure occurred early on. And the last day we calculated only added an additional 70.

We also rechecked our maximum individual exposure. We still estimate that no individual has received -- or that anyone continuously present at the north ridge would have received less than 100 mr an hour, being continuously present there since the accident began.

QUESTION: Mr. Denton, getting back to that pump that failed at 1:30 this afternoon, what would have happened in a hypothetical situation that your second pump failed? Wouldn't that have been a very serious situation?

MR. DENTON: Well, there are two other pumps besides that that procedures call for turning on. The pumps in the other room would have been turned on.

So there are three spare pumps behind the pump that failed.

MR. FOUCHARD: One more, right here.

QUESTION: Mr. Denton, on Wednesday you said that Met Ed's failure to maintain the auxiliary feedwater pumps in operation is a violation of their license.

Who within the company would have made the decision to continue operating like that, and did the NRC know about it?

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MR. DENTON: That's a detailed item I would really have to look back into. I can't identify an answer to that.

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QUESTION: This is for Mr. Stello; isn't it the case that the bubble, the hydrogen bubble in the reactor developed on Wednesday and Met Ed didn't report it to you until Friday?

MR. STELLO: There probably was a bubble in the reactor very soon after the transient was terminated, at about 16 hours after the accident, and it most likely -- some form of it was there.

The methods to try and understand if it indeed was there that developed through the week. I don't believe you could call it not being reported to us. All of our understanding of the bubble finally evolved over several days. There is no instrument to say there is a bubble there. You have to make inferences from measurements that were made in the plant.

QUESTION: All right, as I understand it, the hydrogen bubble came from the water-metal reaction. Would that reaction have continued for hours or days after Wednesday?

MR. STELLO: No, once the temperatures get down below 1300 or 1400 degrees, the metal-water reaction has completely stopped, and there's almost no metal-water reaction at temperatures at temperatures as high as 1800 degrees.

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QUESTION: As I understood the answer to her question, you said the bubble continued to develop beyond Wednesday; the hydrogen wasn't --

MR. STELLO: I'm sorry, could you repeat it?

QUESTION: As I understood the answer to her question, you said the bubble continued to develop beyond Wednesday; the hydrogen wasn't in there. I wondered it --

MR. STELLO: No, I didn't say the bubble continued to develop beyond Wednesday. I said it developed some time after the accident was terminated at 16 hours into it, and that the hydrogen evolution that occurred was essentially complete at that time. There were some questions as to whether there could have been additional hydrogen involved as a result of radiolysis of the water.

And I believe that the information we've had now from people who have looked at it has concluded that radiolysis could not have occurred because of hydrogen overpressure. So there was no more hydrogen evolution following that point.

MR. FOUCHARD: Harold wants to give you just a summary of the status, I guess, and then we do have to move along.

MR. DENTON: I didn't give you the status I normally do. At 1:00 o'clock today the reactor pressure was

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1110 psi. The bulk coolant temperatures were 286 degrees. The recombiner on the containment is operating; it's performing very well.

It looks like the percent of hydrogen in the containment is on the order of 1.8 percent; the containment building is still negative with -1.2 psi. Its temperature is 83 degrees.

QUESTION: Have you lost any instruments as a result of radiation?

MR. DENTON: No further loss; the transmitter which failed earlier and I reported on appears to be transmitting more reliably.

It's giving now --

QUESTION: You're saying the bubble didn't form until 16 hours later? Perhaps by this chronology at the two hour point the core began to heat up and the bubble was forming at that point. Now, you're sure the bubble wasn't formed before the 16 hours?

You said there was core damage at the two hour point.

MR. STELLO: Well, the core damage began some time after that. I don't know precisely when.

QUESTION: You don't have to have a bubble for core damage?

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MR. STELLO: No. There is another kind of a bubble, a steam bubble. As the system depressurized and the core became uncovered, meaning there was a steam bubble in the system, and as gases evolved, there was a mixture of steam and hydrogen in the system which was going through a series of transients being vented out through the pressurizer relief valve; throughout that whole transient, hydrogen was evolving. The bubble that we're talking about is generally the bubble that we believe resulted in a bubble of hydrogen over the reactor core.

I said that in my judgment that bubble was formed just about at the conclusion of the transient. But throughout the transient, clearly there was hydrogen in the system, and whether there was one bubble or several, at that point I believe is again conjecture. There's no way we can make that inference.

QUESTION: But you did have core damage at two hours.

MR. STELLO: No, I said that I thought the core began to heat up at some time following two hours, there was core damage and --

MR. FOUCHARD: Harold, do you have one more thing you want to say?

MR. DENTON: Just one more point I forgot to mention. We will be phasing back our round the clock coverage

that we've had up until now. We'll probably go to principally two shifts for our engineering staff; this will be somewhere from 6:00 to 6:00 during the day, and another shift will come on at noon time and work until midnight. So there is some overlap during the time, the midnight to 6:00. We will maintain surveillance of operations in the control room, but we'll cut back our staff which has been around the clock coverage.

MR. POUCHARD: Thank you very much.

(Whereupon, at 4:52 p.m., the press conference was adjourned.)