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F. T. INGRAM

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NUCLEAR REGULATORY COMMISSION

PRESS CONFERENCE

ON

THREE MILE ISLAND

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Middletown, Pennsylvania

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P R O C E E D I N G S

MR. DENTON: What I'd like to do is give a quick status on the situation at the reactor as of about noontime and touch on a few other issues and then go to questions.

The situation remains stable. The core pressure is 1100 psi. The temperature has remained at 281 degrees. The hydrogen concentration in the containment is 2.1 percent. The containment building remains subatmospheric, about a pound psi negative. The containment temperature is 88 degrees.

Probably the most significant development regarding the hydrogen bubble and the explosion of hydrogen: today I want to report that we no longer consider hydrogen explosion at a significant problem at this plant for three reasons; the fact that the question of oxygen evolution in this containment in this type of atmosphere has been resolved and the numbers we were using before were too conservative; the bubble has been oliminated, for all practical purposes.

There's probably still some small bubbles in the containment, but they're not -- they're not the type up at the top of the dome, and they pose no further significant safety problems.

And the recombiner is working and removing hydrogen from the containment.

The power being produced by the core at this time after the accident is a little less than six megawatts, which is about .18 percent of the total amount of heat that was produced before.

A few elements still remain above the 400 degree temperature, but none are above the saturation temperature for the pressure which the system maintains.

There have been -- there has been a new development regarding the types of radionuclides found in the environment. I think I previously reported that only kryptons and xenons have been found, but there is now evidence that radioiodines are found in very small amounts in some milk samples.

We've brought up some people from the FDA this morning and talked to them; the levels appear to be, when they are found, on the order of 10 to 20 picocuries per liter. These are very small levels. They are not a lot different than our own Appendix I levels that we would permit in continuous consumption of milk for a year.

There's also been some iodine and cobalt found in the industrial waste water that's been released from the plant. At our request, the licensee and the state's request the licensee ceased discharging this water last night. So when we make some further analyses, I expect that the plant will be allowed to continue this discharge this water

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in accordance with the conditions of its license.

I think that's about a quick summary of it.

QUESTION: Have you found out why a leak occurred shortly after midnight last night in the hydrogen containment area during the hydrogen sampling process, the monitoring process?

MR. DENTON: I'm not familiar with that; could you tell me a little bit more about it.

QUESTION: Yes. Last night outside the plant, two reporters fromthe Philadelphia Inquirer monitored the radio conversations between a fellow named Tom Frailer (PHONETIC) and a fellow named Vic in the plant control room.

Tom says, there's a direct leak from the containment. Shut the damn thing down and quit screwing around. Shut the release. Shut all the valves of the monitor. We're going to take samples and find out what caused this.

Then Tom gets on the radio to the mobile radiation detection unit and dispatches them to an area south of the Three Mile Island Plant.

He asks them to take the highest reading that they get at those sites --

Vic responds, I'm checking on the status of isolation.

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Tom says, see if you can determine by sampling

in the system where the leak actually occurred. Where in the valves --

MR. DENTON: Well, maybe I can -- with that much background, maybe I can answer.

In trying to take samples of -- in either the waste gas storage tanks, in trying to take any samples of primary coolant or any other sample, the -- we've had trouble taking these samples without introducing leaks.

We have one sample from the waste gas storage tank that shows 50 percent -- 56 percent hydrogen. The rest is nitrogen. We decided to take a second sample; that second sample showed entirely different composition, indicating air in contamination in the sample. And when these types of samples are taken -- it's difficult to take a sample without having a leak somewhere within the sampling point and back to the tank. The total amount of radioactivity getting out aren't changing the off-site dosage significantly.

QUESTION: First, can you possibly elaborate a little bit more on the situation of iodine? We've asked about it several times and thus far you haven't had a good deal of information.

Where is the iodine specifically being tested; where are the samples being taken from? I couldn't understand, for example, the term you used to describe the amount of iodine, the effect on the milk, grass, and farmers, the iodine in the water, what that would effect.

Second of all, I'm sure you're aware -- I'd like a little bit of the truth: There was a situation at the University of Southern Maine, a Dr. Armand Shroud happened to have been looking at a meter up at his laboratory. There was a rainstorm and the meter measured 100 times the normal amount of radioactivity, he said, in the area.

Now he suggested that it perhaps is coming from Harrisburg. I understand since then that this is perhaps not the case.

But the question is: how much radioactivity might have traveled around the area? Is it possible it could have gotten there from wind streams, et cetera?

MR. DENTON: Let me try to elaborate on that a bit.

The samples that were taken by the NRC when we first arrived were sort of emergency type samples. We sampled

air, milk, water, and had these done with our mobile lounge. And in fact, the NRC samples have yet failed to find any iodine levels above detectable levels even in milk.

I think we sampled 56 milk samples from 17 different farms. Now the FDA in its milk sampling program of somewhat wider scope, and they're sending them off to a laboratory in Massachusetts for analysis, originally reported some samples as high as 41 picocuries in milk at some nearby farms.

QUESTION: What's that?

MR. DENTON: Picocuries per liter.

They've since refined their numbers. I understand the peak sample that is now reported by FDA is about 31 picocuries per liter. The range of activity in those samples that they considered liable is on the order of 10 to 20 picocuries per liter.

If you were to consume milk like that for a month, the radiation level would be approximately the same as would be permitted under our limits for routine operations.

Maybe I stated that poorly, but I don't consider these radiation levels of 10 to 20 picocuries per liter any cause for alarm with regard to milk.

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Now the question, where is this iodine coming from, we've been able to go back and look at the cartridges that sample the air as it's released from the plant. All the air released from the plant goes through a high efficiency

particulate filter and then through a charcol filter before it's released. The air then is sampled by passing it through a charcol cartridge, and these cartridges are counted.

Our best estimate of the total amount of iodine that has been released as a result of this accident is about one curie..

QUESTION: Would you compare these concentrations to the maximum permissible concentration that one might get from, say, the Chinese fallout?

MR. DENTON: The governor put out a press release earlier today that I agree with. He pointed out that the FDA action level is 12,000 picocuries per liter. And during the Chinese fallout period levels of 100 picocuries, and in some instances up to 300 picocuries, were reached.

Our own standards call for not exceeding about two and a half picocuries per liter on an annual basis for milk consumed during the whole year.

QUESTION: Dr. Denton, when will this all be over? When can the pregnant women and children, and life get back to normal in this area?

MR. DENTON: I hope that from here on out we can move rapidly in that direction, with the fact that we're no longer concerned about a hydrogen explosion and the bubble is no impediment to operation. We are right now developing and looking at plans for the most effective way to bring the

reactor to a cold shutdown state without an increased leakage from the plant. I'm not yet ready to give a prediction.

The Staff is looking at it. But I'm hopeful we can now move forward, as we've eliminated these problems.

QUESTION: Mr. Denton, aren't there daughter products of krypton and xenon that include iodine-131 and strontium-90 that would start to be detected a few days from now?

MR. DENTON: There are daughter products of xenon and krypton, but iodine is not one of them. Strontium is. And I believe that the radioisotope most commonly found is rubidium-88, where they have very short half-lives, and the ones that have long half-lives, like strontium, are found in exceedingly small amounts when they are generated by shorter-lived parents.

QUESTION: Are you looking for strontium, which obviously is a --

MR. DENTON: Yes, we are.

QUESTION: A follow-up on an earlier question.

Again in layman's terms, now, you are telling us that the bubble danger is gone. As you described it, what is the basic danger, then, that remains? 11 186

MR. DENTON: I think, as I said before, time is on our side. Of course, temperatures are getting lower, the amount of heat generated by the fuel is lower. As long as the system

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is pressurized there is a potential that some loss of cooling mechanism might still cause the core to become uncovered, until we can get the system operating in a state such as it's operating with water below the boiling point so that we don't have to worry with system failures.

QUESTION: Until you do that, the danger remains?

MR. DENTON: I think the danger point is considerably down from where it was a few days ago because of the concerns about the bubble and hydrogen explosion.

So in my own view, it's -- we can fall back on the traditional options for bringing the reactor core to a cold condition. And the main obstacle to doing so is to pick one which doesn't do further fuel damage and which doesn't result in the release of the highly radioactive water inside the containment to the environment.

QUESTION: Would you describe whether or not there has been any radioactivity detected in the water supplies? And also would you go into the (inaudible) potassium iodine and whether or not that's under consideration for workers and other people that might be subjected to the iodine?

MR. DENTON: I don't have the data at hand on whether or not radioactivity in water has been found at other cities. I kind of doubt it. Because the plant has essentially been releasing radioactivity at or near, slightly above or

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slightly below our normal limits for releases. And at those levels I would not expect radioactivity to be found in downstream water supplies.

With regard to iodine blocking tablets, I understand that this is being considered by people within HEW merely as a precautionary measure.

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QUESTION: Dr. Denton, yesterday you expressed some concern about the effect of high radioactivity on the instruments and cables within the containment.

Could you tell us today what is the state of that and what is the short term scenario for that?

MR. DENTON: Well, during the accident, if I go back to time zero, there were a few instrument losses at that time. There were no further changes in the status of the instrumentation until a loss of the flow transmitter which I described yesterday. There's been no further changes in the status of instrumentation.

Most of the instrumentation at the plant is redundant and we have a means to get the information we are seeking, but we do have a task force looking ahead and making contingency plans if we do lose vital instrumentation.

QUESTION: Dr. Denton, could you tell us first how much the temperature in the core has been brought down in the last 24 hours; and second, could you tell us what the problems, the risks are involved in bringing the RHR system into operation and whether you have tested it for operation for possible leakage.

MR. DENTON: The whole effort over the past few days has been to maintain the core in a stable condition, so the temperature of the inlet and outlet of the core has been essentially 280 degrees for the past several days. We

deliberately tried not to change the known collable geometry of the core, the known cooling system; so there's been no change in the method of cooling. With regard to the RHR system, we want to be sure before we turn it on that we've taken every precaution against leaks and ensure maintainability.

The auxiliary building was contaminated because of the water on the floor as a result of earlier spills; there was a radiation survey made yesterday by a team from the Department of Energy to see what the problems would be when we go in and try to put in shielding between the redundant components. We want to put in filters on components that might leak. Since the RHR brings contaminated water from the containment out and cools it and returns it, it's very critical that we don't turn it on until we have all the leaks or potential leaks in that system isolated and be sure the system would perform adequately for the type of conditions we've got.

QUESTION: Yes, Mr. Denton, can you please tell us -- can you confirm whether the core is totally damaged; second, whether any nuclear fission is going on in the core at the present time; and third, whether this plant -- how long will it take to decontaminate the plant.

MR. DENTON: Well, with regard to the fission

process, that was terminated by the control rods -- by scram at the initiation the event.

MR. FOUCHARD: Repeat your second two questions.

QUESTION: The second part: is the core totally damaged, even greater than the estimate you gave us? Is there some further damage?

MR. DENTON: I haven't given you any new numbers aside from the numbers I gave you earlier. I said that when we look at the core -- that there will be extensive damage to most of the fuel rods, the upper part of the cladding of those rods.

I should expect perforations in the cladding, fragmentation in the pellets; and you've got approximately 2 to 15 percent of the core which had experienced very high temperatures as a result of transient.

I would expect that the upper part of the core would show extensive damage.

QUESTION: With school scheduled to open on a large scale tomorrow, are you telling the people are here that the chances for any type of massive evacuation are totally remote?

MR. DENTON: I think that's a decision that's made by the governor. I would defer to his judgment.

QUESTION: What would you advise him at this point,

based on what you said about the bubble?

MR. DENTON: There are two issues on which I reported to the governor when I talked to him last night. I reported to him on the progress of being able to pump back into the containment the leakage that still is occurring from the letdown system. We're still checking that system out. We've not yet begun to pump that leakage back into the containment, and that's a source of routine, low level exposure.

Then there's the question of the core itself. And with regard to the core itself, I'm very optimistic now that we've gotten over certain hurdles to bring in down; I think we're very close to being able to pump back into the containment the gases that have been generated outside of the auxiliary building.

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QUESTION: With the hydrogen bubble diminished and the buildup of oxygen problem gone, when you do make the deliberate attempt to bring the reactor down, at this point would you recommend any necessity for evacuation?

MR. DENTON: It depends on the mode selected. I think it's likely that we will attempt to cool the plant down using exactly the same mode of cooling as it's now operated in because we don't have the worry with bubble expansion that was our principal concern earlier.

QUESTION: Are you talking about days or weeks to shut down?

MR. DENTON: I believe -- I can give you a much better handle on it tonight. I need to look at the outcome--

QUESTION: What about yesterday?

MR. DENTON: Yesterday we were still worried about the bubble. And now that we've passed that hurdle, our concerns will be better framed.

QUESTION: You've answered two of the questions that have been posed earlier, that is: how does radiation travel long distances. And the second question is: Based on your estimates of decontamination used (inaudible), how long you expect it will be before work can begin in the primary containment?

MR. DENTON: The question is, how is radiation

transported, and secondly, how long before workers can enter the containment.

I discount completely any influence of this plant on samples in Maine. In other words, I don't think even with the one curie release that has occurred over the last several days that there has been any analytical equipment which could detect iodine concentrations beyond ten miles or that sort of distance.

With regard to how long before entering the containment, the half-life of the principal isotope, xenon, is five days. And the radioactive levels continue to be very high in the dome. So we will continue to wait for decay to take place and those levels to get down so that people can enter.

It could be four or five half-lives before the xenon levels are down to a level.

I might mention also that the dome reading continues to be somewhat synonomous with other levels in the containment, which are lower. So it's not clear that the radiation levels throughout the containment are uniform.

QUESTION: Can the problem be totally cleaned up? Can the plant operator get in? If so, how long might that whole operation take?

MR. DENTON: That's another one that our think tank

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is scoping out. Obviously it would require refueling of the core. That will require looking at all the instrument cables and instrumentation which has been exposed to these high radiation levels to assure they could still work.

I think we're talking about a considerable period of time before the plant would resume operation.

QUESTION: Is it certain that it can, or is there a possibility that it can't resume at all.

MR. DENTON: I think it's really too early to say. My best estimate would be that it's likely the plant could be restored to an adequate status to resume operation. But we have to defer on that until we've actually looked inside to see how much equipment has been damaged.

QUESTION: Mr. Denton, is there a significant probability that the level of risk, say on Saturday, would increase once again in the process of bringing the reactor to cold shutdown?

MR. DENTON: I doubt it. I think that the concern we had with the bubble was it interfered with the normal proven ways of cooling. The hydrogen brought with it a chance for complete disruption of the coolant system due to an explosion.

With those potentials out of the way, I expect there to continue to be frustrating problems, that the equipment may fail. But with each day that goes by, the core gets

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cooler. And without the bubble in the core there are many systems available to cope with bringing it down.

QUESTION: What effect really does rain have on the radioactivity.

MR. DENTON: If there are particulates in the atmosphere such as iodine -- in other words, they would scavenge out of the atmosphere, the releases, and tend to concentrate them in the area of the site.

With regards to the noble gases, they're probably more dependent on wind speed than on rainfall.

QUESTION: Could you go through the -- what the major means were for getting rid of the hydrogen bubble, and did it proceed as you have been outlining your options over the last few days?

I mean, did it go away the way you expected it to go away, or did it go away in a way that surprised you?

MR. DENTON: I think it was a little bit because of our actions and maybe a little bit of serendipity.

QUESTION: Excuse me, I didn't hear that.

MR. DENTON: A little bit of luck and a little bit of forethought I think it responsible for it.

Several days ago we decided that it was very important that we do everything that we could to lower the hydrogen concentration above the vessel; so this is when we asked the applicant to continue spraying coolant in the pressurizer and continue getting it down. Since that time we've discovered

several other mechanisms that we're operating, such as control rod leakage, pump seal leakage, the letdown system, and perhaps the chemical recombination of the hydrogen and oxygen within the water itself, using radiolysis and the back pressure.

So all these combinations of events have caused a reduction. I would say that there is no bubble any longer at the top of the core. There are probably small bubbles throughout the water, and the water has a certain amount of sponginess to it.

But there's no longer the bubble at the top that was our previous concern.

QUESTION: And no --

MR. FOUCHARD: Just a minute. The background noise in the rear is -- we're having a great difficulty hearing your questions. Could we please just keep it a little more quiet.

QUESTION: Dr. Denton, was there -- do you have any evidence that there was trouble at the reactor prior to 4:00 a.m. last Wednesday when Met Edison claims it began?

MR. DENTON: I have no more evidence than was described in the bulletin that was released yesterday to all the other applicants.

They were having problems with the feedwater

and looking back, these were the types of startup problems. And with hindsight I think we recognize that there were some problems with the auxiliary system.

QUESTION: We've heard various reports since the beginning of how much water was actually in the containment; perhaps a quarter of a million gallons or more. If that is as highly contaminated as the atmosphere in the containment, what do you do with a quarter of a million gallons of contaminated water?

MR. DENTON: It would have to be processed through the rad waste treatment system, and the particular radioactivity solidified; in regard to the gases, we'll just have to wait for decay to take place in the system.

QUESTION: It will be transported?

MR. DENTON: No, the water would be cleaned up and purified before it would be released.

QUESTION: Was there a tape recording made -- was a tape recorder running in the control center at the time of the incident last Wednesday?

MR. DENTON: A tape recorder?

QUESTION: Was a tape recorder as a normal precautionary measure to monitor something in case an accident occurred --

MR. DENTON: We have no requirement for vocal tape recorders running. If there were, it was not -- not a

requirement.

QUESTION: You said yesterday that once the hydrogen bubble was gone there would be no hydraulic obstacles to cooldown. Are there any other kinds of obstacles to cooldown, other than the possibility of some leakage that you've outlined?

MR. DENTON: No. With the bubble gone, the only hydraulic obstacle is to be sure that you don't change pressure drops across the core or change flow rates such that you might further damage the fuel. So, it's not an obstacle to getting water through the system.

There's no problem with the bubble causing pump failure or cavitation. But we want to make sure the change in the hydraulics of the system don't further damage the primary system.

QUESTION: To go back to your assessment of when it might be possible to enter containment, you had mentioned that the principal isotope there is xenon with a half life of about five days. You spoke of several half lives. Does that translate into a period of approximately 20 to 25 days as your best guess?

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MR. DENTON: I think that's even optimistic, because there are probably even iodines in the water and there are trace elements of barium and cesium. While the

predominant isotope would be gone considerably by that time, there might still be others which would take a little while to run off.

So I haven't turned to that issue and attempted to get a level, but I would think it would be in excess of a month.

QUESTION: In excess of a month?

MR. DENTON: Yes.

QUESTION: Just to be sure I understand something in connection with your references to the containment building; when that transcript was read to you earlier that appeared to be a monitoring of two workers, you gave a rather elaborate answer; in a word, has there been any radioactive leak from the containment building?

MR. DENTON: To my knowledge, no leakage from the containment building. The containment appears to be functioning exactly the way containments are supposed to be, isolating under negative pressure. Leakage would occur into the containment building, however,whenever samples are taken. It is inevitable that some leakage would occur during the process, and there is leakage going of noble gases and some iodines occurring from the plant now. As water dries up from previous spills, it's continuing to let iodine into the atmosphere, and then until we can get the waste gas takeback system operating in a manner that pumps back into

the containment, everything that comes out of the containment -- there will continue to be small releases as manual operations are performed and the system is aligned, of course, pumping it back.

QUESTION: Are you going to have a talk with Tom and Dick.

MR. DENTON: I guess Tom and Dick work for the power company.

QUESTION: What are the present levels of radiation coming out of that plant now?

MR. DENTON: I don't have a new number. Yesterday I said that the radiation levels with regard to noble gases are going down; in other words, the measurement made in the plume by our helicopter shows continuous decreasing levels of the noble gases.

The iodine levels that are coming out probably are just about constant or changing with a half life of that iodine isotope. Staff says the best number we have for iodine is about a curie over the total course of the accident to date.

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QUESTION: On the basis of this survey that you said was taken yesterday, can you describe those a little bit more fully, the contamination situation in the auxiliary building?

MR. DENTON: Earlier in the accident going back several days, waste tanks in the auxiliary building were overfilled and water was on the floor of the auxiliary building. And as the water there begins to evaporate, it leaves on the floor iodines and maybe other particulate matter, the cobalts that were in the water.

And so the auxiliary building is quite hot, and that's why the DOE team was then surveying to establish what kind of decontamination would be necessary before you could go in and establish the kinds of shielding and filter equipment in order to make it RHR operable for long term core heat removal systems.

QUESTION: Okay. You said a little while ago that because of your actions and a little bit of luck, the reactor is cooling and the bubble is disappearing.

By "luck" do you mean the fact that it's raining and colder weather outside? What effect does that have on the building, the vessel and the problem?

MR. DENTON: By "luck" I meant each one of these various sources had moved. Hydrogen from the containment was

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really responsible --

QUESTION: Was the change in the weather really affecting --

MR. DENTON: No, sir, I don't think so.

QUESTION: Met Edison people are saying that the change in weather moved the bubble down, has reduced the bubble.

MR. DENTON: I guess I'll have to get educated on that one.

MR. FOUCHARD: Yes, ma'am, the last question.

QUESTION: When the safety injection system was turned off manually, you said that you still weren't sure how long it stayed off, and have you found out since?

MR. DENTON: I think we've been looking at that. We plan to submit a briefing on the entire incident in a few days. And at that time we can tell you what we know about the entire history of the event.

I'm not going back to look to establish times and sequences yet; but it will be in a public meeting with the Commission.

MR. FOUCHARD: Thank you very much.

(Whereupon, at 3:20 p.m., the press conference was adjourned.)