**Three Mile Island press conference: Governor Thornburgh and President Carter statements, followed by Harold Denton (Nuclear Regulatory Commission) press conference, April 1, 1979 (29:31)**

Governor’s Press Officer: Ladies and gentlemen, President Carter and then Governor Thornburgh will have brief statements for you. They will then be leaving. Harold Denton, who you now know well, will be onstage shortly thereafter to make any additional comments which he may have and to respond to your questions. Thank you.

[ Indistinct conversations ]

[ Applause ]

[ Clears throat ]

>> Carter: My primary concern in coming here this afternoon has been to learn as much as I possibly can as president about the problems at the Three Mile Island nuclear-power plant and to assure the people of this region that everything possible is being done and will be done to cope with these problems, both at the reactor and in the contingency planning for all eventualities that might occur in the future. I want to commend Governor Thornburgh and other state and local officials for their leadership, and I would like to express my personal admiration and appreciation for the citizens of this area who, under the most difficult circumstances, have behaved in a calm and a responsible manner.

I would also like to express my thanks and admiration for the civilian and government personnel who continue to devote themselves without reservation to solving the problems at the reactor site. The working relations among state, local, federal, and private personnel has been excellent and has also been productive. The primary and overriding concern for all of us is the health and the safety of the people of this entire area. As I've said before, if we make an error, all of us want to err on the side of extra precautions and extra safety. I've learned that the radiation levels are being very carefully monitored throughout the area, and any trend toward higher levels would immediately be reported to me and to Governor Thornburgh and others, and every effort will be made to keep those radiation levels down to the present state, which is quite safe for all concerned. The challenge in the future will be to cool down the reactor core itself to a safe level.And at the present time, all those who are involved here, who are highly qualified, tell me that the reactor core is, indeed, stable.

However, within the next few days, important decisions will be made on how to bring the reactor down to a cold and stable state. As always, in that transition period, careful preparations are being made, every eventuality is being assessed, and, above all, the health and safety of people involved will be paramount. I would like to say to the people who live around the Three Mile Island plant that if it does become necessary, your governor, Governor Thornburgh, will ask you and others in this area to take appropriate action to ensure your safety. If he does, I want to urge that these instructions be carried out calmly and exactly as they have been in the past few days. This will not indicate that danger is high. It will indicate that a change is being made in the operation of the cooling-water system to permanently correct the present state of the reactor, and it's strictly a precautionary measure.

It's too early yet to make judgments about the lessons to be learned from this nuclear incident. Once the job of satisfactorily dealing with the present circumstances is completed, then there will be a thorough inquiry into the original causes and, obviously, into the events that have occurred since the incident, and additional safety precautions will undoubtedly be evolved. Perhaps some design changes will be implemented to make sure that there's no recurrence of this incident or one similar to it. We will also do everything possible. I will be personally responsible for thoroughly informing the American people about this particular incident and the status of nuclear safety in the future. I intend to make sure that the investigation is conducted, is conducted thoroughly, and the results are made public.

And now I would like to have the honor of introducing a man who has done a superlative job in coordinating this entire effort. And because of the trust of the American people in him, and particularly those who live in this region, potential panic and disturbance has been minimized, and again I want to congratulate you, Governor Thornburgh, and thank you on behalf of our country for doing such a superb job. Thank you very much.

>> Thornburgh: Thank you, Mr. President. Your expression of concern and courage in coming to Central Pennsylvania today is an inspiration to the good people of this region. That kind of courage has been exhibited for the past five days by technicians at the facility, by those individuals who undertook to relocate themselves voluntarily at our suggestion within the near-in region, and by countless thousands of other Pennsylvanians who have shown qualities of patience and forbearance during a very

difficult period. We thank you from the bottom of our hearts for your expression, and that of Mrs. Carter, in being here today. We promise you and assure you that Pennsylvanians are tough people, that we're made of stern stuff, and that we will weather and endure this kind of difficulty, to the credit of this great commonwealth, and we thank you for your presence here.

>> President Carter: Thank you very much.

>> Thornburgh: Thank you.

[ President Carter and Governor Thornburgh depart]

>> Denton: The data indicates the vessel is coming down, the radiation levels outside the plant continue to be as reported earlier, that off-site they range from a few tenths of millirems to perhaps a tenth of a rem from the continuing letdown of the primary coolant system. The hydrogen recombiners on the containment are a high-priority item. One hydrogen recombiner is ready to go. A second one is now being hooked up, and I expect it to be operational before midnight. This will enable us to begin to reduce the hydrogen concentrations in the containment. After that, a brief summary. Why don't I take questions?

>> Reporter: What is the normal temperature of the fuel?

>> Unidentified speaker: I'd go to someone...

>> Press officer: Beg pardon?

>> Unidentified speaker: You take the question.

>> Press Officer: Yeah, fine. Your question again, sir, please?

>> Reporter: What is the normal temperature for a fuel level?

[ Speaking indistinctly ]

>> Denton: I'm afraid I'm having difficulty hearing you.

>> Press officer: Yeah.

>> Reporter: What would the normal temperature be, at this time -- this long time after shutdown, for a fuel level? What would the temperature normally...

>> Denton: I'm not sure I understand the intent of your question, but this -- this long after a -- a -- a reactor shutdown, when all the control rods went in, in normal circumstances, the reactor would be cooled down to a sub-- to temperatures below the boiling point.

>> Reporter: What was your first point you had about the power level in the core?

>> Denton: Just to re-- Just to let you know that the amount of decay heat that's being generated in the core is declining with time. In other words, time is on our side in an event like this. The moment the control rods go in a reactor core, the power level drops to about 6% of the full power production, and then, as a function of time afterwards, it drops, and I think now it's down to 0.22% of the power that it was producing a week ago.

>> Press officer: Yes, sir?

>> Reporter: What is the volume of the resulting [indistinct] in the reactor [indistinct] ?

>> Denton: We're -- We're having the applicant run tests at 2-hour intervals to collect data on the size of the bubble. There's a very wide scatter band in -- in any one measurement. In fact, any one measurement, I think the -- the uncertainty is on the order of 100 or 200 standard cubic feet. So, from the data we've seen, I -- I continue to be convinced that the size of the bubble is decreasing, but it's -- I really can't say yet what -- what the final number will be.

>> Press officer: Yes, sir?

[ Reporter speaking indistinctly re the bubble issue ]

>> Denton: No, we haven't made that decision. That -- that's the types of analyses that are being done now, that, if the hydrogen bubble is not removed, we'll have to decide which one of the safety injection systems we will rely on to bring the reactor down to a cold condition.

>> Press officer: Yes, ma'am?

[ Reporter speaking indistinctly?

>> Denton: Yes, we are.

[ Reporter speaking indistinctly ] ]  Do you have any estimate yet of time the you have before you have to make the decision on safety --?

>> Denton: I think we'll have to, if -- if the size of the bubble doesn't go down, we would be faced with a decision on selection of a -- of a different method several days from now.

>> Reporter: Would you continue venting the gases the same way?

>> Denton: And -- and gases are being vented now, yes.

>> Press officer: Yes, sir?

[ Reporter speaking indistinctly ]

>> Denton: Well, no, an explosion inside the reactor vessel wouldn't reach the containment. You know, there was an explosion inside the containment early in the accident that reached about 28 pounds per square inch, but you -- you have to look -- for explosions, you have to look at not only the peak pressures but also the total energy and force that that explosion exerts on important components.

[ Reporter speaking indistinctly ]

>> Denton: I -- I -- That can be done. I don't have those numbers handy.

>> Press officer: John?

>> Reporter: Mr. Denton, do you have any indication that oxygen...to stop that hydrogen bubble...?

>> Denton: Yes, I would -- I do expect that oxygen is continuing to be generated in the core by radiolysis and that oxygen is finding its way into the top of the vessel.

>> Reporter: How long before you...

>> Denton: I -- I think -- I think we have five, six days -- The numbers are still bouncing around a bit on -- on this issue -- before we reach detonable levels.

>> Press officer: Bob?

[ Reporter speaking indistinctly ]

>> Denton: Yes. Primary coolant water is being taken from one of the recirculating water pumps through a small line, up to the top of the pressurizer, and it's being sprayed into the top of the pressurizer. And since the water is being sprayed, the dissolved gases in that water come out of solution and mix in -- in the top of the pressurizer with the steam there. That upper pressurizer space is being vented into the containment, so the hydrogen that comes out of solution is being passed into the containment, so it's a -- a question of continuing a solution of hydrogen into the primary coolant water, transportation up to the pressurizer, and release from there.

>> Reporter: What is the hydrogen levels in the containment building?

>> Denton: The hydrogen level in the containment building is going up. If it's coming from the release of hydrogen from the reactor vessel, that's what we'd hope to achieve. If it's coming -- Another potential path is it's coming from radiolysis of the 100 to 200 gallons of water in the floor of the containment. And right now, we're attempting to calculate which source is predominating.

>> Press officer: Yes, over here?

>> Reporter: Why does smoke come up out of three of the four cooling towers? Can you explain what that was?

>> Press officer: He says, "Why does smoke come out of the three -- three of the four cooling towers?"

>> Denton: No, sir, I -- I can't. I assume that's related to a -- a non nuclear operation.

[ Reporter speaking indistinctly ]

>> Denton: Well, radioactive gases are vented through the cooling towers. That's the point of release, but they're not visible, and what must be -- You must be referring to steam.

>> Press officer: Yes?

>> Reporter: Do you have any indications at all that the second tower might be...

>> Denton: None at -- none at all, sir.

>> Press officer: Yes?

[ Reporter speaking indistinctly ]

>> Denton: Uh, uh, I -- I -- That possibility has not been suggested to me. We are going back through all the strip-chart recorders in the plant to ascertain the chronology of what events when, and now that you brought it up, I'll be sure we cover that one.

>> Press officer: Yes, sir?

[ Reporter speaking indistinctly ]

>> Denton: The 1.7% was the concentration of hydrogen in the containment building, and that's the concentration that's going up, and I think, right now, it's like 2.4% or 2.6% in the containment building. The flammable concentration in the containment building is about 4%. The detonable level is about 8%.

>> Press officer: Way in the back.

>> Reporter: We're at three bubbles and not one -- is that true?

>> Denton: Yes, there's a bubble in the pressurizer, and there's a potential that there are other void spaces in the primary coolant loop somewhere. We are conservatively assuming that all the hydrogen that's -- that's hidden out elsewhere in the system is on top of the reactor vessel. But the -- there is this bubble always in the top of the pressurizer for control of pressure.

>> Press officer: Walt?

[ Reporter speaking indistinctly ]

>> Denton: We've taken over 200 samples independently, and there's no iodine indicated at all in either water, grass, air, or milk samples, so -- and I think the state of Pennsylvania has also decided that their early report of iodine in one sample was a false signal, so my own view is that there are no radioisotopes in the environment, other than noble gases.

>> Press officer: Yes, sir?

[ Two men speaking ]

Yeah. What? Now, one -- one at a time, please. Yes, sir?

[ Reporter speaking indistinctly ]

>> Denton: I know too readily the -- the -- the containment temperature is about 95 degrees, the containment pressure is slightly sub atmospheric. The -- the radiation reading at -- at the monitor inside the containment continues to be very high and anomalous with respect to the reading taken with handheld instruments outside, but I don't recall the magnitude.

>> Press officer: Yes, sir?

>> Reporter: The governor's remarks stated clearly that you were telling the people that, prior precautionary evacuation might be used - -- is that- - is that likely or possible only if you collect one particular...being cooled down or the whole spectrum of possible procedures would a cautionary prior evacuation be possible.

>> Denton: I think, if we're successful in reducing the bubble size to sufficiently small so that pressure of the primary system can be reduced without having the bubble expand to an extent it uncovers the fuel assemblies, it'll be possible to put the reactor on a cold-shutdown state without any need for evacuation planning at all. Now, if the bubble size cannot be reduced, I think we would plan to alert the state so that, when we make a switch to one of the emergency core-cooling systems that it be done in a carefully planned time of day, with the state fully alert, just as a precautionary measure to -- and I think there would be time available to actually order an evacuation in the event that the first system selected didn't function right or the second system failed to function for some reason.

>> Press officer: Yes, sir, back in the corner?

>> Reporter: If there -- If there is a continuing problem...is there any alternative to getting the hydrogen out of there...

>> Denton: There would be an alternative that -- one I wouldn't favor, because it would be releasing gas out and exposing the public. One recombiner is fully operational now. The only reason it's not turned on now is that, if it's put into operation, it makes start-up of the second unit more difficult because of the high radiation levels it will cause. So the licensee hopes to have the second one fully operational tonight. I would anticipate that, once both of them are fully operational, they'll both be started

up and tested out, and with two, there's always a -- one additional one to rely on.

>> Reporter: Where are they specifically? Are they in the containment area?

>> Denton: They're outside the containment, and they take air from inside the containment, convert to the hydrogen in the water, and return it to the containment.

>> Press officer: The lady way in the back.

[ Reporter speaking indistinctly ]

>> Denton: We're -- We're bringing in a number of supplies that might be needed in the event of contingencies. We're bringing in a lot of lead bricks. We've flown in two robots -- These are mechanically operable robots -- just in the event that they may prove useful sometime during the event. We actually decided to order these several days ago, not because we had any particular function defined but the thought that we should get to the site as much equipment as might be needed.

[ Reporter speaking indistinctly ]

>> Denton: They can be operated remotely. They have TV cameras on them. They -- Some can climb steps. They have manual manipulators, so they can be used to perform simple mechanical operations.

>> Press officer: Bill?

[ Reporter speaking indistinctly ] --- Are they buildings, or are they vehicles, or...

>> Denton: It's a -- It's a unit of equipment, usually all mounted together. It's not that big a piece of equipment, but they are mounted in -- in buildings outside the containment and then, through plumbing, connected to pipes on the inside of the containment.

[ Two men speaking ]

>> Press officer: One -- One at a time. One at a time, please.

>> Reporter: Can you describe the scenario that would occur if there was a flaw? What exactly would happen? Would it be an

explosion, an implosion? What would we get? Give us the worst-case scenario.

>> Denton: That's a question I've always been asked, and the worst case, of course, if all the systems provided fail, is a core meltdown.

>> Reporter: What would happen outside? Why just people within 20 miles?

>> Denton: Well, this -- The spectrum of consequences that might occur was addressed in WASH-1400, the so-called Rasmussen Study. This report was criticized heavily in some respects by the Lewis Committee. If you're familiar with -- with that report, they criticized the probabilities used, not so much the consequence models. The consequences range all the way from mainly economic costs, on the order of a billion dollars or so, with very minor health effects, all the way out to accidents with very severe health effects, early fatalities, and latent cancers.

>> Press officer: Yes, sir, over here?

>> Reporter: There's a large number of nuclear engineers...

[ Two men speaking ]

>> Press officer: One -- one at a time, please. There's a question over here.

>> Reporter: ...operating costs...

>> Denton: After I arrived, I -- I thought that GPU was a little bit thin in technical talent and discussed this with the company. They have now, I understand, representatives here from all the major reactor vendors and suppliers and other power companies to assist them in answering some of the type questions you're posing today and the questions that we're trying to answer ourselves.

>> Press officer: John?

[ Speaking indistinctly ]

>> Denton: No, sir, I don't think so.

>> Press officer: Yes, Don?

>> Reporter: Two questions. Harold, why don't you explain exactly what a recombiner does, how it works. Also, before you get that bubble under control, will you go to cold shutdown in a matter of minutes, hours, days?

>> Denton: I think, once we get the bubble under control, we could go to cold shutdown at our discretion. I think it would be hours and not days if -- if we got to that point. Your question as to what a catalytic converter is, it's a high --

>> Reporter: Recombiner.

>> Denton: Recombiner -- It's -- It's a chemical unit that operates at high temperatures, that burns hydrogen to form water.

>> Reporter: What are the chances of a hydrogen explosion or a - - - right now?

>> Denton: I think they're nil right now. The physical concentrations of hydrogen and oxygen in either the containment or the reactor vessel won't support ignition or detonation.

>> Press officer: Yes, sir, in the back, please?

[ Reporter speaking indistinctly ]

>> Denton: I would anticipate that, once the cause of the accident has been identified and corrected and the damaged fuel assemblies have been replaced and the plant restored to a condition that meets the license conditions, it would be allowed to restart.

>> Press officer: Yes, sir, over here?

>> Reporter: What do you think would be the timetable… under control…[long question indistinct].

>> Denton: Well, I think, because of the uncertainty over the hydrogen concentration in the vessel, that -- that if we don't succeed in reducing the volume over the next few days, we'll have to begin to rely on one of the emergency core cooling systems, at which time we'll -- we'll bring the reactor to the cold condition. So I see the time period within the next few days as being a critical change in the temperature of the core.

>> Press officer: Yes, sir?

[ Reporter speaking indistinctly ]

>> Denton: I'd say, five or less.

[ Reporter speaking indistinctly ]

>> Denton: I've managed to -- I -- ' This -- This accident here has taken my time full-time. I've not discussed back with headquarters what's happening in the other plants.

>> Press officer: Yes, sir?

[ Reporter speaking indistinctly ]

>> Denton: I'm sure the recombiners have been tested. They're relatively standard units of equipment. They're not actually functioning now. Yes, there is a question that they'll be...

>> Reporter: After you get started to work with authorities on how that will be done - - -[indistinct]?

>> Denton: That work is going on. I -- I've not devoted a lot of time to definition of miles. I think there are a lot of considerations involved in nursing homes and special population groups, and that's being handled by other people.

>> Press officer: Yes, sir? One more right here.

[ Reporter speaking indistinctly ]

>> Denton: No, sir, at all. That would begin to reduce the hydrogen in the containment.

>> Reporter: Will be no problems leading to an evacuation turning on the reactor?

>> Denton: That's correct. You want to take one more?

>> Press officer: Yeah, one more question. I've really got to get this together...

[ Reporter speaking indistinctly ] …They said there were no radioisotopes on the ground, but perhaps there were on the overhead. How will those come down?

>> Denton: The -- The -- The releases from the plant have consisted of noble gases -- xenons and kryptons. Each isotope has its own half-life. The predominant radioisotope that's been

released is xenon-133 that has a half-life of 5 days. So it doesn't come down, in a sense. It stays in the atmosphere, disperses both horizontally and vertically, and changes into a stable isotope with a half-life of 5 days.

>> Press officer: One more, right there.

[ Reporter speaking indistinctly ]

>> Denton: I don't think it's so. The company is informing us now routinely of all unusual operations. Perhaps I should mention that all the waste-gas storage tanks are full to the brim and that, as they let down gases from the -- the primary coolant system, the release valves on these tanks occasionally lift and let gases out, so there's always continuing today, as was yesterday, a continuous sort of intermittent releases of these noble gases. Occasionally, in order to obtain a grab sample to analyze the composition of these gases, it's necessary to close valves, take the sample, and then reopen valves, and that results in a puff release at that time, but the total amount of activity that's being released is staying about the same, whether it's being released as a puff or whether in a series of intermittent of continuous releases.

[ Reporter speaking indistinctly ]

>> Denton: Well, I'm -- I'm not aware of that, if -- if that's the case.

[ Reporter speaking indistinctly ]

>> Denton: What was the question?

>> Press officer: I'm sorry. Didn't hear your question?

[ Reporter speaking indistinctly ]

>> Denton: I think it's the unequivocal understanding that -- that we concur and are informed about, in advance, of all actions that -- that change the -- either the rate of release or the way of cooling the vessel, and we inform the state and other authorities.

[ Reporter speaking indistinctly ]

>> Denton: I said less than five days.

>> Press officer: I had one more just a moment ago, and that was it.