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IN THE MATTER OF:

THREE MILE ISLAND
SPECIAL INQUIRY DEPOSITION

DEPOSITION OF: GARY PAUL MILLER

Place - MIDDLETOWN, PA.

Date - SEPTEMBER 20, 1979 Pages 1 - 123

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

IN THE MATTER OF:

THREE MILE ISLAND
SPECIAL INTERVIEW

Interview of: GARY PAUL MILLER

Place : Trailer 11
Three Mile Island
Middletown, Pennsylvania

Date : Thursday, September 20, 1979
10:45 a.m.

APPEARANCES:

GEORGE T. FRAMPTON, JR., Esquire

DENNIS ALLISON

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MR. FRAMPTON: This is the deposition being conducted by the United States Nuclear Regulatory Commission's Special Inquiry Group on Three Mile Island on September 20th, 1979 at Three Mile Island, Pennsylvania, of Mr. Gary P. Miller, who is with Metropolitan Edison Company.

Met-Ed is represented at the deposition by Mr. Mat Diaz. Dennis, do you want to swear the witness?

(At this time Mr. Dennis Allison administered the oath to the witness.)

GARY PAUL MILLER, called as a witness, having been duly sworn, testified as follows:

MR. ALLISON: Would you, please, state your full name for the record.

A Gary Paul Miller.

DIRECT EXAMINATION

BY MR. FRAMPTON:

Q Mr. Miller, I have previously given you a one-page notice form that describes the Special Inquiry Group, the purpose of this interview, and the possibility that the transcript of the interview may eventually become public information.

Have you read that notification form and do you understand it?

A I have read it, and I do understand it. And I would

appreciate what effort you could make to get me a copy of the transcript.

Q We will provide you with a copy of the transcript. As I told you before we began, we had the benefit of your testimony in a number of forums, including your deposition by staff members of the President's Commission, public testimony you have given before both the President's Commission and congressional bodies, and a number of transcripts of interviews that were done with you by the NRC inspectors during their enforcement investigation.

Have you had an opportunity to review the transcript of the deposition that was done by staff members of the President's Commission beginning on August 7, 1979?

A Yes, I have. I have reviewed and submitted any corrections to that transcript.

MR. FRAMPTON: I'd like to ask the reporter to mark as Exhibit 16 of this date a document that appears to be a list of the corrections that you made to the transcript of the President's Commission deposition.

(At this time Exhibit 16 was marked for identification.)

BY MR. FRAMPTON:

Q Are those the corrections that you forwarded to the President's Commission?

A Yes, they are the corrections.

Q And is the testimony recorded in that transcript with the corrections that you sent to them substantially accurate?

A Yes.

Q Have you had an opportunity to review the transcripts of the I. & E. interview tapes that were done with you?

A I don't believe I have those transcripts.

Q They did not provide those to you?

A Not at this date.

Q To the best of your recollection, were the answers that you gave during those taped interviews accurate?

A I would expect they are accurate, except for minor corrections.

Q You feel the transcripts would be substantially accurate?

A Yes.

Q Let me begin and take you through the major events or decisions that were made on March 28th. I believe you have testified previously that you were notified of the trip shortly after 4:00 a.m. and that at least one other telephone conversation occurred between you and people at the plant resulting in a conference call that you participated in about 6:00 or 6:15 a.m., is that right?

A Yes. As I have said previously, my itinerary that day was not to be at the site. I was scheduled to be at the

Oyster Creek site for a meeting.

I was notified shortly after four. I made a call back to the plant somewhere in the vicinity of five, the exact time being in my previous transcripts as best I could remember. That call was made back as a verificiation of what was going on at the plant.

Then there were calls between then and probably six, six thirty that involved the conference call, plus making arrangements for that day, since I was not going to the meeting and I had other people.

Q Okay. You have testified rather extensively in prior interviews about the substance of that conference call. The only question I have about it is this: Do you remember whether there was any discussion during the conference call concerning whether the people at the plant, Mr. Kunder and others, believed that they had some natural circulation at that time? Do you remember that being discussed?

A I don't remember --- I don't remember whether it was or was not discussed as of this date or time. I would have to go back to what I said previously and have to stand on that.

I do remember discussions that involved trying to start reactor core pumps. I vaguely remember that. Otherwise it's in whatever I said before.

Q Do you recall, then, that you arrived at the plant about seven or five after seven that morning?

A (Affirmative nod.)

Q What initial assessment did you make about the plant status?

A I think some of that is contained in previous testimony. Remembering it today, I guess the immediate assessment was that the radiation monitors were essentially rising at a rate that was obviously going to put them very high on their scales very quickly. And also, if I remember, the plant temperatures were all scale high on the indicators on the console.

When I got to the plant, I had various people brief me on their particular area. I don't recall today all those specifics. But most --- the most important thing was the radiation at that time.

Q Do you remember being told when you arrived that the pressurizer relief valve had been opened for over two hours?

A I do not remember that.

Q Do you recall when into the morning you learned that?

A I don't remember discussing that in the morning right now. I don't. I don't remember going back in the morning and discussing the events before seven that morning. My memory is we spent more time figuring out what to do.

Q Do you remember whether when you arrived there was concern about whether natural circulation had been established?

A I believe there was concern being discussed amongst

the Operations people, because I do remember discussions over steam generator levels and so forth. I don't remember any more specifics than that.

Q Before we started this morning, we were showing you a series of graphs, which is in draft form, and lays out a number of system parameters on a single big sheet of paper, and we pointed out to you that this is a working document and we cannot vouch for its accuracy, but that we are using it for working purposes.

That graph appears to show that after the P.O.R.V. block valve was shut around 6:20 a.m., the system pressure was quite low and then rose over a period of forty-five minutes to an hour up to about twenty-one hundred pounds per square inch at about 7:00 a.m. or 7:15 a.m. Then it shows the pressure gradually falling with some possible cycling to a low of about twelve hundred or twelve hundred and fifty pounds per square inch at approximately nine o'clock or nine fifteen in the morning; at which time it increases and appears to cycle around twenty-one hundred.

What we are interested in asking you about is what you recall of the events and your activities from about seven fifteen to nine fifteen that morning and specifically what you recall about what plan or strategy was being pursued by the operators that would tend to give this kind of a pressure curve, pressure indication?

A Well, I think I arrived inside the control room probably in the vicinity of five after seven. That's from memory, the best I can from memory. It took some period of minutes for each senior guy that was already there to brief me on his area. Following that, then we were in a site emergency. My role in a site emergency is the emergency director. So, therefore, I would have --- I took those functions on, appointed certain individuals, as I have testified, to be in charge of certain areas.

Twenty after seven or so the conditions for a general emergency were there. So I can't remember times exactly, but I'm sure from seven to eight my thoughts were that Mike Ross, being Operation Supervisor from Unit 1, who has a license in Unit 2, was in charge of Operations, and I really didn't question his actions in that time frame. I directly applied myself to the emergency director's role, which --- and, then, somewhere between eight and nine --- and I think somewhere around eight thirty --- I very firmly had told Ross that high pressure injection had to remain on and the only person who could authorize that change would be me.

And so, therefore, I think before nine o'clock we had made the decision to continually inject water. I think some of the variations in the curve that exist between eight and nine or eight and nine thirty involve possibly things like trying to start reactor coolant pumps, adjusting steam

generator levels.

I'm saying there's thermal hydraulic considerations that have got to be looked at. That's the way I feel.

Q Specifically with respect to those curves or cycles, one of the things that could reflect is voids being collapsed or increasing?

A I think so. At the time, though, I wasn't evaluating voids. I was looking at a set of curves today.

Q Right. I'm talking about in retrospect.

A In retrospect, I think that could have been part of it. I'm pretty sure that those things have to be looked at to decide those curves also, the block valve position can be looked at from some parameters that I don't see here, principally the drain tank and the reactor building indications would maybe lead you to look at block valve position and give you another parameter to check against.

Q I believe what you're referring to is that as you told us before we started this morning, it's your impression that someone from GPU is trying to look at when the block valve was open and when it was closed by looking at reactor building pressure and temperature, is that correct?

A And reactor drain tank, that's the tank in the reactor building. I think its pressure and level instruments have some response that could be maybe more indicative of block valve position than some of these bigger parameters.

Q After the rupture disc blew, the pressure would stay low but might vary a little bit when there were liquid releases into it?

A That's true. Plus you're releasing a certain amount of energy into the reactor building itself, which might show up on the pressure or temperature instrumentation of the building.

Q It appears that just before or just after you came in around seven and then, once again, before nine there were a couple of attempts to start a main reactor coolant pump. Do you remember those efforts?

A I don't today remember the exact pumps, but those efforts were a part of something that we felt we wanted to try to the point where we were sure that they wouldn't run and pump water.

Q I think you said on one prior interview that Lee Rodgers from Babcock and Wilcox was one of the people who was pressing.

A Encouraging that, yes.

Q Encouraging the starting of a pump, if possible?

A Yes. Right.

Q And I think you have also testified before that at some point around eight o'clock or perhaps eight thirty was the first time that you got together with a group of people with whom you were to consult throughout the day and try to figure

out where you were and where you ought to be going, is that right?

A That's true. I initially reacted to the situation no differently than I would react to the emergency drill that I have run at this station every year. And, in fact, I have --- I have referred to in other testimony, I have a set of index cards,which I have given to the President's Commission, which actually have the four or five immediate types of areas and immediate types of things that you want to get started. And you can go back and verify them.

And I went into that sequence, which involves picking four or five individuals and telling them to get to that area and begin to do that function. That's the way I went.

And then at eight o'clock, I commenced to come in to hold meetings with each guy, with a group, and have each guy brief me on his area.

Q As a result of that first caucus, what decision was made about plant strategy at about eight or nine o'clock in the morning?

A In the previous testimony I put down, I think, to my best memory, what we decided. But that first conference would have been heavily involved in discussion of the emergency plan, because of the importance of having teams and monitors and notifications. That would have been probably the most discussion.

From a plant strategy standpoint, my only memory is we decided to keep high pressure injection on. There were discussions, as I remember, in a group of not keeping it on. My memory of the meeting was that we decided --- and I personally felt --- we had to maintain high pressure injection, because we didn't understand really the configuration the plant was in as opposed to what we were normally used to.

We did understand that the pumps run at a hundred amps and that they were not pumping water.

Q You are speaking of the main reactor coolants?

A Right.

Q Do you remember whether high pressure injection was on when you first came in that morning around 7:05?

A I do not remember in my briefing the status of the make-up pumps or high pressure injection, those two being synonymous.

Q Do you recall when you issued your instruction that the high pressure injection should be kept on unless you personally authorized it to be turned off? Was that when you first came in or was that as a result of your first caucus meeting where you were trying to figure out which way to go?

A I don't --- I don't remember right now whether I have given a time in the previous testimony, but I think it was eight thirty, plus or minus ten minutes. And that's hard

to pinpoint. But I believe it was around the eight thirty time frame.

Q And I think you have said before that you have a recollection that on one occasion you found that the H.P.I. had been turned off and that as a result of that you specifically told Mike Ross to keep it on unless you authorized it to be turned off, is that right? Do you recall that happening or ---

A I recall a discussion of that nature. My memory would have been that it was turned off. I know that other people have reacted to that by, I think, stating that they were going to turn it off. Either way, I interpreted it as the intention to turn it off. And I would have reacted the same. And I reacted, I think, fairly, fairly strongly to that.

Q So your recollection is that if you had found that it had been turned off that would have been just a few minutes before?

A That's right. I believe I recollected afterward that it was off, but I think other people may have recollected that it was just discussed to be turned off. Either way I wanted it back on.

Q We have some information that makes it appear that make-up pumps were pulled to lock at around eight seventeen and were then turned on again within about five minutes afterwards. That might be the occasion that you recall?

A Yes.

Q Would it have been that event that could have prompted a discussion and a decision or clear instruction from you that that shouldn't happen again without your authorization, do you remember that triggering the decision to leave it on?

A I think I remember that triggering me to not negotiate that point. I think Mike Ross also remembers that that's something that I told him pretty strongly.

Q Let me move on and ask you about your requesting readings from the incore thermocouples at some point during the morning. I believe you have said before that you asked that those readings be displayed on the television or visual computer read-out. Is that right? Or at least that may be printed out for the computer?

A Again, I could contradict myself, but my memory of that --- I may have said some things previously --- my memory of that is that I was aware very early that the temperatures on the normal demand panels were off-scale high, the hot leg temperatures, the hot spot temperatures. So, therefore, we didn't have, to my knowledge, indication of temperature.

And I was looking for any indication of temperature I could get, and in my previous experience I have used incore thermocouples in nuclear submarine test programs. So my picking that off would have been based on a plant where they

were normally used.

They are not normally used here. They're not even --- they were not even wired out in Unit 1. I asked for those in the hope of getting an answer that was definitive.

At the same time the instrument guy that I talked to or the instrument engineer, I believe, installed a temporary meter or a temporary device on an indicator that is in that coolant system and was able to get a reading that was on the scale of the instrument.

Q And that was Mr. Porter?

A I believe it was Mr. Porter. And so, therefore, when he came back --- and I have testified previously --- and gave me a variety of, as I remember, three or four readings, four or five readings off the incores there were --- there was no --- there was high zeros. There was no indication of consistency.

At the same time it came back and had an on-scale reading on an R.T.D. in the hot leg. That's as best I can remember.

Q Mr. Porter, I take it, communicated to you his belief that the readings from the incore thermocouples were not entirely believable?

A My memory is that they were --- the context I evaluated them in, from what I was told, was they were unreliable because some said zero and some said two hundred.

And as I said before, I believe one was over the two thousand mark.

I was not aware, and I'll say I was aware a month after, that the instrument tech may have, in fact, read out voltage readings for a lot of these, and I don't believe Mr. Porter even knew of the range of those readings which we have today. So I --- my memory is that they were not considered reliable.

Technically they are not normally used. They are not normally very accurate. So I would have tended to just --- to not trust those. They are not part of the safety systems. They are not environmentally qualified as far as penetration. So I would have been led by my own previous experience here in a direction to consider them unreliable given those four readings or five readings.

At the same time, I think you must remember that to my memory he had a volt meter installed on a resistance temperature --- an R.T.D., a resistance temperature detector, that was considered an instrument that you could read, even though it was in an environment of steam at that time. It was on scale.

So that would have convinced me that we had a hot temperature. I didn't consider the incores as being necessary for what I was trying to do at the time.

Q You're saying that the R.T.D. reading that Mr. Porter

got with his instrument off the R.T.D. and the hot leg temperature was more reliable to you, to your mind, than the readings that he got off the wires for the incore thermocouples, is that right?

A At the time, trying to put myself back at that very time, that gave us something that was on a scale of an instrument that was --- that was thought to be more dependable and that was a constant read-out.

Q My question to you is whether even if you didn't think that the thermocouple readings were reliable in terms of the numbers, whether the high numbers and/or the possibility that some of the junctions had melted and so on nevertheless convinced you that there were probably some very high temperatures in there of some magnitude. Can you recall that?

A I was convinced there was high temperatures in there. I didn't quite honestly go back and evaluate the incores like I would today after we've learned an awful lot more about them. I just think their emphasis in my mind was never great. And when I didn't get reliable information, I think I went by them and tried to use other parameters to establish where we were going.

Q In a prior I. & E. interview you mentioned that, as you recall it, the group that you were consulting with spent a good part of the morning not totally convinced that the core was completely covered.

A (Affirmative nod.)

Q Is that an accurate characterization of your state of mind?

A I think as we met we were trying to give ourselves the absolute assurance that we were covering the core, and I think that we understood that there was steam in a lot of the system. There are not very many indicators of core level that you are taught about. And I think, therefore, there were --- we were questioning ourselves as to whether high pressure injection was, in fact, going on the core.

And I think there were members of the group that were just not totally convinced that all of it was going on the core. And that was discussed in probably, I think, most of the meetings.

Q Did you ever put together the high or very high temperatures that might be in portions of the core with this concern about possible uncovery or a possible state of steam heat removal rather than water contact with the fuel elements?

A I don't remember discussing boiling in the core. I do remember us discussing, assuring that the coverage was there over the core and that we were --- we were concerned about the high temperatures and the steam environment that we were under in most of the system.

And we didn't --- I don't think we thought back about whether there had been uncoverage as much as we thought is it

still totally covered. We didn't discuss boiling water in the core that I remember.

Q I think, if not you, other members of that group have testified before that periodically over the morning you got together and said in substance, okay, now do we all think the core is covered. Do you remember that?

A I remember. I think I remember the core coverage was probably the biggest thing I could --- you know, the single issue among the group. Other than the emergency plan, which we --- which we took on each time.

Q But you were definitely not convinced that you had flow through the core; that is, you thought that the high pressure injection water might be by-passing the core or parts of the core?

A We discussed that that could be done. I think the temperature indication on the cold indications told us that some of it was going in. And I think we discussed that. Okay. I think we had no way of assuring ourselves what the level in the system was.

Q As you look at it today, do you have any ideas of what the flow paths might have been for high pressure injection water to by-pass the core and go out the pressurizer relief valve some other way?

A I think we had --- that's hard to remember. But I think we looked --- I think a couple of times we looked at the

elevation drawings, and I think we thought that some of the high pressure injection could have gone across and out through the pressurizer, through the block valve, passing over the core.

There was a path we sketched out that I can't --- that I can't remember today that we tried to sketch out as a possibility. I think you've got to look at the fact that we were trying to say, "Is there any possibility that the core is not being --- not getting the water?"

And I think we were trying to convince ourselves that there was no other path or by-pass path and that was --- and I can't remember the specific lines, but I think we did propose a couple of ways up to the surge line or some way for it to get across the core and out the pressurizer.

The other concern that I had that I think we discussed is --- I remember having it the first few days --- is the fact that the water supply wasn't infinite. And, in fact, I think I had the maintenance supervisor looking for a way to get water from Unit 1. So I was concerned about the amount of water we had.

Q Do you know where the water comes from for the pressurizer spray? Does that come on a line from one of the cold legs?

A I'd like --- I used --- at that time I knew all the A's and the B's pretty well. I'd look at a diagram. We have

an elevation diagram.

I wouldn't want to guess today where it comes off of. It comes off a discharge of one of the pumps, and it depends on how you level them between the units.

Q And there are block valves in that line, aren't there?

A There are valves on that line.

Q Do you recall whether those valves were open at any time?

A I don't recall that today.

Q Let me move on to the decision to close the atmospheric dump valves. That was a decision that was ultimately made in conversations between you and Mr. Herbein, is that correct?

A The ---

Q Or would you say in the end you were just instructed by Mr. Herbein to do that?

A You mean steaming the atmosphere?

Q Right.

A That --- I believe that there was --- I thought at the time, and I think I've said this in other testimony, I felt that there was pressure to stop steaming for a good period of time because I think there was some thought that there was radioactive steam being released.

Q Did you share that concern?

A No.

Q Did Mr. Herbein, if you can recall?

A I think Mr. Herbein, not being here, was probably not totally convinced that we weren't releasing some radioactive steam. We had acknowledged one steam generator was bottled up, closed off containing some radioactivity.

There was some confusion over sample results early in the morning, and I think some of this might have caused Mr. Herbein to question. I had Dick Dubiel, I remember, absolutely assure me with a sample and with a guy on the roof that we weren't.

So I wasn't concerned about that. I felt at the end point, I guess, I felt directed to close it when I finally did.

Q When you say you felt there was pressure, did Mr. Herbein tell you that somebody was putting pressure on him?

A When I said that, I mean today I am remembering the situation. I felt --- I don't mean at the time. At the time there was direct pressure to shut the valve.

Q Was that coming through Mr. Herbein?

A It was coming through Mr. Herbein. Some people, both myself and other people of my senior group, although they would have not shut the valve without me okaying shutting the valve. At the end point of that discussion, I felt that I had been essentially directed to shut it.

Q Do you know where the pressure was coming from?

A I feel --- I understood and I think I understood that

from the people who worked around me, the senior people, I understood it was coming from the State government. I don't know that I ever knew a name, okay? But I was --- you know, the control room, I think, felt directly the State government had told us to shut the valve.

Q Do you remember hearing that from Mr. Herbein; that is, did he tell you in substance, "Look, Gary, the State's very nervous about this and we've really got to shut the thing down."?

A I don't today remember that.

Q Do you recall whether Mr. Higgins, who at some point came in to the control room from Region 1 of the NRC, had any input to that or was urging you to close the .ps?

A I don't remember. I know --- I know Mr. Higgins was there, and he was there in the morning hours. But I don't remember him in that discussion.

Q In retrospect do you think that a significant heat sink was lost by closing those valves when it was finally done?

A I think some --- in retrospect I feel that some heat sink was lost, yes. We felt from some of the indications on the generators in the early morning that we were getting some heat removal through that path; although we knew it was small, because I think the pressure was low in the generator. I think we had indications that it was small. It was a safe heat path to us inside.

Q I think there has been a little confusion about the time when you were able to get vacuum established again in the condensor and be able to use that route of steaming. Do you remember when that was finally achieved? Was that shortly after you closed the valves or was that some hours later?

A I think that I remembered it shortly afterwards; but if I go back and look, and I have --- that's why --- I've looked at the charts. It looks like it was a couple hours in retrospect. At the time, though, I don't remember it that way.

Q Your recollection would be that it was shortly thereafter?

A Yes. And that turns out, if you look at the vacuum chart, to be not shortly thereafter.

Q Now, I think at some time in the late morning, about 11:30 a.m., you made a decision to try to depressurize the system, blow down the system, and attempt to get on decay heat and activate the core flood tanks. My question about that is: At the time that you left to go with Jack Herbein to the State House, did you think that that was succeeding or likely to succeed? What did you think when you left t' plant about the condition of the plant and the condition of that strategy?

A I think that I have said some things about that previously in testimony, and you've got that. But if I had to come down to --- we decided --- we talked earlier here of

core coverage, water considerations --- water consideration was beginning to get larger in my mind at that time. And I think --- I don't think we worried about the decay heat as an immediate type thing.

We looked at this as a step down. I don't think we thought decay heat would occur. We had sat all morning and charged the plant. I don't think we thought decay heat was an immediate thing.

I think we thought one other thing this might solve for the group, and in my mind, if we could get a pressure differential across the core flood tanks and the core. Okay? A sizable pressure differential. Then if the core uncoverage was significant, then a significant volume of water would go in. Not a level indicator, but a significant amount of water.

And before I left, I remember four forty coming up on the computer, which was the core flood tank, I think, pressure as opposed to system pressure. We got about one to two hundred pounds which showed us some discharge of water and didn't show us a great volume of water. So floating on the core flood tank or going to the flood core tank was a step down in our minds. Okay?

I don't think --- I think decay heat was still where we thought we were going to end up, but I don't think we were really worried about whether we thought decay heat would occur.

Q You have talked in previous interviews about the

decision to go to the Governor's Office, and I think you've covered that and I won't ask you to go over that again except to ask you one question. In retrospect do you think that that turned out to have any impact, particularly any detrimental impact, on plant operations that you were taken away and that you were out of the plant for a number of hours?

A I, in fact, did not leave the plant until we were on core flood. We had already seen some response on some of those high temperatures, which encouraged us. In retrospect I don't think going to the Governor's Office had an impact on where we ended up.

I don't believe that it was necessary to go to the Governor's Office either. But I don't --- I left the plant with a radio. I called back when I got there, and I was twenty minutes away.

So I had people there that knew as much about where we were as I did. I was --- I didn't like to leave, but I didn't feel I was leaving anything that was going to change very rapidly.

If I had, I would not have left. In fact, I did not leave until I saw us down on core flood. I felt like I had to go.

Q I want to go into ---

A I'll say one thing, though. If I had felt that I had to stay, I would have never --- I would not have left.

Q I'd like to go into the briefing that you gave at the Lieutenant Governor's Office for that meeting in a little bit of detail. Do you remember whether there were any press people present in addition to State officials?

A I do not. The people in the room, I know there were State officials, the Lieutenant Governor, and there were others I didn't know.

I was only in that room for the first couple minutes. I was subsequently out on the phone with the plant. So I was not in that entire briefing to my memory.

Q So to your recollection, Mr. Herbein did most of the description of plant status and so forth?

A Yes, sir. In fact, I think he sent me out to find out some things, is the way that I, first of all, went out of the room.

Q Mr. Gerusky was there, was he?

A Yes.

Q He's someone you know?

A Yes.

Q Personally?

A Yes.

Q And do you recall whether while you were in the room there were any promises or commitments made about steam dumping or releases?

A I don't remember any commitments made in the future.

I believe that I stated that we had stopped steaming. I believe I remember that much, but I don't remember saying I wouldn't steam again.

Q It's my understanding --- and I may be wrong --- that the Lieutenant Governor at some subsequent point made some statement or has testified that he felt that Met-Ed had gone back on some promise or commitment made to him with respect to steaming the atmosphere. Do you know what he meant or what he could be referring to?

A I can't remember. I don't believe we made a commitment on that in there that I remember, the part of the meeting that I was in.

Q Do you have any recollection as to whether anybody made a tape recording of that meeting? Did somebody have a cassette recorder or any other kind of recorder there?

A I don't remember.

Q You don't remember one way or the other?

A No, I do not.

Q Do you recall anything about the response of Mr. Gerusky or Mr. Dornsife at the conclusion of that meeting in terms of whether they seemed satisfied, seemed reassured, seemed upset or not reassured?

A I was not in the room at the end of the meeting. I was in the hall.

I think I might say one thing. I think Gerusky and

I touched base for one moment in the meeting. And I don't know if I said that previously, but I believe he thought he was having trouble getting data or he wasn't sure. And I had left the plant, and we had two open lines; and I believe when I came back, I told Dick Dubiel to make doubly sure that Maggie Reilly or Gerusky were the people that were getting the data. That's the only part of the day I remember of that meeting.

And one other thing, somebody in the room asked the question, "Do we, the State, have monitors?" and I at that point remember myself saying, "You do not have monitors, but I believe you are welcome to be with our people."

And then I believe there was some suggestions made in the room about the emergency plan, and I stated that I would not change what I was doing within a planned emergency plan based on suggestions. And I think at that point I exited the room.

Q On your way over to that briefing, did you and Mr. Herbein talk about or make any decision about how you were going to approach this thing, what you were going to say, how you were going to characterize what had happened?

A In the car on the way over I had --- I had had George Kunder assembling information for me for the meeting about an hour before. And what I was looking at was readings on site and off site plant parameters, and we discussed those

things.

But I can't remember any discussion or prediscussion of what was going to be said. I would have assumed that Jack would have been the leader of the group.

Q Was there any discussion about trying to give them a rosy picture of the situation or reassure them? And I don't mean to make that a loaded question. I'm asking you, to reassure in the neutral sense?

A I believe that we simply wanted to present them the situation, and I don't believe we wanted to say that it was overly serious or overly not serious. I think we all recognized it was a serious situation, and we were going to present them that situation without any shading that I remember being discussed.

Q Did you think at that point that the plant was relatively stable? Did you think you were in a position to tell them that you thought you were going to get on decay heat and that the problem would be terminated as far as operations were concerned?

A I felt --- I felt that the plant was reasonably stable. But I didn't think we were at the final stability condition. In my mind decay heat or reactor coolant pump would have been a very --- a much firmer stability point. But I thought we were progressing in the plans we had.

Q Did you think you were probably out of the woods, if

that's a fair question to ask?

A I don't think we thought we were out of the woods. I don't --- I don't believe we --- I believe we were happy in that the releases we had seen to that point, the readings were very minimal, not anywhere near the action requirements, even thinking about action requirements. And I think we thought we were in a set of steps that would bring us out.

Q Before you left, I think you had been told or observed the chart that showed a pressure spike in the containment building, is that correct?

A That's not my recollection. My recollection is that it --- somewhere at the point before I left, I heard a noise. And I think I was standing next to a guy named Marshall, Bubba Marshall or William Marshall, and a guy named Mike Ross. And I think I said, "What was that?" And I think I said that loud enough so that they heard me.

And I don't today recollect exact things that I was fed back, but I didn't realize it was a pressure, a real pressure spike in the reactor building that day. I think we --- I think the discussion was that it was an instrumentation, the noise was not related to instrumentation that I remember that day.

It was related by other people to me Thursday or Friday that I --- that was the first time I remember seeing the chart, was probably Friday. But it could be Thursday or

Saturday, but it was sometime afterwards.

Q Were you aware on Wednesday sometime that there had been either a real spike or an instrument, electrical excursion that had caused emergency safety actuation and spray to come on?

A I don't remember --- and this is as good as I can --- I don't remember anything other than a noise and somebody telling me that it was probably the ventilation, which makes a loud thud in that control room when it shifts in one of the modes it goes through.

And I think I was going to the Governor's Office or the Lieutenant Governor's Office, and I passed by that.

I don't remember being told at that time that the spray pumps had started, which I found out subsequent, to my memory. That would have caused me to question it more. And I just don't remember that. And I would have questioned it more.

Q The sodium hydroxide --- is it --- spray, does that come on at a certain pressure? Thirty pounds?

A There's a set of pumps that come on at thirty pounds that essentially inject that solution into the reactor building through the spray header.

Q Now, let me go to the decision that was made late in the afternoon after you returned to the plant to try to repressurize the system and make new attempts to get a reactor coolant pump started. That was a decision which, I believe,

you've testified before was, according to your understanding, made by Mr. Herbein and Mr. Arnold in conversation between them. Is that fair to say?

A I think it's fair to say that the decision to turn on --- to do that was ours inside. We had strong advice from Jack and Arnold, and I --- I believe I understood that also meant the GPU engineering people recommended that.

Q Do you recall before you talked to Mr. Herbein about that that you had had some input from Babcock and Wilcox in Lynchburg about keeping the high pressure injection flow up or on?

A I remember somewhere in the time frame right after I got back noticing that they had given us a number, four hundred gallons per minute, as I remember it, and that number I had asked for earlier, by the way. Okay?

And that number was what they were trying to arrive at, and that number was the one we implemented. At the time it came over from Unit 1 from somebody.

I don't remember a recommendation of pressurizing at that time from B and W. If Lee Rodgers had strongly encouraged me to pressurize, I would have never had to talk to Jack Herbein.

Q Did Mr. Herbein ---

A I think I also should say that I was welcoming any input that I could get which would have a technical basis

based on the information or the data that was existing. I would have wanted to understand the recommendations is what I'm saying.

Q Did you hear from Mr. Herbein that one of the reasons that he and Mr. Arnold were suggesting repressurization was because there had been a strong input from B and W to that effect?

A I don't remember hearing that.

Q You don't recall that?

A No, sir.

Q It's my impression that there has been some testimony about a telephone call from Mr. Arnold and possibly from Mr. Wilson at GPU into the control room during the afternoon expressing concern about the core being uncovered. Do you remember such a phone call or a communication or anything like that?

A I don't remember anything relative to core coverage. I do think I remember that Arnold might have talked to Lee Rodgers, but I don't remember the specifics of that conversation. He might have talked to Lee when I was gone.

Q During the afternoon?

A Yes, sir. Well, I could be wrong on who I'm telling that he talked to, but I think it was Lee.

Q Do you remember anything else about that, anything about the substance of what that phone call may have been?

A I thought that phone call was --- was merely to get some status and update on parameters. To my knowledge there were no directives or requests or suggestions that were given directly before the five o'clock time frame when pressurization was made.

Q We've looked at a very rough transcript of a telephone conversation that appears to have been held between some people at NRC headquarters, including a Victor Stello, and Greg Hitz in the Unit 1 control room late in the afternoon, in which Mr. Stello is expressing the same concerns about whether super heat conditions indicate possible core uncovery. Did that message in any kind of a dramatic form get effectively communicated to the people in the Unit 2 control room to your recollection?

A Not to my recollection today. Especially with --- when you're talking about super heat and core uncoverage. I don't remember that. I know we discussed later in the day steam voids and super heat. But I don't remember it coming from anyone like Vic Stello or anyone at B and W, like a John McMillan. If it did, I didn't --- I don't believe I remember it. I don't believe it happened.

Q Did you know at the time who Mr. Stello was?

A Uh-huh. I didn't know his title, but I knew --- I knew the name.

Q So you think that if you or the caucus in Unit 2

had heard that Victor Stello or some other knowledgeable high NRC person had made a call to the plant saying, "Hey, we're concerned about this. We would like you to look at it. We think you ought to reexamine it," that would have made an impact on you?

A That would have made an impact. I think in direct fairness to me, you've got to remember that every one of those meetings I held, I --- I enlisted and requested and encouraged those people who were up there to participate and to tell me anything that they thought we could do. Because I knew some of those people. Bill Raymond was there that I remember. He used to be a B and W representative.

They were --- I'm trying to say they were knowledgeable people and I would have --- I would have certainly looked at any advice they gave with the thought that I ought to evaluate it very carefully.

Q Let me ask you a couple questions about the role of the NRC inspectors who were in the Unit 2 control room on Wednesday and on Thursday. Did the people who were there ever make any strong suggestions or recommendations to you relating to operations that you can recall?

A In all honesty, I can't remember specifics. But I know there was dialogue and are you --- there were suggestions like, "Are you looking at certain things."

And there was no adversary relationship. There was

a direct, no-different-than-any-other-day relationship. And to my knowledge, anything --- they were allowed to look. I may have limited the number of them in each control room, but they were encouraged and they participated in the meetings I had in that they --- but I would have not have expected them to tell me what to do.

I think we discussed that maybe once or twice during the day. I think I was the licensee and I should not --- they did not want to be in the position of being the licensee and I --- that's the only type of discussion we had.

It was a cooperative relationship. I wouldn't say friendly or unfriendly. It was direct.

Q What I'm getting at is whether any of them at any time did try to tell you what to do or strongly suggest to you what you should do in a way that might convey something more than just discussion.

A I think that when I say discussion, I don't mean it in any different context that the people that were working for me. And that could be pretty strong discussion.

But I don't remember refusing to evaluate or do something that I was strongly told to do or that I was strongly told to do based on some external force or member. And I don't think I would have.

Q You don't recall that any of the NRC inspectors at any time strongly disagreed with any of the decisions that you

or your group made about operations?

A My recollection is that they didn't know of anything else to do, anymore than we did. That's exactly --- and they sat in the meetings. And what I'm trying to say is at the end of the meeting when we said --- when I said, "All right. We're going to go this way for the next hour," there was nobody saying, "Hey, you just can't do that," or "Don't do that." None of that.

I don't think I felt I had their concurrence, but I didn't feel they had an alternative. And I wanted to hear that alternative. I'm sure that that was clear to them.

MR. FRAMPTON: Off the record.

(At this time a discussion was held off the record.)

BY MR. ALLISON:

Q Mr. Miller, going to the conference call early in the morning with you and Mr. Herbein and Mr. Rodgers, at the time of the conference call previous testimony indicates that the question was asked is the P.O.R.V. block valve closed, and the answer was the valve is closed.

My question now is was it mentioned on that call that the valve had only closed at about six fifteen in the morning?

A My memory is that during the call the question was asked, and I think George Kunder said he would check. And the word came back it was closed --- it was closed. Not that we

were closing it. It was closed. In other words, there was no indication that the valve had been other than closed.

Q So you didn't know that it had been opened until just recently when you got that report back?

A That's true.

Q And if you had known that at the time, do you think that would have changed your perception of what was happening?

A Looking back, I think that would have --- that would have --- again, I'm looking back, I think that would have caused us to discuss that as a reason for some of the things we had in the plant at that time. We went by that as a possibility for that, and we began to look for other ways of evaluating the plant.

And as I have said previously, I don't remember any radiation indications being discussed. So that was not a consideration or a problem to us.

Q Right. Had there been radiation alarms and had you known about them, I suppose that would have changed your perception, too, at that time?

A I believe that would have generated a totally different discussion on the phone call. As it was, we came out of the phone call with the agreement that Lee and I would get to the plant and try and get to the root of the problem or of the situation.

Q There was a third thing I wanted to ask you about

that conference call, too. I believe that the decision was made on that conference call that reactor coolant pumps should be restarted and get forced circulation through the core. Had you known at that time or had someone strongly suspected or told you that natural circulation was not working, would that have changed your perception, the urgency that you attached to starting reactor coolant pumps or perhaps the actions that you took?

A I think that if we had had that kind of a specific discussion on natural circulation, we would have looked for some way of assuring water flow through the core or some way --- we would have discussed heat removal to a greater extent than we did. I think we thought the pumps had been turned off; let's get them back on.

I don't think we suspected on the phone call --- I think we thought the action ought to be to get them back on and get water flowing. I think discussion on natural circulation would have caused more discussion on the entry of water into the system. But that didn't occur.

I think we came out of that discussion more with we've got to get more information, hard information, and understanding to be sure of our action. The pumps being turned off was something we wanted back on.

Q But I guess it's fair to say not with the urgency that you would have wanted them back on if you had appreciated

natural circulation was ---

A If natural circulation had been discussed and thought to be inadequate, we would have --- we would have --- that would have been a totally different urgency on that. It might have even been to the point of not worrying about the pump, I think if we had had that discussion. But that didn't occur.

Q Now, my last question is, when you went to the Governor's Office at about fourteen hundred on Wednesday, what was the --- as you recall --- what was the general plan for cooling the core at that time? Now, to set a little background, I believe I read in your previous testimony that your instructions to Mr. Logan were to maintain the status quo, if possible, or provided you didn't have to do something else. And I'm just wondering were there any other more specific instructions in what was the plan for cooling the core?

A I don't know that I can say that I remember specific instructions. But I --- I think we knew that we were trying to redraw the vacuum on the steam generators. So we knew that was a path we were going to pursue.

I think we also knew we had water flow through the core, and we wanted to continue that water flow. I think --- I really think that the passing water through the core was thought to be our best method of keeping --- of keeping it covered and watching the temperature indications.

And as I have said earlier, we did see positive response on some of the high temperature indications and the Th's as we came down. And I also think we were able to shift which high pressure injection valve we opened and get better response on the hot temperature leg, which meant that we were bringing the system down some. That's the context that I remember it in.

Q So I guess you don't recall telling someone this is the plan, but you feel that was the plan that was being pursued?

A I feel we discussed heat removal at that time. I don't think we left instructions. I think we left Joe the latitude to change things if he had to. But I didn't want to change the direction we had agreed to and had just implemented before I left.

MR. ALLISON: Thank you.

BY MR. FRAMPTON:

Q Mr. Miller, could you give us just very briefly what you recall were the hours when you were on site Thursday, Friday, Saturday, Sunday?

A I have a hard time pinning those times. I've not gone back and looked up date entries so that I can remember it better. I'll give you what I think, and it could be totally inaccurate. But I have purposely not gone back and asked when I was here.

I remember being here Thursday until --- I'm sorry --- Wednesday through the day and past midnight. Somewhere in the middle of the night I went home that night, I believe.

I also believe I sent Jim Seelinger home sometime after we started the pump Wednesday night in anticipation of him relieving me the next day. I think I was on eight to eight or seven to seven and eventually moved back to six to six from the standpoint of getting in the gate and so forth.

But I think initially it might have been seven to seven or eight to eight, me having the daylight half of that.

Q So you think that you were on shift from morning to evening on Thursday, Friday?

A Yes.

Q And did that continue Saturday and Sunday, too?

A I believe it did. Except I believe that Jim and I sometime between Thursday and Saturday moved our hours back so we weren't relieving at the same time a bunch of other people were. So there was continuity at the emergency director level and not, you know, discontinuity as opposed to everybody trying to relieve at the same time.

Q You and Mr. Seelinger were on a twelve-on/twelve-off basis, is that right?

A Basically twelve on, twelve off. It meant about fourteen hours until you turned over on each end.

Q Okay. And underneath you Mr. Ross and Mr. Floyd also

rotated?

A Yes. And I can't remember --- we set a watch bill up Wednesday night, and we set it up based on initially having twelve and twelve. And we tried to fill all of the slots that are in the emergency plant chart. Emergency director, I picked Jim Seelinger as the ultimate emergency director because he had --- he had very specific experience in the emergency plan.

Underneath that I would have kept the same sort of setup. In other words, I would have Dick Dubiel and probably Tom Mulleavy and probably Mike Ross and Jim Floyd. I used Joe Logan somewhere in there to give him the freedom, too, with --- you know, where we eventually ended up going to three shifts. But that wasn't in my mind at that time.

Q Was there an engineering or technical support slot, too?

A Yes.

Q Do you remember who that was?

A I think it was George Kunder and Bill Potts. But I can't --- I know we were --- see, we were coordinating with the Unit 1 control room as far as where the emergency --- where the ECS, the emergency control center director was. And I don't remember all those specifics.

But we filled every function in the emergency plan and tried to do that Wednesday night so we could end up with

release.

And I also, I think, brought a guy in from PENELEC, a guy named Ron Toole, who I put in there as another senior guy. I can't remember when he got there, but I think he got there either sometime late Wednesday night ---

Q Was Mr. Toole the same gentleman who was head of the site start-up team for GPU Service Company?

A He was the head of that team for Unit 2. Previously I had that job in Unit 1.

Q Do you recall that there was some appreciation of or suspicion of leaks from the vent header system in the auxiliary building as early as Wednesday?

A I think that as early as Wednesday in the afternoon, and I think Seelinger was involved, along with Dubiel, I think we appreciated that there was --- there was --- that we were trying to look at methods of stopping the release. I think we were even laying poly on the floors to keep the water from evaporating.

I also think we were looking at the vent header. I think Seelinger or Dubiel had somebody trying to look at the vent header, which is a complicated system in terms of number of components and types.

Q Yes. I've come to learn that. Had you had releases of activity from the vent header system prior to this accident, say, following reactor trips?

A I can't remember a history of problems or releases from the vent header. Not before this trip.

Q Do you remember any such occurrences in Unit 1?

A Not --- not relative to vent header problems. With the exception that there were certain things like tank --- tanks which have vents that are sealed by water legs. I remember problems of that nature in Unit 1.

But Unit 2 was designed a little differently. We did have periodically small amounts of radioactivity released. You know there are various things documented where we might have had releases because we would have looked at the charts for any up-scale indication. But nothing of a significant nature. Okay?

The vent header was a complicated system, and I wouldn't say it had known problems. But it was complicated, and there were --- there were things on the vent header that we worked on. There was gas sampling type things and so on.

I'm saying it was a system that was known, but not from a standpoint of a problem with releases that I can remember.

Q Some notes taken by Mr. Berry in the Unit 2 control room show that by sometime on Thursday, late Thursday afternoon or early evening, some people in Unit 2 had made a correlation between the venting of the make-up tank and seeing releases. Do you remember what you knew during Thursday,

before you went home Thursday evening, about venting of the make-up tank and problems that it was causing?

A I think that we knew there was an increase in the monitors when we vented, and I don't remember the specifics. But I don't think we could get too near it physically because of the radiation levels to troubleshoot it.

But I think I remember knowing that there was --- that there was --- that there was a change, not a --- our monitors were very high to start with. So when I say change, I mean a little more up scale.

I think we could see it, and I think I remember that much of it.

Q Was there any appreciation of the possibility that continued accumulation of gas, increased accumulation of gas in the make-up tank was going to pose a more serious problem for degassing the system as you got into Friday or Saturday?

A I think as we got further into Friday and Saturday, we realized that was one method of degassing. I think our concern was --- was more Thursday and Friday in the waste gas tanks being fairly pressurized and in the --- what --- as I remember it, we also had, when we got pressure in the make-up tank, I think, let down decreased. And I think our concern was more related to pump seals and things of that nature.

The need for the make-up tank to be operable and not be pressurized and the need to discharge that to the waste gas

tank, I think that was more the context that I remember it in.

Q If there was concern on Thursday about the waste gas decay tanks possibly filling up, do you remember whether there was also some discussion as early as Thursday about running some pipe from those tanks back into the containment?

A I don't --- I don't believe there was Thursday. At least not inside. I'm saying that the waste gas compressor sensitivity to the high pressure, is what I'm saying.

The ability to get it out --- out of the suction header is what I'm relating to as opposed to what do we do with the waste gas tank. I don't think we thought that far ahead. At least we hadn't inside.

Q So your thinking was if the waste gas decay tank pressure is building up, it makes it that much harder for the compressor to suck any gas out of the vent header system, is that what you're saying?

A I think that was a concern relative to the pressure on the suction header and where we were going, more than, I think, discharging that tank.

Q But you didn't feel or you didn't sense any concern on the part of others about this building up to be an imminent problem in the next day or so as of the end of Thursday?

A I don't remember the waste gas tank being an imminent problem on Thursday or Friday. I remember that we were more worried about the make-up tank pressure and let down and water

into the core --- okay --- and trying to minimize the amount of that increased release that we might get.

Q Looking back at reported readings from various monitors, it appears that there were readings on Thursday directly above the stack in the vicinity of twelve hundred mR per hour and there was one reading of three thousand mR per hour for a very short time period.

Were you aware of those readings on Thursday?

A I don't know that I was aware of the three thousand. I think I might have been aware of readings like three or four hundred or twelve hundred. I think they were being made by an overhead helicopter or a plane.

But I don't remember them being consistently at eleven or twelve hundred. And I know that we weren't getting --- you know, we were watching very closely the readings off site and on site for worry as far as it's --- you know, the reading up there is an indicator of a release. The reading down on the plume or in the direction of the plume is an indication of what you're seeing and how long.

Q Had you been aware of a three thousand reading right on the top of the stack, do you think that might have caused you to be somewhat more concerned about the venting of the make-up tank or would that have been the same order of magnitude in your mind with three or four or five hundred at that spot?

A No. I think three thousand would have --- I think a constant three thousand reading would have been --- would have been --- would have been a very big concern. Okay?

I think you also have to look at --- my memory of --- the biggest problem I can remember is the one that's well known on Friday morning. And by the time I remember becoming involved in that, we had already vented the make-up tank.

So we thought --- I think Mike Ross and I both thought that letting the make-up tank flood at low pressure would minimize the amount of release at any one time, because I think --- I think somebody had felt that was the way to go on Thursday night.

But the pressure had apparently built up in the tank, and I think there had been a water discharge from water to water storage tank, which would have caused --- probably caused some people to think that they could lose their water flow, the water source.

Q Okay. When you came in on Friday morning, a Mr. Ross or someone else, I think, told you that there was a situation with respect to a release developing and you'd better go to the Unit 2 control room, is that right?

A I think that I came in that morning and went to my normal office. And I think somebody was --- they already --- there was some consultants in there. I believe I either called the control room or they called me --- and I think it

was Mike Ross --- and asked me to come up because there was a problem developing with respect to the release or the make-up tank.

Q In one of your I. & E. interviews, you said that when you went there, you got into the emergency procedures again. What do you mean by that? Can you tell us what happened?

A We were in the emergency plan and never got out of it. I wanted --- I think when I say we got into that, I wanted to make sure that the State government was specifically advised over the release that had just occurred, because it was above where we had been. And I wanted them to be specifically advised of the fact we had had a release, an increased release, and we were monitoring it.

I must say also that I've subsequently read that Jim Floyd called the State, and I was not, to my memory, aware of those calls. I discussed --- as I remember, I talked to Bill Zewe and Greg Hitz that morning along with Mike Ross. I'm pretty sure Hitz and Zewe were in the control room. And we began to try to take steps to minimize the release.

And at that time, as I remember, the tank was vented, and we left it that way at low pressure.

Q Do you recall telling Mr. Zewe, who, I believe, was just about to go off shift, to take over the control console and

telling Mr. Hitz to do the notifications to the State?

A I talked to both of those in that manner. I can't honestly say I remember exactly what I told them, but I did separate them out functionally and began to try and get control.

I wasn't sure when I got there that the situation and the plan of action were --- were --- were going in one direction. So I did do some of that type of direction.

Q So you, then, made or concurred in a decision to try to leave the vent valve open and keep the pressure low?

A I felt that we had to leave it open and keep the pressure low. I also must say I think I remember when I first got there that the release valve was still open from the bonated water storage tank, our water source.

So I think once we knew that was shut, I didn't want to increase pressure for that reason; plus the reason that I think we felt the releases were more significant when you pressurize them.

Q What was the next thing that you heard about someone recommending an evacuation or ordering an evacuation or partial evacuation?

A I think some --- that's --- I think someone that came in and relieved said --- or someone's wife called and said that there was a recommended evacuation or there was some discussion we heard.

We had monitors on some of the civil defense lines or fire station lines, and that's --- that's hard to remember today. But I think that's how we learned about it.

And we began to ask why. And I think even the NRC people along with us were beginning to ask why and trying to make phone calls and try to find out what --- as I remember, Dick Dubiel was calling the State and trying to find out if they had recommended it and why.

Q Do you remember staying in the control room, then, that morning?

A I do remember it, but it's vague. And I thought it got turned around after a while.

Q Did you subsequently learn that the NRC in Washington had recommended a partial evacuation to the Governor?

A I subsequently learned that there had been calls that I wasn't aware of.

Q Do you know whether anyore from Bethesda, the NRC headquarters, ever got through or tried to get through directly or indirectly to either the Unit 1 or Unit 2 control rooms during the morning to ask somebody about the status of the plant?

A I don't remember anybody trying to get through. I --- I thought we had a phone in the shift supervisors' office that was open by that time with Bethesda. And I thought we

had --- I thought early Thursday morning that there was some people who showed up from headquarters. But I can't remember names.

I know one of the mornings, either Thursday or Friday, I think his name was Tom Novak, was up there. But that's vague.

But I don't remember any --- I don't remember any discussion. I do think that I remember the NRC --- the NRC people who were in the control room not understanding. And I didn't separate them out as to NRC or Region 1. I grouped them as NRC people.

I don't believe they understood why they were evacuating either, to my knowledge, because we asked each other, and nobody understood.

Q What I'm trying to get at is whether you know of any inquiry that was made directly by people in Bethesda at that time making this decision to the plant saying, "What's happening? We want to talk to somebody who's in the control room or who's in charge to find out what the plant status is and what's going on."?

A I don't remember any inquiry. And, in fact, I think we --- we and people up there were trying to reach someone to find out who was making the decision.

Q It's your recollection that there was a line from the Unit 2 shift supervisors' office that would go through to

Bethesda?

A I believe there was. I know there was a --- was a line to Region 1 the first day. I thought there was another line by the second day that was being held open. But I don't know who was on the other end of it, and I didn't ask.

Q So it's your impression if someone in Bethesda had wanted to know, they could have picked up the phone and called the Unit 2 control room?

A It was my impression that that could have been done, yes. It was more my impression that --- the best I can remember --- that the people up there couldn't figure out who to call either.

Q That is the people in the control room from the NRC ---

A That's right.

Q --- could not figure out who to call in Bethesda?

A That's right. They didn't know who made the decision either, and they didn't know the basis of it. Because they were --- because they were --- my memory is they were trying to get through to be sure that someone didn't have a false basis, like data that was not accurate. Okay? I think that was more the concern.

Q Do you recall any concern being expressed in the control room during Friday morning about whether the waste gas decay tanks were actually filling up to capacity?

A I think --- I can't specifically remember, but I know we knew they were at eighty pounds or better and we had to --- we had to eventually do something.

Q Was that an imminent concern?

A No. But it was a concern that we were going to have to address in the next days. We knew that.

Q Don't the tanks have an actual capacity that's higher than that limit?

A Yes. And that's probably why our concern wouldn't have been imminent. You know, higher than that limit is probably a hundred and twenty pounds or so. Okay?

I also think the compressors weren't necessarily working exactly like we thought they should, and it was hard to get near enough to them to look at things like water in the reservoirs and things to be sure that we were not --- we were not going to lose that.

(At this time Peter Sicilia and Richard DeYoung left the deposition.)

BY MR. FRAMPTON:

Q Had there been some kind of a procedure or practice in place from Thursday to notify the State when you thought you were going to have a release from the venting of the make-up tank?

A I think there was at some point, but I can't remember exactly when. Okay? And I don't ever remember not

being in contact with the State, though, to tell them anything that was going to happen in the plant that we thought would cause a bigger release.

Q Did there come a time Friday, Saturday, Sunday, when the role of NRC people in the control room or on site changed in terms of their impact on operations?

A I felt there was a larger role change occurring at the observation center than in the control room, in that I knew by that time that there was --- there were very senior people out there in the NRC and that there was a group being formed to make decisions.

Now, within the control room, I think there was more of an effort to ensure that they were informed of what we were doing or informed of something we had to do and that if they would have said do not do something, we would not have done it; unless it was an emergency.

The role got stronger, but I don't think that --- in the control room I never detected a question over who was the operator. Okay? There were more NRC people, more technical people, but my memory is from Thursday on, my first thought was I was talking --- I would only talk to one of their guys at that point.

We may have changed as we went on during the next week and we got more normalized, but I --- my first thought, as I remember, I talked to one guy. That way if he had a

problem, then I would address that problem; unless it was an emergency.

And that's the way the role was. That was stronger than the first day.

Q But that method of operation in the control room continued?

A That continued.

Q For some time?

A Yes. They had fairly senior --- when I say fairly senior, I mean fairly experienced and senior supervision that arrived in that control room and with real understanding of, you know, what we were doing.

I must also say as we increased the number of any organization in that control room, that there were a variety of opinions. So that's why I would --- I remember I think at one point --- I don't know if it was Thursday or Friday --- insisting on talking to just one person, okay, and let that person run his organization.

And also at various times I used to clear the control room when I was there and limit the number.

Q So you were aware that there was a management group being organized in the observation center to review plant procedures, new procedures, and major actions, and that the NRC was involved there, but that didn't result in an additional direct impact of NRC people in or into the control room itself?

A It did the further it went, because when we --- when we get into --- and I can't --- the days, the days on when we changed the way we did business are hard to pinpoint. But we eventually ended up with everybody that was involved, be it the NRC, concurring in anything we did.

But inside the plant, should the operators have to do something, for instance, if the pump would trip, which it did one time, we would have started the second pump in accordance with, you know, our own safety precautions and then discussed it as opposed to --- as opposed to a planned operation which we would have agreed to prior to doing it.

So in that aspect, the role did change. The role became stronger.

Q I think you have said in prior interviews that it was your perception that command and control shifted to the observation center on the evening of Wednesday, 7:00 or 8:00 p.m. perhaps. What was your perception of the role of Mr. Herbein or other people there after that time; specifically when Mr. Herbein went home at two or three o'clock in the morning on Thursday morning and you had gone home, would you still have expected that the senior person in the Unit 2 control room would be looking to somebody in the observation center whom Mr. Herbein had left behind in charge, or would the senior person in the Unit 2 control room then be in charge?

A My perception of that would have been pretty precise. I --- I by eight o'clock that night, once the pump had started, felt that the immediate, you know, that the immediate, I mean serious-now concern was gone. And by that time Jack was more formally in place over there with the ability to communicate and help.

I would have looked at him, being my boss, like normally, as far as directing moves in the plant, with the exception that in the emergency plan, I would have still been the emergency director and would not have expected him, nor would I have --- it would have been my responsibility still to be the emergency director; the same as I had Jim Seelinger.

In fact, I remember when I left, I told Seelinger not to hesitate to call me if things changed. So I would have still looked at us as being the emergency directors and as the senior guy in the plant.

Jack left behind him probably one of his managers, but I don't think we would have thought that guy was technically more adequate than the guy in the plant. But he would have been --- there were an awful lot of people trying to communicate. He would have been the contact for senior people in other organizations, and then that would have fed into the plant.

But I wouldn't look to him with the ability to direct an operation, unless we reviewed it inside.

So I would have looked at it as a command-type relationship, except I wouldn't have felt that all my responsibilities --- and I'm sure Seelinger wouldn't have --- were abrogated to the observation center. But I would have looked for my direction --- my direction on where we were going. Our long term direction would have come --- begun to come from the observation center.

At the same time we would have begun --- begun to build a more formalized method of transmitting plant evolutions and data to them. And as an example of that, Friday when I came in, I didn't even question the observation center. I came in, realized we had a release going on, and did that first, and then talked to the observation center. That's the way I would have viewed it.

Q On Friday and Saturday there was concern expressed in the press and evidently in the NRC about the possibility that hydrogen in the reactor vessel itself might explode or be in an explosive concentration with oxygen in the relatively near future.

A In the reactor vessel?

Q In the reactor vessel. A concern which shortly thereafter dissipated. Did that concern ever make an impact on plant operations?

A I don't believe it had an impact on plant operations directly. I think it had an impact on our considerations.

Inside the plant we didn't understand, I don't believe, how you could have gotten the situation where you could have gotten an explosive mixture.

We didn't know where the dissolution --- dissociation of hydrogen and oxygen was occurring. We understood there were experts on both sides of the fence. In other words, there were people saying it could and couldn't happen.

I think we understood it was --- that was now a possibility. I think we thought it was remote. I think we took the precautions as much as you could as far as reassuring the degassing was occurring at the best rate we could.

I don't think we thought it was very possible. We had been through a situation that wasn't very possible. I think we accepted the experts' opinion, but I just --- I don't remember being overly concerned about that; other than it was now calculated to be a possibility among the other things that we were faced with.

Q When you say you accepted the experts' opinions, you mean even though you didn't think it was a very realistic fear, you said, well, if the experts or some experts think it is, maybe it is?

A Maybe there's a ---

Q And if there's anything we can do about it, we will do it?

A Maybe there's a possibility of it of some magnitude,

even though it's small. And I think we were all convinced that degassing was the primary item and that this would get us out of it.

It would have been very hard to imagine the --- it would have been very hard to imagine the energy calculation and the amount of force and so forth. That's --- that's --- that would have been the stuff that we discussed up there. And I just --- I think we thought it was remote.

I don't --- it didn't cause anybody to do anything different as far as our thought process.

Q Let me go back for just one question to the early morning of March 28th. I think you've said before that you had done a dry run previous to the accident with the Pennsylvania State Police in ordering up a helicopter. How did you do that? When did that happen?

A When I say dry run, I may have overemphasized it. During the yearly drills we have here, we have tried to imagine scenarios that are varied. And I remember in the past years discussing the communications we'd have to have to bring a helicopter here and verifying that they had one that would respond.

I don't remember ever asking for that during the drill. We had it here before for other things, so we knew we could get it.

Q But you had discussions with the State Police?

A With at least the dispatchers.

Q About whether you could get one ---

A That's right.

Q --- and how if you had an emergency?

A That's right. Not just this type of emergency. In fact, I think we've gotten their helicopter for security items before. No different than calling the airport, learning to call Conrail for trains. That's stuff we've imagined in scenarios in the past.

Q In fact, you or someone called the State Police that morning for a helicopter and you got one very fast, didn't you?

A There may be --- subsequently I know there's some disparities in my time versus the time the thing landed here or the time it's documented. I remember as soon as I had the projection, which was high, for Goldsboro and knowing the west --- knowing the wind was blowing to the west and knowing that it was seven or eight in the morning, that I know that I asked for a helicopter before seven thirty.

I knew that that was in my mind and knew I had the York Haven monitor out over there and I knew I had a guy on the West Shore. That's something that I had practiced and thought about it. Even in the Unit 2 hearings when we discussed the wind blowing west, slow as it was.

Q Do you know whether the helicopter actually came on the site and picked up somebody to go over the river?

A To my knowledge it was verified to me that they picked up one or two of our people and they were flown over there. And readings were back, and as I remember the readings were back before Dubiel had thought the plume had gotten there. In other words, we had gotten over there faster than the radiation would have at the wind speed, which was very slow.

Q Do you know whether people also went over there in a car?

A Tried to go over. I don't know when they got over there. We sent them. In my mind I asked them to dispatch both.

Q Do you recall whether you or anybody else here called out or leased or chartered other helicopters? There were a number of helicopters, and I wonder if you know where they came from other than the ones that may have been federal, D.O.E.

A Well, I knew that we had a RAP --- I think that's R-A-P --- I knew the RAP aircraft was here early in the morning. Okay? I didn't know what kind of aircraft. I knew there were other helicopters Thursday and Friday and knew we had rented them, but I didn't know from where.

Q Do you know who rented them?

A I assumed it was coming out of Jack's place in the observation center. And I also --- I think we had probably blank orders or a way of getting helicopters through the

service corporations. So I didn't even worry about it.

Q That wasn't from you, though?

A No, sir.

MR. FRAMPTON: Off the record.

(At this time a discussion was held off the record.)

(At this time a recess was taken from one o'clock p.m. to 1:25 p.m.)

September 20, 1979
1:30 p.m.

BY MR. FRAMPTON:

Q Mr. Miller, in hindsight, looking at the way the emergency plan was implemented, what would you say are the major strength or strengths of the plan; and if it had a major weakness or weaknesses, what do you think those are?

A I feel that looking back that the emergency plan had built into it some good strengths. I feel that the organizational structure and the communications with people at the working level, I'd like to call it --- by working level, I mean the communications with other technical people in other organizations--I think were adequate and I think helped us. And I believe that it was rapidly implemented and that it worked from that aspect on the ---

Q By technical people in other organizations, do you include State ---

A State.

Q --- B.R.H.?

A State, B.R.H., NRC.

Q NRC Region 1 people?

A Yes. I feel those communications, plus the fact they were established before the --- within the first hour, worked and they were effective. On the negative side, I believe that we've learned a whole new area of communications

that are necessary in this type of a situation.

Q And what are those new areas of communications?

A I personally think we have learned that the media has to be involved. And I don't pick them first because of priority, but I believe they have to be involved.

I believe we have to have more senior officials within the State and the Federal government involved, because of the impact of the thing, which I don't think any of us realized before that time.

Q When you say senior officials in the State, are you talking about the Lieutenant Governor and the Governor, people at that level?

A I'm talking about the Lieutenant Governor and the Governor and their staffs, because I believe that the Lieutenant Governor --- I don't really believe he understood or knew the emergency plan before that day. And that's not a criticism. I just --- I feel that we now know a need for that to be an effective emergency situation and organization, too.

Q What about top people in the NRC?

A I've made one comment in recommendations to the NRC in the early parts of this when I thought about it. I think each organization involved; by that I mean the vendor, the architect/engineer, the NRC, and the company and the State all have to have an emergency organization that's responsive to this kind of situation and has a defined chain of command and

practice in communications.

Q On paper the NRC had such an organization. Did you ever see any evidence of it from your vantage point here?

A I saw evidence of it in that the people that I've normally contacted, like the Region 1 people, there was evidence of a communication there. But I wouldn't have known from a superintendent-in-charge kind of guy, I wouldn't have known who I could call in the NRC, who in that group would have been able to tell me something or to help me before that day. I wouldn't have known who to call.

I think today with the establishment of what we call a hot line that's taken care of. That day I wouldn't have known who to call in any organization because I wouldn't have known that I could have taken the time to talk to them and get set up for this situation.

I must say, in all honesty, I feel that people in the NRC who were up there didn't really know in their organization where to go either, and that there was --- there was --- there was confusion just because of the numbers of people trying to discuss the situation. I think that confusion has got to be eliminated.

Q When I say there was such an organization in the NRC on paper, I meant to say that there was a plan on paper for such an organization, not to imply that it got implemented. And the question I was asking you was whether you saw any sign

that any such organization was implemented.

A And I'm trying to give you an objective answer. I didn't see any sign. And I also must tell you that you have to prepare for emergencies as much as you can, and that preparation at this site includes emergency drills. So everything that was done in those drills was done.

Never was I aware that there was a unique organization other than the ones I've been dealing with. So I'm saying, no, in that context.

Q Mr. Herbein told us yesterday that he was very much involved in drafting the emergency plan for Unit 1 which in scope, at least, looks quite a bit like the existing emergency plan. Thereafter I think there was an emergency plan covering both units that was incorporated in the F.S.A.R. for Unit 2 which would have been filed in 1975. An amended or revised plan was sent to the NRC in a letter, undercover letter, in May of 1978.

Do you remember that or do you remember; and if so, do you remember why there was a '78 revision?

A You mean a '78 revision at all?

Q Yes.

A I was always aware that the F.S.A.R. in Unit 1 had a plan in it and that Unit 2 had a plan in it. And we had hoped to make them the same in the end.

But I think you must go back and say when we went

through the hearing stages in Unit 2 in the 1977 time frame through to '78, one of the areas that was reviewed very thoroughly was emergency planning. And a lot of concerns of my people and some of the NRC people were reflected, I believe, in that revision. That's why it was necessary.

I might say that the station procedures, to my knowledge, were based on the latest emergency plan submitted to the station. They might not have been affected by the fact that there might have been an older copy in Unit 1. In NRC the procedures, which were put in place by us and audited by the NRC, were addressed to the latest revision, to my knowledge.

Q Were you ever informed that someone in the NRC reviewed that latest emergency plan and found certain deficiencies in it, vis-a-vis the appropriate regulatory guide, and suggested that someone send you a letter saying that you ought to abide by your old emergency plan? Were you ever notified by the NRC of any such thing was my question.

Q No. But, in all honesty, back in the 1977/78 time frame I knew there was a revision under discussion in the NRC during a hearing process. But it had never been officially given to us; although I had an unofficial copy of the read guide and we did implement and change some of that.

But some of it was a major-type change, and we were not told --- I believe we were not in a position to implement

--- I knew there --- what I'm trying to say is I knew there were major changes being thought of, like alternate centers of communication and so forth. But to my knowledge none of that had been made a regulation. Okay?

So I was aware that there were revisions under discussion and, in fact, in our emergency drill, which was run in late '78 at the station, we had generated some things which we were trying to implement. But I was not aware of any big required change in emergency planning which we had not done.

Q You had not received any notification in the last year saying that your most up-to-date emergency plan was inadequate in any way?

A No, sir. And, in fact ---

Q From the NRC?

A No, sir. And, in fact, at the end of the drill in 1978 --- I believe I conducted that drill --- and at the end of the drill the comment made by the NRC inspector was that we had made advanced areas and advanced scenarios. So I was under the impression that it was very acceptable to them.

Q These were inspectors from Region 1?

A Yes, sir.

Q Let me ask you some questions about the condensate polisher system. Is it your understanding that that system is included within the Quality Control/Quality Assurance Program?

A My understanding is that that system is not included in that --- that part of the program in Quality Control. But there are connections to that system from, say, the emergency feed system which probably, in my mind, would be Q.C. The main system, no.

Q So if the name of the system appeared on a list of systems covered or partially covered by the program, your thinking would be that it would be the connection between that system and another safety system that was covered?

A Yes, sir.

Q I think you have been asked in a prior interview about an incident in November of 1977 in which the condensate inlet and discharge valves, condensate polisher inlet and discharge valves closed and caused a complete loss of feed water flow prior to the fuel loading. Do you recall that incident?

A I recall an incident. I don't know whether I recall both inlet and outlet valves, but I do recall a loss of feed water incident.

Q And do you recall that suggestions were made at that time that perhaps an automatic by-pass valve ought to be installed or that that possibility be reviewed by the GPU?

A I recall some correspondence requesting the review of that. Because Unit 1 did have a valve of that nature or that design.

Q Are you aware of your own knowledge as to how those valves, inlet and discharge valves, were originally designed to operate in terms of failing closed, failing open, or failing as is?

A I don't remember. I might say they are instrument error operated valves, as I remember; the outlets are at least. And I'm aware that there's --- there are --- there are design requirements for each of those kinds of valves which depended on the system.

There is also, I think, a loss of instrument air test in the test program which would have verified that. I don't know that I --- I didn't look at that test, but there would have been such a test for all air operated valves.

Q Once a plant goes commercial, can you describe for us the difference between the review that a design change in a system covered by the Q.A./Q.C. Program receives from the review received by a system that is not covered by that program?

A A system covered by that program, I believe, would require a quality --- an engineering and quality review before implementation of any change.

Q What's the nature of that review, how many reviews, who makes them, and what's the ultimate review by the P.O.R.C.?

A That review is covered by specific administrative procedures, which we do not have in front of us. But I think

that review consists of a formal change modification and a safety evaluation which would receive P.O.R.C. sign-off to verify there was no change in a safety system. Then that would allow the change to be implemented, and then that would also be reviewed by Reading Engineering.

Q So are you saying that at least for a major system change, the change gets an on-site review, a second review at Reading, and a P.O.R.C. review at some point before or after the change is actually made?

A When you say P.O.R.C., you are talking about the Plant Operations Review Committee?

Q Right.

A That would be the first review that was done on that change. And I'm saying if it was a major change, it would have to receive Reading Engineering approval, which would include Q.A. and engineering prior to being put in the plant.

A minor change mod might be --- might require a P.O.R.C. review first to be put in and reviewed afterwards by Reading. But both of them would end up being reviewed independently off site.

Q How about a change in a system that was not covered by that program?

A I think a minor change modification in the secondary plan, not Q.C., could be done with a maintenance department and possibly an engineer out of one discipline. Not a plant

review committee. I think major changes required an on-site engineering review.

Q And minor changes simply a maintenance department review by a single engineer who worked on it, is that right?

A Plus, I think, the supervisor of maintenance has to sign off on it.

Q How is it determined whether a system is covered by the Q.A./Q.C. Program or not covered? Does that basically correspond to whether a system is a safety system or a non-safety system under NRC regulations or guides? Or is there some distinction?

A The way I think it is is the final safety analysis, the F.S.A.R., describes the systems, and those are the systems that in our minds are considered in the analysis and the safety review of the plant. If any of those --- all those systems would be described in the Q.C. plan, any of them that affected the safety analysis, then that would have been the basic document.

Now, as far as generating specifics, I believe that the architect/engineer had a document designated Q.C./Q.A. for the building program and test program. And I think we took a lot of our specifics right from that because it came out of the same criteria.

Q Do you know whether the pressurizer relief valve that apparently stuck open in this accident was a piece of

equipment covered by the Q.A./Q.C. Program?

A I believe it was a Q.C. component. I don't believe it was a safeguards designated component. By that I mean it was Quality Control because it was connected to the reactor plant and so designated for purchase and installation by B and W. I don't believe it was considered as a safeguards requirement for the plant.

You're required to have a safety system redundancy in that kind of a requirement.

Q We have some information that at some point apparently prior to November, 1977 the fail as is feature of the condensate polisher inlet and/or discharge valves was disabled on each and every polisher unit. Is that the kind of change that could be made simply by the supervisor of maintenance and an engineer who worked on the system? Would you consider that a minor change?

A I would consider that a major change to the system, and I would say they would have to have at least an on-site review.

Q On-site engineering review?

A Yes. Now, let me say one thing. In the time frame you mentioned Met-Ed would have not been evaluating that type change. It would have been an architect/engineer, a GPU project review.

Q The procedures, therefore, would be different?

A The procedure would be somewhat different in that they should --- they would have to determine whether they changed the F.S.A.R., for instance, which would have caused other reviews. I might also tell you that when you say fail as is on this type of valve, I'm talking about if the air system that supplies its air fails.

The night of the accident when there was water in those lines, that may not be the same position as fail as is, as a failure position, because of the water being in these instrument lines would have caused a possible false signal to the valves, which might be two different situations.

Q Let me understand you correctly. Am I right that what you're saying is that the fail as is result depends upon the air system working correctly and that if there's water in the air system, the fail as is part of it may itself fail and make the valves fail in some other way?

A That's basically what I'm saying. I'm saying the fail as is is a loss of air --- that's what you arrive at --- as opposed to putting water in the line, which may cause the valve to position itself differently and the fail as is mode.

Q Than the fail as is design?

A Design mode. Off the record.

(At this time a discussion was held off the record.)

BY MR. FRAMPTON:

Q Just for the record, while we were off the record,

you were explaining to us that on the night of this particular accident if there was water in the instrument air system, that could well have caused the fail as is system to malfunction even if it had not been disabled previously, is that right?

A That's true. What I'm saying is that water in the instrument air system would have given a zero signal. The valve would have closed because it thought it had a zero signal. And there was water in the lines that night, which were found subsequent to the trip.

Q Do you recall a trip in November, a reactor trip in November of 1978, that was caused by a loss of feed water; that, in turn, was caused by some of these valves, condensate polisher valves closing; and if so, what do you remember about that?

A I know there was a trip in that time frame caused by a loss of feed water. I can't separate out in my mind whether these valves were the cause of the trip or we had a problem with these valves after the trip. Okay? These particular valves.

Q I believe that the cause of the valve closing was someone turning a switch which was represented, that person thought, as a light switch, is that right?

A That is right. Only I'm trying to separate in my mind --- I thought there were two problems that were within a short

interval with the feed water systems, and I thought that was only one of them. And I may be remembering it wrong.

There's documentation to that. We can go back and figure that out.

Q You think it's possible that the occasion in which the person threw a light switch or something he thought was a light switch was not the same incident that caused the reactor trip?

A I have no doubt in my mind that we threw a light switch and lost feed water. I thought there might have been two problems in that day or two interval there, and I can't remember both of them.

But there's no doubt in my mind that the guy threw a light switch and we lost feed water. I don't remember the reactor trip, but the effect would have been the same as far as feed water is concerned.

Q When you say he threw a light switch, he threw what he thought would be a light switch?

A He threw a switch inside the panel that he thought to be the light switch, and it was not.

Q Did you, in fact, investigate to see what that switch looked like?

A Yes. I personally went out and looked at that.

Q Did it look like a light switch?

A To me it did not.

Q Was it inside a walk-in panel?

A It was inside a walk-in panel which would have been where the man would have walked to do troubleshooting. So he could have walked in. It's a big enough panel. And he threw a breaker which he interpreted as a light switch.

Q And the breaker was, in fact, the system power for the condensate polisher system or some portion of it?

A It was power for some of these valves.

Q And the valves then shut?

A Yes. And I have been saying that I believe it was the inlet valve, but I could be wrong.

Q Your technical specifications on Unit 2, which, I believe, reflect the standard technical specifications, require that you have one senior reactor operator licensed individual and two reactor operator licensed individuals in the plant, a minimum of those three people, and two nonlicensed people or auxiliary operators. Those tech specs also permit one of the three licensed personnel to be gone from the plant for a period of up to two hours, I believe it is. Therefore, under your minimum requirements as you put forth in the technical specifications, you could operate the plant for up to two hours with only two licensed personnel in the unit, only one of whom would have to be in the control room.

Do you think if you were operating at the absolute minimum that that would be an adequate number of people to

handle a transient?

A Number one, I think we also have to have a shift supervisor on the station by those same technical specifications, and he has to be licensed on both units. So there's one other guy that I don't think you've mentioned.

Q Is that in the technical specifications ---

A That's in the drawing ---

Q --- or is that company policy?

A --- that's in the drawing technical specifications. So, therefore, there's one more guy required.

Now, the basic question on the transient, I think, the basic number of licensed people is adequate for a transient. I don't honestly think you could handle it with two auxiliary operators because I believe you would need more people out in the plant. You would probably need four to five. We would never have run internally with less than four.

Q Is that a matter of company policy, is it?

A It's a matter of superintendent's policy.

Q And does the superintendent have a policy requiring more than the minimum number of licensed personnel as well?

A I had one policy that I had implemented back around the turn of the year in 1978, and that was if there was a major evolution occurring in either of the two units, there had to be a shift supervisor in that control room.

The night in question there were, in fact, two shift

supervisors in the station because Unit 1 was heating up. And I required for major evolutions that a shift supervisor be devoted to that unit; in addition to the normal shift supervisor that had to be here by our technical specifications.

Q Let me go on to a different subject for a minute. You've been asked in a prior deposition in some length about budget cutbacks or requests to pare the budget and attempts to reduce budget expenditures for certain items.

I'm interested in a more specific question that has arisen as a result of a newspaper article discussing an alleged cutback of one third or one quarter in the maintenance or maintenance budget for Three Mile Island. Do you know anything about that alleged cutback?

A Yes. I am aware of the article. I was aware of it before the accident. I think it relates to Unit 1's refueling last year, the last refueling.

Q And what was the cutback which the article referred to, if there was one, or what did the article refer to?

A There was not a cutback to the magnitude of the article. I related the article to the fact when we cut back maintenance somewhat, we cut back the contractor, which were people that came in from the outside during the refueling. And I really felt personally that was a reaction to that.

There were budget --- there were budget --- there was budget pressure in the maintenance area.

Q Okay. Can you tell us what happened? You said there was a change of contractor and, as a result, some maintenance cutback.

A Not in the maintenance contractor. There was some cutback in the amount of work that the contractor was given. And I always felt personally that possibly some of the people that we bring in that were affected maybe reacted to that in a subjective way.

Q Who was the contractor?

A Catylitic is the maintenance contractor.

Q And when did this reduction in work given to them occur?

A It occurred during the planning stages or in the final planning stages for the Unit 1 refueling in 1978.

Q Can you tell me approximately what months of 1978?

A My guess is November and December and January.

Q Of '78/'79?

A '78 into '79.

Q And during that refueling period, the amount of maintenance work given to the contractor was reduced, is that right?

A Was reduced from the year before.

Q Was reduced from the refueling of the previous year?

A Yes.

Q The maintenance work is done during refueling

because that's the only time when a lot of maintenance on certain systems can be done, is that right?

A There's constant maintenance all year, but you're right. You know you're going to be in a down outage condition for that period of time, so you plan as much maintenance as you can do.

Q And that maintenance related only to Unit 1 and not to Unit 2?

A That maintenance that I'm talking about now related to Unit 1. At the same time we were sensitive to the number of contractors on the station, but more related to Unit 1 than Unit 2. We had planned to have more people in Unit 2 because we knew it was in its initial cycle.

Q Who made the decision as to the amount of maintenance that would be assigned to the contractor?

A On an item-by-item basis, the maintenance superintendent, Dan Shovlin, would have made the decision. If there was a major area; for instance, the turbine, where you were going to pull part of your turbine apart, that might be a separate contract coming out of the corporate office. Okay?

But as far as the day-by-day decision over who did what job, the maintenance superintendent had the say. I might have reviewed that decision, but he would have been the major input.

Q Well, you said there was a reduction in the amount

as opposed to the previous year. Who was the person or the body that set the total amount that could be spent?

A That would have been Jack Herbein and myself.

Q Did you make a total dollar determination?

A No. I think we --- we made a determination of what everybody wanted to do in their area. Then we looked at probably that amount and we looked at various levels, five, ten, fifteen percent cut levels and impact on specific jobs. From that would have evolved the decision over what jobs to do. That wasn't a new process.

Q When you said there was a reduction from the year before, was that a reduction in total dollar amount or was that a reduction in items, specific items, or both?

A There --- there was never an arbitrary number given to us. But there was pressure to look at the whole outage and do what was necessary. And that evaluation, which was done first by the operations people and maintenance people and then reviewed through senior levels, including myself, resulted in some dollar reductions.

In addition to that, we instituted some harder or more formal controls over adding jobs to the outage. And really from a dollar standpoint, that's where you could save the most dollars, was looking very closely on what you decided to do during the outage, because you're running a schedule and you're running a pretty complicated number of

items.

Q Do you know what the total decrease in dollar volume was in percentage terms relative to the year before? Roughly? Was it five percent? Thirty percent?

A I don't believe it was any more than ten percent.

Q Did you or Mr. Herbein receive any instructions from corporate management about a target figure for a cutback or target percentage?

A I believe we received a target value from O and M for the budget for the year, which would have included the normal running expenses and the refueling. And I believe we worked to that target.

At the same time I think you should realize that there are --- in refueling we have twenty-six areas, each of which has a coordinator. Each one of those people had a shot at reviewing and looking for cuts. And they gave us an impact statement of any cut. The impact statement could have said the cut can't be made, and the reason might be that the unit will be down three more times or will trip three more times this year or that system has been leaking and must be fixed.

So it's not a simple evaluation. I don't want to imply that it is. You could be looking at as many as twenty-six hundred or three thousand items.

Q Did you consider that this cutback affected safety

related work in work that was important to safety in any way?

A To my knowledge we did more work on the safety --- on the primary side of the plant than we did the previous year. I would not have cut any job that anybody in my staff told me would have affected safety. And I would not have negotiated that. That's no different this year than any other year.

Q Do you remember attending a yearly management meeting with NRC people in Region 1 about January of this year?

A Yes.

Q Do you recall whether you talked with them about any particular problems or weaknesses that you perceived in your own operations at that time? Are there any that stick in your mind?

A We had a general discussion most of the day which the NRC led. We discussed things like the security system changes. We discussed the standard technical specifications in Unit 1, which did not have them.

We discussed one area that we were sensitive to, and that was health/physics, if I remember right. And we told them we were sensitive to it.

Other people have been sensitive to it. And we asked them to help us look at that area and tell us if they see generic problems in the health/physics area.

We had an audit run by a separate organization. And

I also believe we were aware that our sister plant at Oyster Creek within the company had had some problems. And I think that was making all of us in management sensitive to health/physics.

Q Was that the audit done by N.U.S.?

A Yes.

Q And that was done because you felt that you had some weaknesses in the health/physics program and you wanted somebody to help you identify them?

A Yes.

Q Make recommendations?

A Wanted an independent evaluation.

Q Do you remember what you perceived, when you requested the audit, to be the primary problem or problems?

A I perceived that we were weak in manpower. I also ---

Q Are you talking about numbers of people or management?

A Numbers of qualified people. Both at a technician and at the foreman level. With two units and with the fact that we knew we were going to age, I felt we were going to eventually face health/physics problems which we hadn't --- which we couldn't have faced without an expanded staff.

Also a part of that audit was to look at the regulations and the procedures. I perceived that we had maybe a

lot more built in to our procedures than there were in the regulations and we might be diluting our effort sometimes. And that was another thing that I had hoped to get out of that audit.

And then also if we were doing the procedures that we had in the field, how well implemented were they? I wasn't --- in my own mind I had --- I had concern that we were doing what we said in the paper.

Q Prior to the accident were there any difficulties or conflicts between the Operations staff and the Radiation Protection staff?

A There was some ---

Q Tensions between them?

A There was some interaction between them. I don't know that tension is the proper word. But there were some concerns expressed by the health/physics people.

One or two of them expressed those concerns to me personally. I know them. And I was --- I was interested in getting to the cause of those concerns and determining that they were real. And then we would have to correct those.

Q What were the concerns in general? What type of concerns?

A Some of the health/physics people in their opinion felt that the Operations people didn't have the total respect for their job that they should and that they --- that they

might not want to fully implement every requirement in the procedures. And that would not have been in accordance with the way I do business. But there was some interaction.

Q In your experience is that a common or generic problem, that the health/physics people are sometimes regarded as overtechnical or overprotective by the Operations types?

A It's my experience that the Operations, Maintenance, and health/physics types have constant interaction. By that I mean that they are all tuned in or experts in their area, and they don't tend to think about the other guy's area as fully as they probably should.

Q Did you take any particular action on these complaints that were expressed to you to try to reinforce the concerns that these people had expressed to you?

A Each time a concern was expressed --- each time a concern was expressed to me, I would investigate it myself. And I would have --- once or twice I believe I talked to the shift supervisors and the Operations supervisor about, you know, the absolute necessity for the health/physics program to be fully implemented. Sometimes those complaints came to personalities, and it made it hard to separate.

I also must say I would have depended on the unit superintendent, who has daily interaction with those three groups more than I did, at times to help with that.

Q Were there occasions prior to the accident when

people were observed or reported violating radiation protection procedures?

A There were no cases I knew of where there was a documented violation. Okay? A lot of what you're saying I've --- I used to hear. And if I did hear, then I would call people in and review it.

It would have been very easy to evaluate something that was documented. I was evaluating something that people were saying and trying to separate the personalities from the issues.

Q Without expressing any opinion about this, let me try to get into this with you by a couple of questions. I'm impressed that you say you personally wanted to deal with any conflicts or reported violations of procedures.

But on the other hand, one might ask whether the station superintendent is the right person to be doing that, whether perhaps it ought to be done on a lower level. Why did you attend to these things yourself? Is the Radiation Protection group or function separate enough that you as the station superintendent were the only one that could really gopher these problems, if there are problems?

A Number one, the normal day-to-day activity in a normal interfacing is the unit superintendent's responsibility, and he should separate out some of that stuff. And he did.

I think you must remember with health/physics

reporting to a new superintendent --- we had them reporting to Ad/Min superintendent, Dave Limroth, who was not in place very firmly, did not understand all of the history and the people.

I think prior to him they reported to me because of the fact they were a common service. I couldn't have left the unit superintendent decide who got what health/physics support. That was part of my role here, was to decide priorities.

There was a lot of things that I'm sure that they straightened out that I never heard about. Once or twice just, as I remember it, some of the foremen had come to me and talked to me about what they thought were some problems. And that is the point where I would have got in to assure myself that if there was something we didn't know, that we were pursuing facts.

I would have involved Jim Seelinger or Joe Logan, depending on which unit, and I would have held --- I would have held them responsible for helping with the corrective action.

But I would have deemed it important enough for me to understand it.

Q Is this the kind of problem that has to be solved by somebody who is above the Operations level in the sense that if the Operations people just hear it from the health physics people, they won't believe it quite as much as if they hear it from somebody who's above them as well as above the health/physics department?

A I think there's a tendency for the unit superintendent to want to operate more than there would be for me. So, therefore, I think some of these properly should come to someone outside.

I didn't --- if they come to me, I would have assumed they were shut off from within, and I would have done something if I could have determined that it was objective. That's one of the reasons, by the way, that we had had health/physics reporting to a separate superintendent --- we're implementing that --- to give them that independency.

Q Let me go back and ask you a follow-up question about the condensate polisher system and review of non-Q.A./Q.C. system changes. Do you think that it would be useful to extend the internal review or the NRC's review of systems into the secondary side of the plant further than it exists today in light of the fact that it seems to have been the secondary side of Unit 2 that caused the majority of the problems in the test year and that served as the triggering events in this accident?

Do you have any thoughts about that?

A I don't know that I would want to say that you should go through the full safety review type concept. But I believe that a more formal engineering review and follow-up on the secondary plant would be advantageous, both safety-wise and from a standpoint of reliability.

What I'm trying to say is that I don't want --- I don't believe that it's necessary to go through redundancy and separate power sources and seismic type design. But I do think from an engineering standpoint that more emphasis and independency of review would be advantageous.

Q The P.O.R.C. for Unit 2 advises you, does it not?

A Advises the unit superintendent.

Q Directly?

A Yes.

Q Rather than the station superintendent?

A That's right.

Q Did you ever attend P.O.R.C. meetings for either unit as station superintendent? Have you on any regular basis?

A I have not on any regular basis. I would have participated if requested, and I would have participated if I felt there was something that I needed to participate in. A change --- a major change in technical specifications would be an example.

You also must remember that I was the original Unit 2 superintendent, so I grew up and helped form the Unit 2 P.O.R.C.

Q As unit superintendent, did you attend the P.O.R.C. meetings on a regular or semiregular basis?

A I did when I was Unit 2 superintendent only. I assumed the position of station superintendent in May of '77,

and at that time I had both the unit superintendent position and the station superintendent position.

Q And I believe you attended a number of General Office Review Board meetings as an observer, nonmember, is that correct?

A I attended them as a station superintendent and, in fact, was responsible for preparation for that.

Q How did you communicate the results or the wisdom of these meetings to site personnel?

A By assuring that a formal memoradum was put out to both units involving each meeting. Basically by the P.O.R.C. chairman of one or both of the units.

Q The P.O.R.C. chairman would attend the G.O.R.B. meetings?

A Him or a senior engineer. And I always assured that one engineer from each unit at least minimum was there and that the minutes were distributed to both units with action items.

Q When you say the minutes were distributed, somebody from each unit was responsible for distributing the results of the action items throughout the unit management?

A That's right.

Q On some distribution list?

A That's right. That's true. Now, the G.O.R.B. itself distributed minutes. I'm talking about internal action items which we developed at the meeting which would have

probably had more items than the G.O.R.B. had in it.

Q Is there a file of these internal action item memorania or results memoranda someplace? Do you keep those or ---

A In the period of time when I was the --- in an active superintendent's role, I would have kept my own G.O.R.B. file. I think that internally amongst the P.O.R.C. coordinators there are some files.

Q It would be the P.O.R.C. coordinators because the G.O.R.B. reviews the P.O.R.C. activities, is that right?

A The P.O.R.C. coordinators, because the engineer would have probably gone back, and that guy works for the P.O.R.C. chairman and he helps with that type of function.

Q He would naturally be the person responsible for communicating the G.O.R.B.'s thoughts down back into the unit?

A He would be the guy responsible for taking those minutes and getting them issued, because he's the guy that distributes things like that. Not from a technical standpoint.

(At this time a short recess was taken.)

BY MR. FRAMPTON:

Q On the record, Mr. Miller, you want to add something to one of your previous answers?

A We discussed G.O.R.B. action items. We might also have --- we might also have documented those items in a P.O.R.C. action list, which was a running list of open items

that the P.O.R.C. followed and closed out.

Q Let me ask you a couple questions about your relationship with the Training Department. Was that under you ---

A No.

Q --- as station superintendent?

A No.

Q What was your relationship with the Training Department?

A Training was under the manager of Q.A., and my relationship would have been an indirect one. And I would have viewed my responsibility of, one, resolving problems, for instance, that the Operations Department might feel existed in training, in licensed training, or in the area of personnel problems in training.

I was involved in it to that type of degree.

Q When there are things that came up as a result of operating experience at T.M.I. or things that you learned about in the operating experience of other plants that had some relevance for training, how would you convey that to the Training Department and who would you talk to?

A If I learned something, I would have sent it to the Training Department head. There were other mechanisms that did not require my participation that I believe caused documents to go to Training, review of plant reports and so forth. I --- I wasn't specifically aware of that.

Q What position does Mr. Zechman hold?

A He's the department head in Training.

Q Was there a time when he divided his duties between doing that and trying to study for his, I think, senior reactor operator license?

A Yes. I was --- I was involved in some of the discussions with Dick when he did divide his time. And we had also assigned the functions that he could not perform to the group training supervisors who were under him.

Q When was that decision made, and what were the considerations involved, if you recall?

A The decision for him to obtain a license was a decision that he made and that we supported and encouraged. And that encouragement was strong encouragement, and he agreed with that.

Now, he was in a licensed program for probably well over a year; and, in fact, he had, to my knowledge, taken an exam and had not fully passed it. And we were providing him the time to go through his areas where he needed improvement.

I might also say that Dick had some [redacted] and we were also attempting to work his schedule out so that he could resolve them.

Q Did you have any system internally as station superintendent other than the visits that you may have made in connection with organizations like the B. & W. users

organization for accumulating operating experience from other plants and sifting through that and communicating the most relevant or important items down into the plant management?

A I didn't have a set of systems set up as station superintendent. I assumed and believed that the unit superintendents had the system set up.

Q Do you see that as a unit function as opposed to a Met-Ed management function above you or parallel to your operations someplace else?

A I saw --- I saw a major responsibility in the corporate office for distributing correspondence which they were privy to that I might not be. I also would have held the unit superintendents responsible for communicating internally and also to each other.

Quite frankly, in the plant, our exposure I would have expected to be a little bit more limited than possibly the corporate office, which, I think, is on distribution for more items than we are at the plant.

Q In your deposition before the President's Commission Staff, you mentioned a continuing problem of attendance at training, a problem which I'm aware of in other industries as being a substantial one. Can you describe what that was that you were referring to? Is that training lectures or were you talking about something else?

A I believe what I was referring to was that prior to

1979 in the Operations Department, while we were finishing the Unit 2 start-up and while we were in a five-shift setup, that the classroom attendance for lecture series in the Training Department was not what I wanted it to be.

Q Can you amplify on that a little bit? Are you talking about the content of lectures or ---

A No. No. I'm not talking about the content of lectures. I'm talking about the participation on the schedules proscribed of our people in the training.

Q This was not for requalification?

A Some of it was requalification. But you've got to remember that if you miss the lecture, you can get a package of material to study. That to me is a second option of doing it.

Q. Personal attendance was not uniformly required, then, at the lectures?

A It was required, but there was an alternative if you did not attend the lecture. And I was trying to enforce the primary requirement as opposed to the alternate.

Q Did you succeed?

A No.

Q What happened as a result of these efforts?

A We got permission to go to the sixth-shift operation in January, and I was in the process of measuring success right down to the auxiliary operator level. But I had not

done that yet or could not measure it yet because in the early months of the year the operators went to the simulator, which meant they left the site. So they were there. Then the refueling occurred.

So I was not really going to be able to get a good measurement until the middle of the year of whether we had had the impact that I wanted. I expected we would, but I wanted to verify it.

And the unit superintendents were --- were really enforcing that on the line basis. They were on the line, and they had the same philosophy.

Q Mr. Seelinger discussed with us some of the changes that have been made recently in the procedures for simulator training at B and W in Lynchburg that he was involved in, I understand. Are you aware of those changes generally?

A Not to the degree he is. Not recently. You must also remember he used to be the head of Training. It's an area he's comfortable in and is knowledgeable in.

Q Prior to the accident, what was your view of the adequacy and effectiveness of the simulator training that operators here got at Lynchburg, and has that view changed since the accident?

A Prior to the accident I felt that it was essential that our operators go there once a year, even though the law says once every two years. I felt it was effective training.

I didn't --- I didn't feel it was deficient training. I felt that it could be improved, but subsequent to the accident I think it could be markedly improved.

Q Do you know whether there was ever any consideration by Met-Ed of purchasing its own simulator?

A I believe there was consideration early in the years of the design of these units or construction of them. There was current discussion on of a mini simulator.

Q When you say current, you mean postaccident?

A Preaccident.

Q Preaccident?

A There were some people in the company that thought it could be justified. But we were not in a buying phase.

Q What is a mini simulator?

A Well, to build a full simulator would be a significant monetary investment for these two units. A mini simulator would have possibly been a way for maybe ten percent of that cost of building a simulator on the site that we could use for operators, simulating some of the vital core and primary system functions.

Q It's just simply not as elaborate as the one at Lynchburg, for example?

A It would be a lot less than the one at Lynchburg, but it could provide a lot of functions that you couldn't just do while the plant was operating.

Q Let me turn to the subject of Unit 2's declaration of commercial availability.

(At this time a short recess was taken.)

BY MR. FRAMPTON:

Q Mr. Miller, let me show you what we've previously marked as Exhibit 14, dated September 19th, 1979. Page 2 of this exhibit is a set of signatures which appear to be the signatures of the Commercial Operation Review Board, some of which are dated December 18th and December 21st, 1978. Your signature is on that page 2 with the date of December 18th, 1978.

Can you tell me what it was, as you understand it, that these people were signing off on?

A I believe they were signing off on the formal minutes from the October 26th, 1978 Commercial Review Board meeting.

Q If that was the case, they would be signing off on minutes that said that the criteria adopted and the problems to be dealt with as identified in the October 26th meeting were the proper ones and the subcommittee appointed was the subcommittee that was going to make the final decision on commercial operation. Is that the case?

A That's the case. There were certain items that were considered significant enough to be considered by a sub-committee. Another intention of my signature and the rest of

these people would have been that the commitment that had been made in these minutes that were not considered negative or detrimental to becoming commercial were going to be met. For instance, completion of work items that would not be involved in safety or availability considerations.

Q On the third page of our exhibit, which is page 1 of a list of criteria, there's a paragraph that says 2.0 conclusion, and the conclusion expressed in that paragraph is that it's determined that the unit is technically ready for commercial operation.

Do you understand that the committee members were all signing off on that as of December 18th, or was that conclusion a conclusion that was going to have to be reached by the subcommittee after December 18th based on some tests that still were to be completed?

A At the October meeting, as I remember it, we were still at low power. And I believe that we felt in the statement you read me that the unit was technically ready to go commercial.

I don't believe at the time we signed that that we knew at what megawatt rating that that would be done. To take the unit commercial for a power rating of less than full power --- that has been done at other places --- I don't think that was our intention.

I'm saying technically, what we had seen at that

point, the unit was ready to go commercial.

Q At that point do you mean October 26th?

A No. I mean in December. October 26th we recognized we had some tests to do, and we based any conclusions on the test acceptance criteria being met.

Q When you're saying in December the unit was judged ready to be declared commercially available, are you talking about December 18th or December 28th? The date at which all the committee members signed on page 2 or the date on which the subcommittee members signed on the last page, that is Supplement A.

A My conclusion would have been that the unit was not totally technically prepared to go commercial until the December 28th or 29th signatures. But that the only items that would have been to be considered would have been items that developed in that interim as opposed to the review that had been conducted in the other years' items that was completed.

Q Do you know why the criteria that are reflected in the October 26th package, which we've marked previously as Exhibit 13, were developed?

A To my knowledge, in Unit 1 when we went commercial, we went through a similar review, and at that time there was not a formal company procedure. And I believe it was our intention as a company to evaluate the technical and

organizational readiness of a new unit and to cover the areas defined in the document so that senior management had an awareness of the technical and organizational structures.

And I think that's true for both coal and nuclear. To assure that the staff and that the plant were ready to be an operational unit.

Q Had you participated in a similar review of such criteria in connection with Unit 1?

A I had participated in the review of Unit 1 as a member of the test program staff.

Q Do you know who developed and drafted the criteria that were used for Unit 2, that were written down here for Unit 2 in Exhibit 13?

A Exhibit 13 is for commercial presentation, which I had a lot to do with its generation. Inside of that is the formal company procedure. But I don't know who wrote this. I commented on it a year or two ago.

Q You're involvement in the preparation of the document, that is, Exhibit 13, was in coordinating the preparation of the various presentations of things that were left to be done, is that correct?

A That's essentially correct. I helped develop the specific agenda and assignment of parties. Plus my own statement is contained in the document relative to the unit's readiness.

Q There's a reference in Exhibit 14 on page 4 to a list of outstanding items, and this sentence appears: "Plans exist to blitz this work during the screen outage."

Do you know when the screen outage for Unit 2 eventually was in time? Was that in late December?

A I believe the screen outage was in the latter half of December.

Q What does this sentence refer to, if you know, blitzing these items during that period?

A It refers to the construction completion items, and the word blitz means an aggressive work force to complete them. If you look at the open items on construction completion, there were a lot of items that required some work and there were a lot more that required some paper verification.

The blitz was a commitment to me to reduce the number of items significantly during that outage, both work items and items which remained to be verified completed, meaning the physical work was done but the verification was not signed off.

Q Was that, in fact, done during the screen outage?

A I can't remember specific numbers, but it was pursued during the screen outage and it had been pursued in previous outages. If you look at this document, I think somewhere in here you can find that there were, at the beginning of this process, like ten thousand items which had

been reduced to something like twelve hundred items. And the major portion of those twelve hundred were verifications as opposed to physical work items. That was the basis of my acceptance of that commitment.

Q Was it your understanding that the unit could have been put into commercial operation prior to the time all of the NRC power ascension tests were required or finished, I mean, if you had desired to do so?

A I'm not specifically aware of any discussion that occurs or required discussion to declare a unit commercial. I would have viewed it that if we had tested to the power level we were going to operate at, that we would have been allowed to declare the unit commercial.

But I would not have had the decision to do that. Declaring a unit commercial is not my decision.

Q Were you ever told or did you have any understanding as to whether there were any financial or tax advantages to the company that would arise from declaring the unit commercial prior to the end of a calendar year as opposed to a few days or a month after?

A In the deposition that, I think, I gave to the President's Commission in the August 7th time frame this was discussed at length. And I still stand by what I said there, and that is that I quite honestly felt --- I don't know the exact mechanism --- but I felt there was an incentive to get

the unit commercial.

I felt at the same time that that wasn't my area. In other words, I felt some pressure as a member of the organization to help get the unit commercial, but not to the extent where it affected my judgment.

Q How was that pressure expressed or communicated?

A I think in the emphasis --- I think in the --- the interest by probably senior management in the unit at that time. But that interest also existed in the unit during the period in November when the unit was down for an unknown period.

That interest --- it would be hard for me to honestly say that I didn't feel that interest, but I was never --- I was never given any indication that anything that happened to me in my job had anything to do with whether the unit went commercial.

I think also there's a certain pride that gets involved in making a date that you've set, and we targeted 1978, and we had talked about it through the year. I think there was some amount of pride internally naturally about it.

Q Do you remember if there was an earlier target date prior to the time that you were down during the summer to replace the steam relief valves?

A Oh, I believe there was a target of March of 1978 at one time, and I think there was a target of September. We

had missed the targets consistently.

Q Are you aware of any shortcuts that were taken or tests that were shortcutted or omitted or hurried up in order to meet that year-end target date?

A I'm not aware of any --- I was not aware and I specifically was told there was no tests required by the F.S.A.R. or the regulatory agency's safety systems that were cut.

There was, I think, for instance, on the integrated control system, which controls the unit for, say, transients, and there might have been some transients --- in other words, take the plant up and down at certain rates that were not conducted. But it would have been based on the integrated control system and on the fact that the condensate polishers were very sensitive to power change from a chemistry standpoint.

There were some tests that were not, I don't believe, fully conducted because of that sensitivity. We had agreed to do them at a later date. But none of a regulatory or safety nature that I was aware of.

Q When you say you had agreed to do these at a later date, were these tests that the NRC normally requires to be performed and that you had to get a specific exemption from the NRC in order to do them later?

A No. The NRC specifically knew which tests we would

do, and none of those were changed. These are internal tests that we had decided to run to give us more assurance that the transient capabilities were there.

Q Were those tests that were set out in this document, Exhibit 13?

A I don't believe so.

Q Was there a test, internal test schedule like that that was drawn up?

A There is an internal master test schedule that's drawn up that would identify who wants the test and who requires it. And that would have identified any test that we had committed to in the final safety analysis.

And none of those tests, to my knowledge, were compromised. There were other tests in that document on every system that's out there that we had written that we could have reviewed and agreed to run later, and I would not specifically have known all of those.

If you look under the criteria of testing in this document, it also addresses the master status of testing.

Q Were you ever told or was it communicated to you indirectly that, although it was desirable for the unit to go commercial before the end of the year, that that was not necessary if some safety related problem intervened?

A It was communicated to me very clearly internally that I should set the schedule that I needed to attain a

hundred percent power when I could safely attain it. The questions that I was asked were strictly what is my schedule and what is the reasoning.

Q My question is whether anybody ever said to you in substance, "Look, we all know that this is desirable and we want to do it and we're breaking our backs to do it; but you should understand that if it can't be done safely, we're not going to do it."? Do you ever recall that being communicated to you by anyone in substance?

A I don't recall exact words of that nature. I would say that that's understood between --- that would be clearly understood between Herbein and myself.

I also said in my deposition in August that, I think, Herman Dieckamp talked to me once or twice in December of that year. He very clearly assured me that he had no interest in pressuring me. He strictly wanted to know status and what our schedule was without any --- any --- any thought of influence in judgment as far as the unit.

Implied in that in my mind is the consideration that safety would not be something that would be negotiable.

Q Did anyone ever complain to you or through someone else to you about test schedules being too short for a test to be performed properly or other schedules being too short to do these maintenance or other work relating in any way to safety?

A No.

BY MR. ALLISON:

Q All right. Mr. Miller, back to Wednesday evening when you went home, could you tell me if at that time you considered the incident to have been terminated or the plant had been brought under control or --- well, let me just ask you to describe in your own words how you considered that aspect on Wednesday night.

A That's hard to remember. I think I considered we were stable and that we --- I think I more approached it from the standpoint that we had a long term situation on our hands. I don't really remember specific thoughts, but I think stability was probably the one thing that I would have felt.

And by that, I mean control stability and protection of the public looked like it was --- had been accomplished. I think I would have also in my own mind been knowledgeable that there were a lot of problems to be faced. But I really didn't think about them.

Q Okay. Do you recall at any time in the first few days or week taking any special precautions to avoid inadvertent opening of a containment isolation valve or something of that nature to cause a release?

A I thought those first three days we verified the line up and instituted internal Ad/Min controls to be assured that no valve operations were conducted. We may have even

tagged the panel even. I know we did, but I just can't remember exactly when.

Q Do you remember racking out any circuit breakers?

A I remember discussion of that and racking certain breakers out. We had to evaluate that carefully, though, and that was part of the reason that we didn't just start to rack out breakers.

Q Do you remember if any were actually racked out?

A I think some were, but I can't remember which.

Q On Thursday, March 29th, can you remember any examples of decisions that you made, actions that you authorized with respect to plant operation that day?

A On Thursday?

Q Right.

A I really can't.

Q From another interview, I believe, I have you met with Dick Wilson at about seventeen hundred on Thursday. Does that sound correct?

A I think I met with him and a couple other people.

Q Do you remember discussing at about that time with Mr. Wilson and the other people the idea that the situation was a lot worse than you had been thinking earlier or at least that he had been thinking and that a lot of outside help would be needed, a lot of assistance was necessary?

A I remember something along that line. But I think

that at that time Mr. Wilson's group was beginning to think of analyzing and investigating this thing, and I think my opinion was that we weren't quite far enough through it to do that yet.

That's all I can remember. I don't know what his memory would be. I was thinking it was too soon to analyze, and I didn't think we were through it yet.

Q I believe that that's what he said, that he went there to talk about analyzing it, and it was later in the evening that he came to agree with you that it was still at a point of trying to recover.

A We traditionally have analyzed and reviewed these types --- not these types, but transients of a significant nature --- and I thought we were too soon worrying about analyzing, because I didn't think we were through it yet. And I didn't want to start interviewing operators and senior people.

That was part of the discussion that night that we were talking about it. I very firmly didn't want to do that and wouldn't do it.

Q Okay. Can you recall any specific instance where the management's role, that would be you or Mr. Herbein or the people in the observation center, what have you, where that role changed with respect to the plant operators? And by plant operators, I mean the shift supervisors and the

people who were in watching the control room.

Can you recall a specific instance where the relationship changed and you told them --- perhaps it was assumed earlier --- but you told them, "Don't change the plant unless you call me first or, of course, unless it's an emergency," where you or the management exercised positive control over what the operators were doing?

A I think that problem --- I have trouble remembering it specifically, but I believe that may have occurred both the 28th and 29th and maybe the 30th. And I can remember the 28th. I think there was one instance --- one instance where we shut ventilation off.

There were other instances probably that I can't remember where I would have wanted to be --- I would have told the people inside the plant not to respond outside without telling me so that I --- I still considered myself the senior guy in the control room, and I wanted to be sure that there was no direction applied that I wasn't sure was evaluated and was where we wanted to be.

And I don't mean that to say that I should be the guy who decided whether it's right. I just wanted to be sure that I understood the logic since I still considered I was the senior guy in the control room.

Another example might have been the transfer of water to Unit 1. Now, that occurred somewhere on a Thursday

or a Friday, discharge of the waste treatment plant to the river. Items like that I probably would have put my own personal hold on unless I was called, if I was here or not, to ensure that there wasn't a communication error made.

Q So you can't remember specific instances ---

A That occurred.

Q It seems that --- yes, other than these. If you can characterize what you've said, it sounds like you think you were giving instructions of that nature as early as Wednesday.

A Yes.

Q And on through the incident as other things would happen to key you to say that?

A Yes. That's --- that's as good as I can remember. I don't know what the other people's memories say about that, but that is the way I remember it.

Q This is my last question. There is a sheet attached to your I.E. interview transcript. It's a sheet of recommendations that you made up and gave to the interviewers shortly after the accident. And if I recall, in that sheet you indicated that you were frequently called upon on the 28th to answer questions from senior company, State, and Federal officials and that had been a hinderance of some significance in explaining things to senior people outside, who had a legitimate interest, obviously, but you had to be called away to explain what you were doing.

I guess what I want to ask you here is just your opinion. Is that a significant problem that warrants some kind of corrective action in emergency planning, in your opinion?

A In my opinion --- and I've said it in more and better terms than that --- I think that you've got to have a man within the plant that's designated as the communicator so that people don't insist on talking to the guy in charge. Because from a time standpoint, he physically can't accomplish his duties and accomplish the informing-type role, to inform people. And the people that need to be informed have a legitimate right to be informed.

So I recommended that we have a communicator, and I think that our plan is being changed to designate a person with enough technical and communication skills to do that.

Q Will this person in your new plan be, perhaps, the second senior man in your organization, something of that nature?

A That might be --- that might be too senior a man. I'm thinking more of a senior engineer that's been drilled and trained in that. My thought there being second or third in command might be needed for the real event.

MR. ALLISON: Okay. That's all I have.

BY MR. FRAMPTON:

Q Mr. Miller, thank you, very much, for your time and

your cooperation. I just want to ask you one final question.

In the interviews that you have had before with the I.E. inspectors and with the President's Commission and in the questions that we have asked you here today, are there any subjects or areas that haven't been explored at all, that nobody has asked you any questions about that you think are important to the extent or the ramifications of the accident that we ought to know about? Something that nobody has shown any interest in that you think somebody ought to show some interest in?

A I would say that's --- that's an encompassing question, and it's hard to give a specific answer. There's one area that I feel hasn't been looked at from a personal standpoint, and that is that this type of situation is, I think, analogous to a war situation, an emergency, and it lasted for a significant period of hours.

And I think the psychological factors that go into stress and reaction have got to be looked at and the lessons learned harder than I have seen today.

And what I'm saying is the evaluation of the personnel and staffing with that in mind and also the --- when you draw conclusions about actions or draw conclusions about actions in the future, I think that has to be considered.

I'm not so sure that the people knowledgeable in that are involved in the process of evaluation. They could be

involved and I'm not aware of it.

I've not seen too much consideration for that, and I believe that's a real world thing that occurs. It takes a strong person to supervise and manage this type of a circumstance so that it does proceed along an organized, defined path.

BY MR. ALLISON:

Q Could I follow up on that just a little bit? I've heard suggestions of this. I'd like to just ask you a couple of questions about whether you think surprise and psychological factors were an important thing here.

I've heard an analogy made between this situation and, let's say, a sailor on a battleship in Pearl Harbor where he's trained to load the machine gun and shoot it and he goes ahead and does that. In this case you followed your emergency plan. But it doesn't sink into him what's really happening.

And I'm wondering, do you think that that kind of a phenomenon might have affected the actions of you or anyone else in the plant that day, maybe the inability to believe that you really had damaged the core, that there was boiling going on in there? Could that have shaded your view of anything that happened during the day and which it did?

A I personally feel that the operators were very affected by that syndrome. I'll call it a syndrome. That's

--- that's really ingrained into you to follow your procedures and your training.

I think the further back from the operators you get, I think there tended to be less of that impact --- of that factor in your mind. I didn't feel at all constrained by previous training or anything. I, in fact, formed the group that I formed in the hope, in my mind, of running the operation from a step or two back, which I thought was the best point to analyze from.

My concern over psychology and stress was that I think you have to look real close at individual's memories and individual's reactions with that in mind. That's all. And I'm not sure that's being looked at.

I do agree with you that's --- I think that hung the operators up very hard. Especially in the early hours. I could still detect pressurizer level being a concern at the times I was there. I think that just goes back to the pressurizer shouldn't be cooled. I wasn't as hung up on that.

So I agree with you. I think it's hard to evaluate.

MR. ALLISON: Okay. That's all.

MR. FRAMPTON: Thank you, very much.

(At four o'clock p.m. the deposition was concluded.)

I hereby certify that the proceedings and evidence are contained fully and accurately in the notes taken by me in this proceeding and that this copy is a correct transcript of the same.

Brenda Smyth Hamilton

Brenda Smyth Hamilton, RPR