

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

1 In the Matter of:

2 IE TMI INVESTIGATION INTERVIEW

3 of Joseph J. Chwastyk, Shift Supervisor, Nuclear
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6
7
8

9 Trailer #203
10 NRC Investigation Site
11 TMI Nuclear Power Plant
12 Middletown, Pennsylvania

13 May 21, 1979
14 (Date of Interview)

15 July 10, 1979
16 (Date Transcript Typed)

17 232 & 233
18 (Tape Number(s))
19
20

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21 NRC PERSONNEL:
22 Robert D. Martin
23 Dorwin R. Hunter
24 Owen C. Shackleton
25

894 352

1 SHACKLETON: This is an interview of Mr. Joseph J. Chwastyk. Mr. Chwastyk
2 is presently the Shift Supervisor, Nuclear for the Metropolitan Edison
3 Company assigned to the Three Mile Island Nuclear Power Station. The
4 time is now 8:06 a.m. eastern day light time, Monday, May 21, 1979.
5 Present to conduct this interview of Mr. Chwastyk from the U.S. Nuclear
6 Regulatory Commission is Mr. Robert D. Martin. Mr. Martin is the Chief,
7 Nuclear Support Section No. 1, for Region 2. Also present is Mr. Dorwin R.
8 Hunter. Mr. Hunter is an Inspection Specialist, Performance Appraisal
9 Branch, Inspection and Enforcement, Reactor Construction and Inspection,
10 presently assigned to Region 3. My name is Owen C. Shackleton. I am an
11 investigator assigned to Region IV.

12
13 This interview is taking place in Trailer No. 203 which is parked just
14 outside the south security gate of the TMI facility. Just prior to
15 going on tape for this interview, I presented to Mr. Chwastyk a two page
16 document prepared by the U.S. Nuclear Regulatory Commission which sets
17 forth the purpose and scope of this investigation and explains the
18 authority of the U.S. Nuclear Regulatory Commission to conduct this
19 investigation. It also advises Mr. Chwastyk of his rights to refuse to
20 be interviewed and of his rights to have someone present of his own
21 choice during the course of the interview and his right to refuse to
22 give any type of a signed statement. On a second and last page of this
23 document there are three questions and Mr. Chwastyk answered all three
24 of these questions in the affirmative. At this time I am going to
25

1 repeat these questions for the record and Mr. Chwastyk, if you would
2 sir, please respond to me orally.
3

4 SHACKLETON: Did you understand the document that I am referring to?
5

6 CHWASTYK: Yes, I did.
7

8 SHACKLETON: And we, the U.S. Nuclear Regulatory Commission, have per-
9 mission to tape this interview?
10

11 CHWASTYK: Yes, you do.
12

13 SHACKLETON: Would you like a copy of the tape?
14

15 CHWASTYK: Yes, I would.
16

17 SHACKLETON: All right sir, we will provide that to you at the conclusion
18 of this interview. And now Mr. Chwastyk, for the benefit of all the
19 persons who will be listening to this tape for the information you are
20 providing to the Commission would you please just briefly give us your
21 background and education and work experience regarding your present
22 employment in the nuclear industry.
23
24
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1 CHWASTYK: I joined the Navy in 1962. Went to the Navy nuclear power
2 school in 1963. I spent the next five years on various nuclear submarines.
3 I got out of the Navy at the end of 1967, joined Met Ed as an operator
4 in a coal fired station and at Crawford Generating Station. 1969 I
5 believe it was I came down to TMI as a control room operator. I went
6 through the TMI nuclear school which was approximately a year in duration.
7 Then we went into the prestartup test program and around 1972 or 73 I
8 made shift foreman, Unit 1. That same year I became a shift supervisor
9 in Unit 1. I went through the pre-testing and startup of Unit 1 as a
10 shift supervisor and later on of course into Unit 2.

11
12 SHACKLETON: Now, I will turn the meeting over to Mr. Hunter.

13
14 HUNTER: Joe, you prefer to be called Joe?

15
16 CHWASTYK: Joe.

17
18 HUNTER: Okay Joe, would like to go back to the 28th of March and as
19 best you recall the time you came onsite, normal shift, or were you
20 called in early? And get yourself to the Unit 1 or Unit 2 control room
21 and we will proceed on that.

22
23 CHWASTYK: Okay, I was working the 3-11 shift that week. I was called
24 in early. I had heard the reports on the radio of a problem. I called
25

1 into the Island and talked to Gregg Hitts who was at Unit 1 at the time.
2 He suggested and I agreed that I would probably be working all night.
3 So there was no since in my coming in unless they called me. They did
4 call me about a half hour later and that was somewhere in the neighbor-
5 hood of 10:00 - 11:00 o'clock I am not sure which. After the call I
6 came into the Island. I went to the Unit 1 control room because I did
7 not know what the status was in Unit 2. Of course everybody was in
8 breathing masks and things like that. I really couldn't get too much
9 information on what was happening in Unit 2 so I found out what I needed
10 to get to the Unit 2 control room which is essentially a regular mask.
11 I then proceeded to the Unit 2 control room. That was somewhere in the
12 area of 11 - 12 o'clock. I am not sure exactly.

13
14 HUNTER: Okay Joe, when you got to the Unit 2 control room, what did you
15 see? People, numbers, activity?

16
17 CHWASTYK: There were quite a few people there and there was of course a
18 lot of activity going on. What exactly, what I did when I got there and
19 that is the only thing I think I really could talk about is what I...
20 Zewe was still there, Bill Zewe was still there and Mike Ross and Gary
21 Miller. They were essentially running the show. I tried to find out
22 exactly what the status of the plant was without affecting anyone's...any-
23 thing they were doing. So I just sort of looked around the control room
24 until I had a feel, I thought I had a feel of what was going on. And I
25

1 told Bill then that I would take over the console. Because he was busy
2 in other areas.

3
4 HUNTER: Okay Joe. Can you give us an idea and I realize the recol-
5 lection in time involved, can you give us an idea of the parameter that
6 you looked at and what you saw as best as you can remember? Pressurizer
7 pressure, level that--

8
9 CHWASTYK: Pressure was around 500-600 lbs. I believe at the time and
10 apparently just before I had gotten there they had gotten on the core
11 flood tanks floating on the reactor vessel, head, reactor coolant pressure
12 like I said was between 500-600 lbs. The temperatures the T-hots were
13 all pegged. I couldn't tell what they were. The pressurizer temperature
14 was low also. What I had found out what they were doing was injecting
15 through the normal makeup water high pressure injection lines and trying
16 to maintain, the numbers I am not sure of but they were trying to
17 maintain a flow rate through the vessel with the core flood tanks holding
18 the pressure. The flow was through the vessel and out the pressurizer
19 electromagnetic relief valve which they were opening periodically.

20
21 HUNTER: Okay Joe. Looking at the electromagnetic relief valve, would
22 that mean that the electromagnetic relief isolation valve was in fact
23 open at that time?

24
25 894 357

1 CHWASTYK: Yes.

2
3 HUNTER: And were they at that time cycling the power relief valve EMOB
4 open and closed or was it...it was actually just being maintained opened?
5

6 CHWASTYK: No, they were actually opening and closing it.
7

8 HUNTER: Okay. The...was the power within the electromagnetic relief
9 valve, was it in fact working properly at that time or at least it was
10 performing what they wanted to do?
11

12 CHWASTYK: It was performing, as far as we could tell, it was going open
13 when they gave it an open signal and going closed when they gave it a
14 close signal.
15

16 HUNTER: Could you tell after it was closed if it was still leaking?
17

18 CHWASTYK: No.
19

20 HUNTER: It was in fact reducing flow to some degree?
21

22 CHWASTYK: Yes.
23
24
25

894 358

1 HUNTER: Okay. The core flood tanks you mentioned were on when you came
2 on.

3
4 CHWASTYK: Yes, the core flood valves were open and like I said the
5 pressure was somewhere in the area of 550 lbs.

6
7 HUNTER: Okay. What kind of key, early in the morning through other
8 interviews at least it has been revealed that the core flood tank valves
9 were energized and closed earlier. When you came on the core flood tank
10 valves were open and they were on the core flood tanks so they were
11 obviously were energized and back open at the time.

12
13 CHWASTYK: Yes they were.

14
15 HUNTER: You -- do you recall any discussions about core flood tank
16 valves during the turnover?

17
18 CHWASTYK: No, the only discussion there was was of course describing
19 the fact that the core flood tanks were floating on the vessel and the
20 flow was going as I mentioned earlier from the high pressure injection
21 pumps into the reactor and out the pressurizer relief.

22
23 HUNTER: Joe, Hunter speaking again, was the pressurizer vent valve
24 being used at that time, to your knowledge?

1 CHWASTYK: I don't really remember. It may have been.
2

3 HUNTER: Was the spray valve being used as a flow path?
4

5 CHWASTYK: No.
6

7 HUNTER: You were going to say something I didn't mean to cut you off.
8 These flow paths then being into the reactor coolant drain tank and then
9 out the flooded tank and out the tank at the time of the reactor building
10 sump and the water then was standing in the reactor building. Okay?
11

12 CHWASTYK: Yes.
13

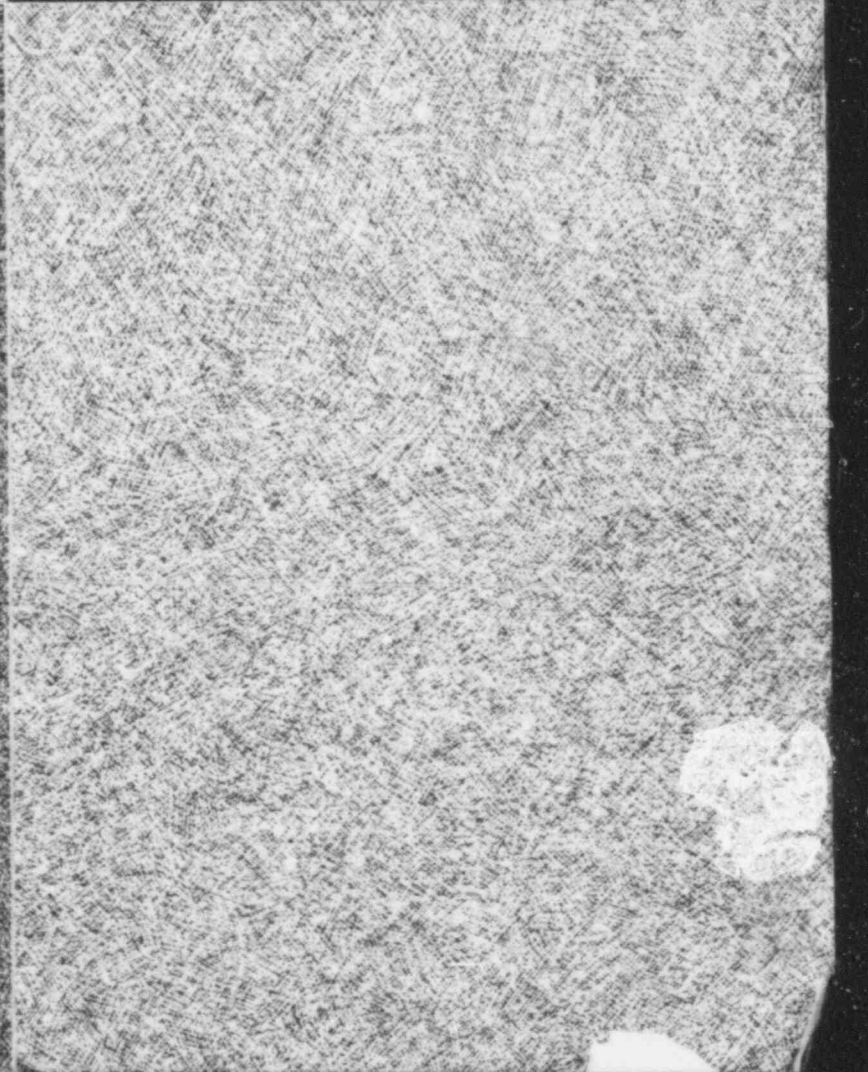
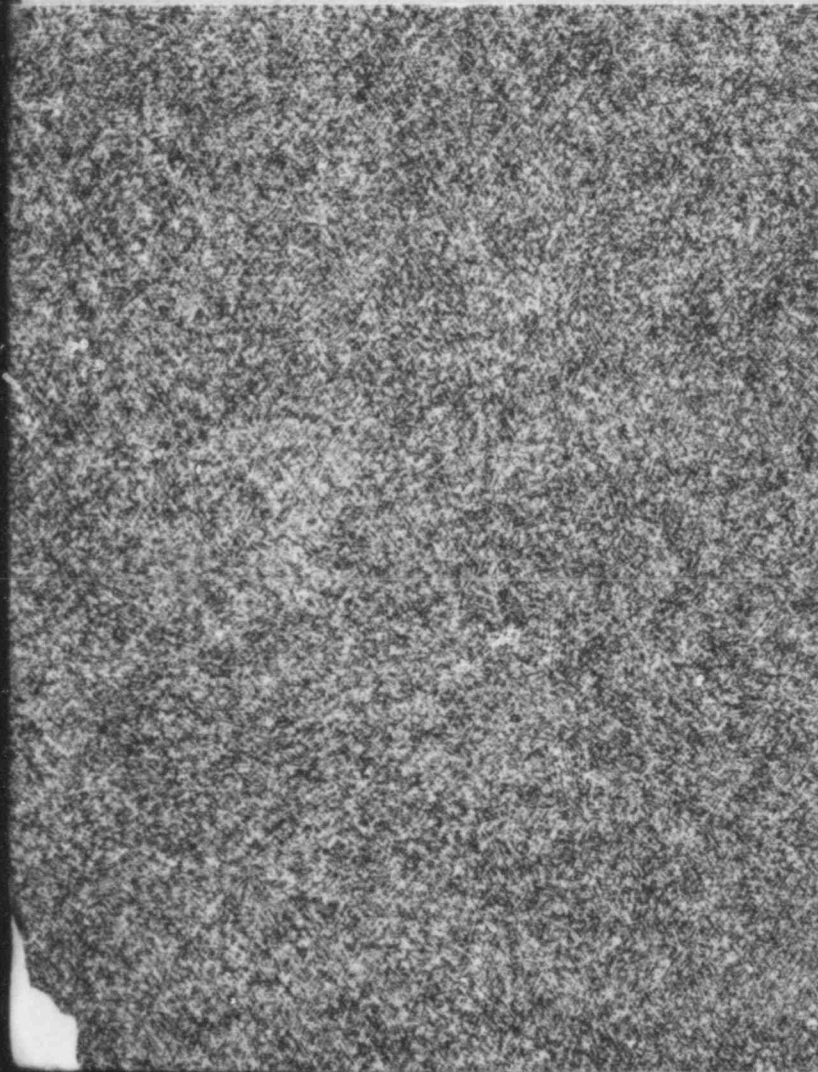
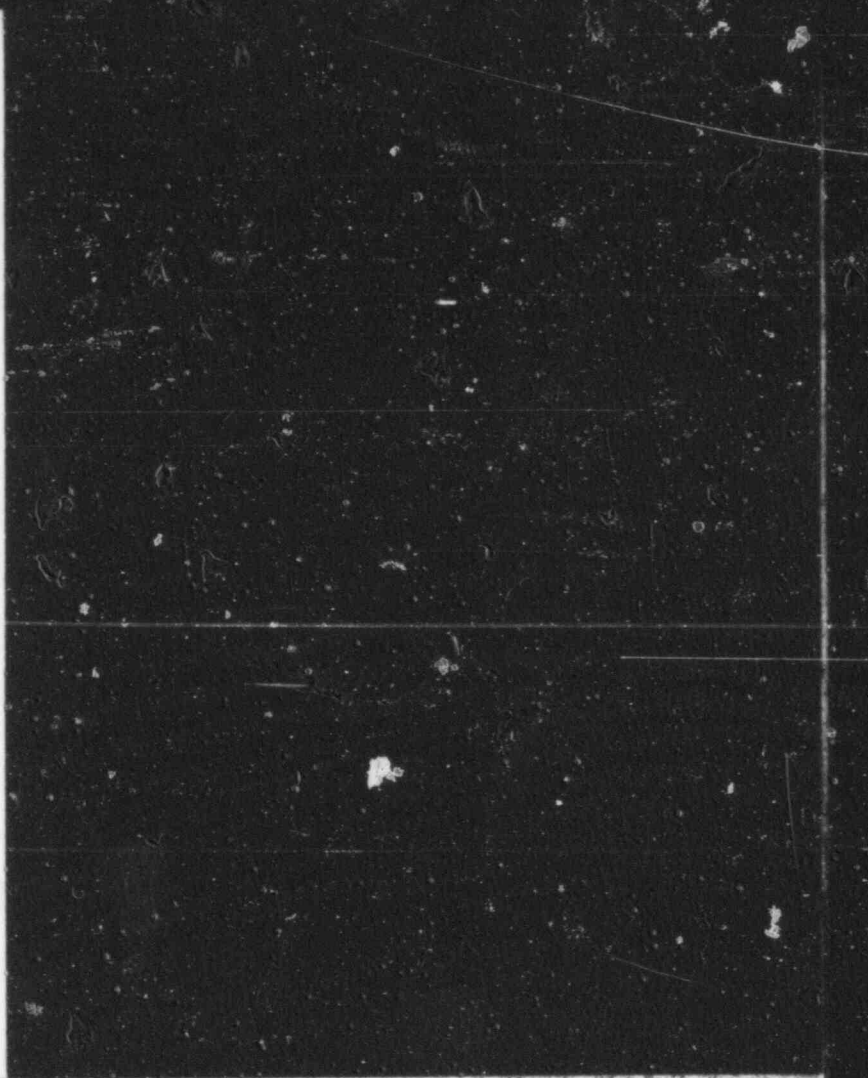
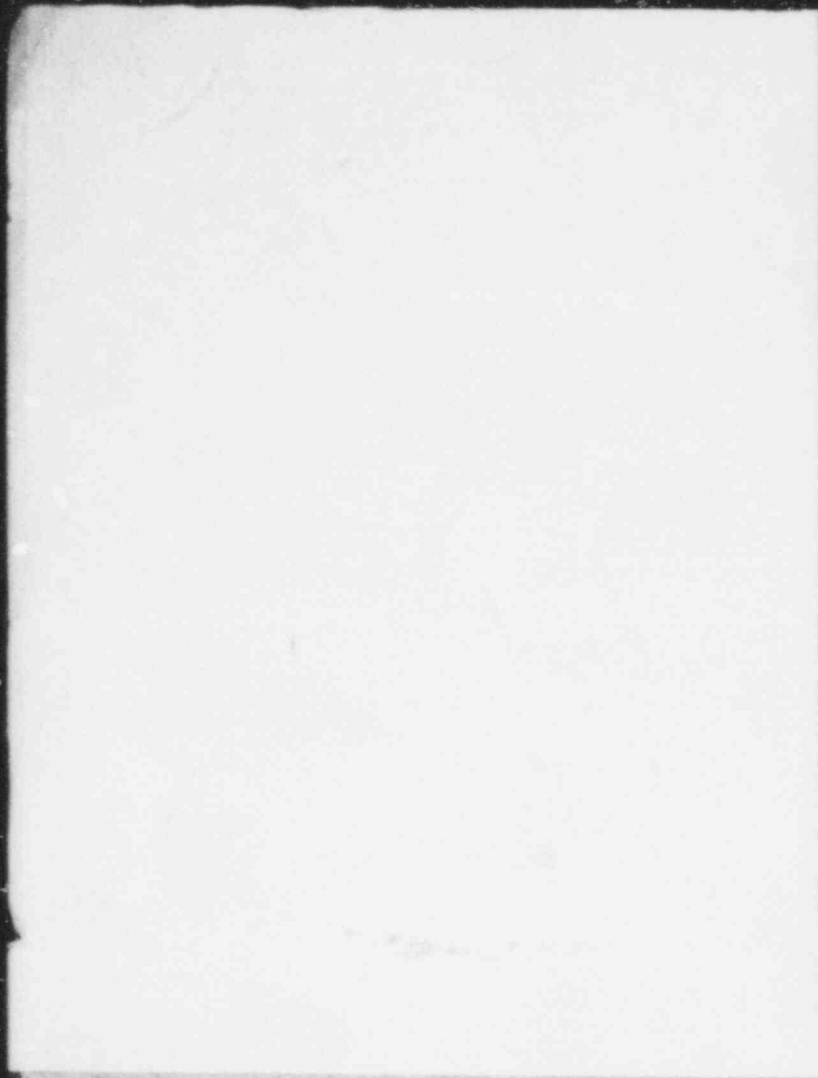
14 HUNTER: Shortly thereafter, there was a reactor building pressure spike
15 and as I understand you had the panel at that time.
16

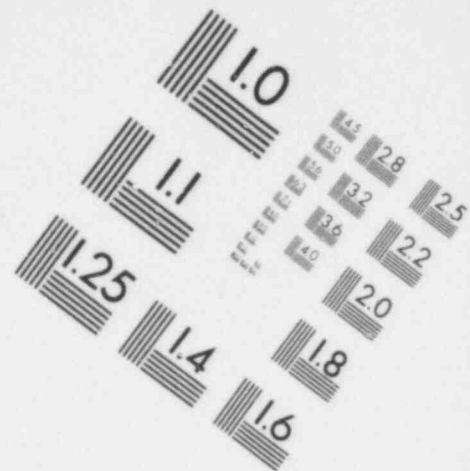
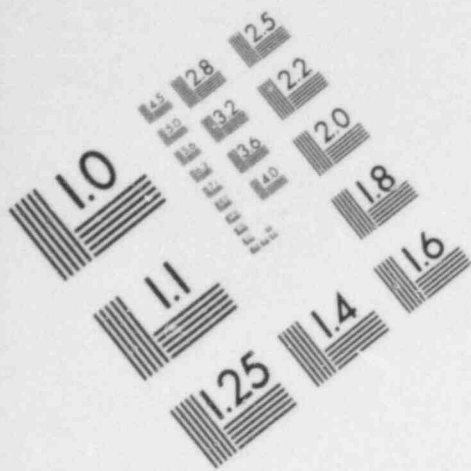
17 CHWASTYK: Yes, I did.
18

19 HUNTER: Were you aware of that spike at that time?
20

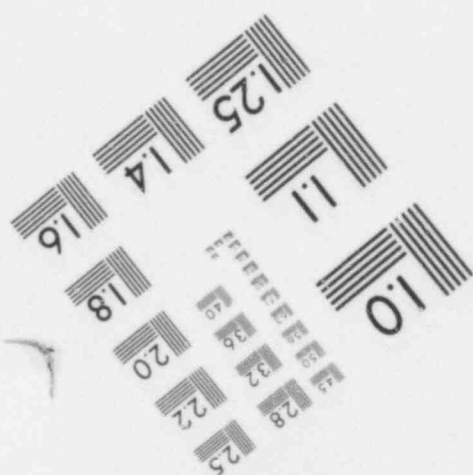
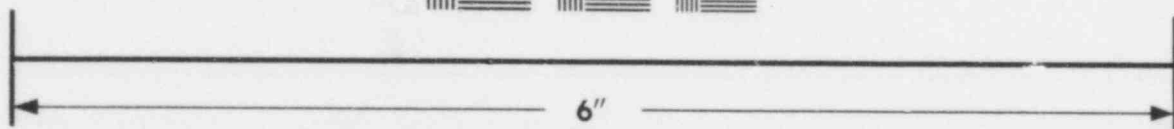
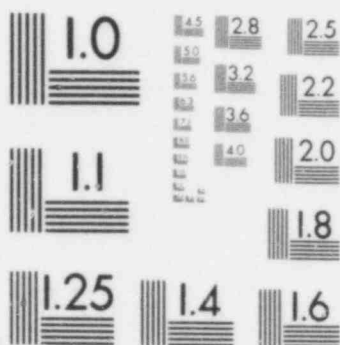
21 CHWASTYK: Yes, I was.
22

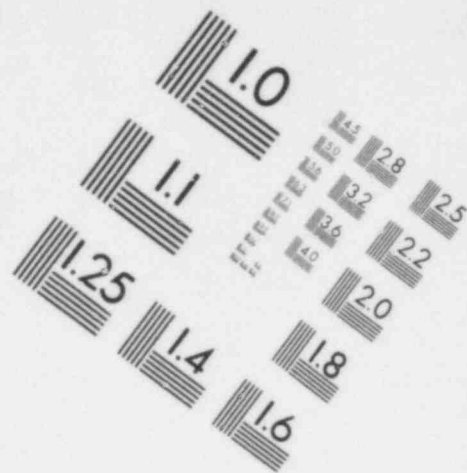
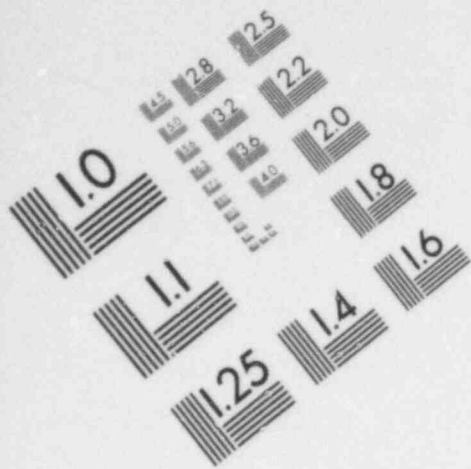
23 HUNTER: Can you describe your reaction, your feelings what you thought
24 it was at that time?
25



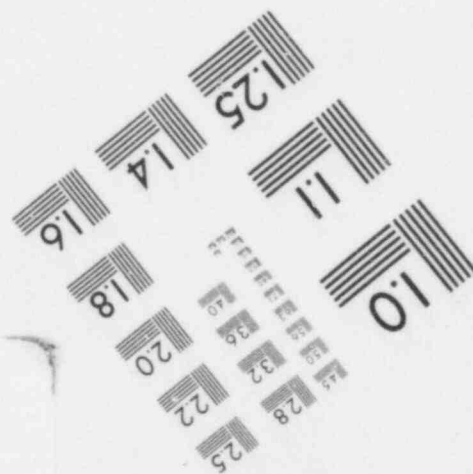
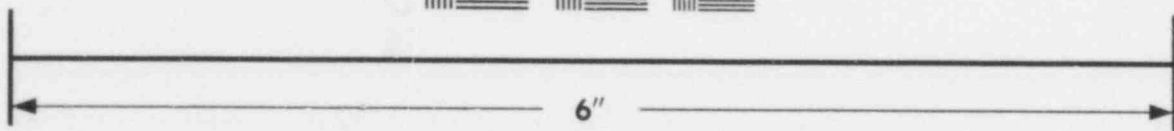
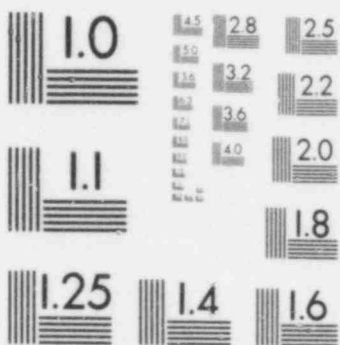


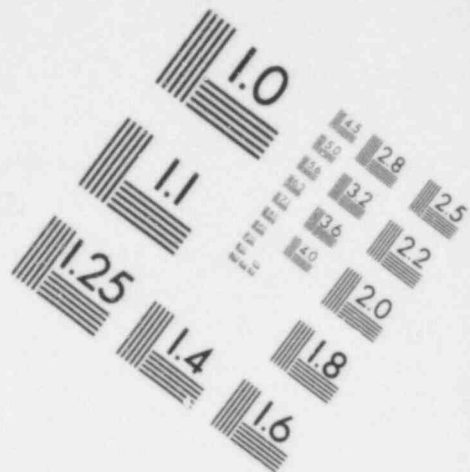
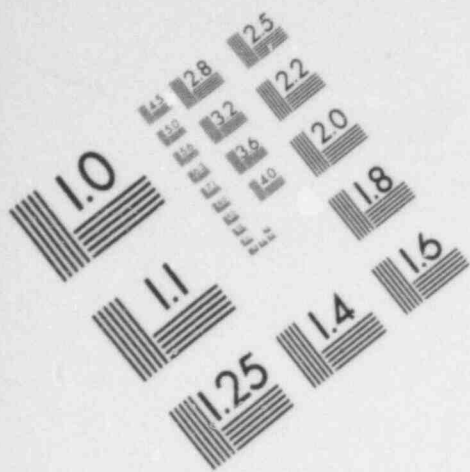
**IMAGE EVALUATION
TEST TARGET (MT-3)**



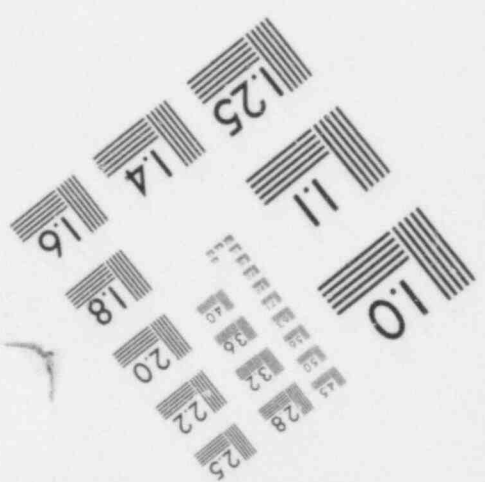
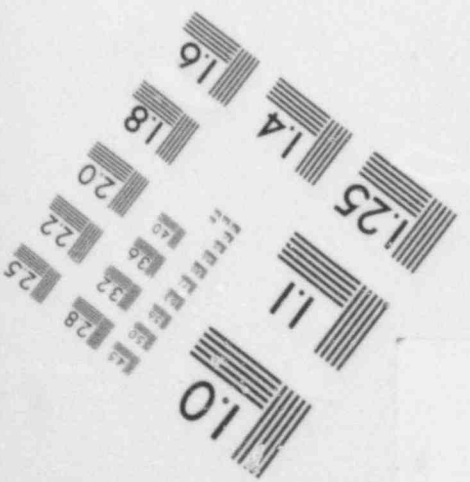
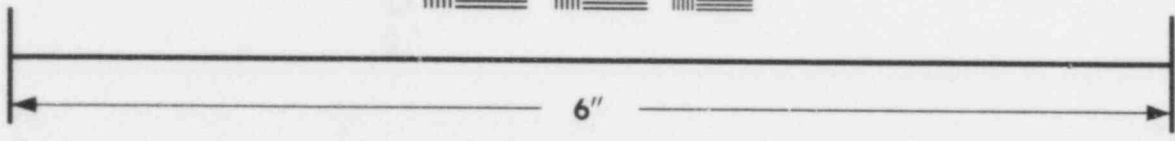
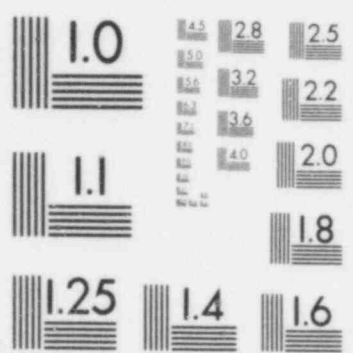


**IMAGE EVALUATION
TEST TARGET (MT-3)**





**IMAGE EVALUATION
TEST TARGET (MT-3)**



1 CHWASTYK: My reactions, I actually saw the recorder, the pressure
2 recorder on the building, spike upward. I didn't know what caused it but
3 the fact that the spray valves started indicated to me that we actually
4 had some kind of pressure spike, either on the sensors on in the building
5 itself. I was not sure. The spike of course started all the building
6 spray pumps, decay heat pumps, etc. The pressure spiked up and it was
7 only up very briefly, as a matter of fact, a couple of heart beats. I
8 know because I missed those heart beats. It came right back down again.
9 I still did not know what caused it so I sort of hesitated on securing
10 all the equipment that started until I thought I had a better feel for
11 what was going on. Of course, I never did because the pressure came
12 down and stayed down, and then I ordered them the building spray pumps
13 and the DHV8s and everything closed. Stopped.

14
15 HUNTER: What was the -- the pressure came back to what level Joe?
16

17 CHWASTYK: It came back to somewhere around zero where I am not sure.
18 It came back to just about where it started from as a matter of fact, I
19 remember that.
20

21 HUNTER: Okay, we...it looks like the system had run about four or five
22 minutes when it was finally secured. Would you consider that amount of
23 time, the time it took you to evaluate the situation and see what was
24 going on?
25

1 CHWASTYK: Well, no that is -- I saw what was going on. I did not know
2 why. That is why I hesitated on shutting the emergency equipment off.
3

4 HUNTER: Okay.
5

6 CHWASTYK: Until I could be absolutely sure that I did not need it.
7

8 HUNTER: When you shut the containment spray pumps off, you had gone up
9 to the 30 lb. trip point or 28 lbs.
10

11 CHWASTYK: Yes.
12

13 HUNTER: You had gone back to two lbs. or close to where it was when you
14 started. You ended up shutting that system off. Can you describe that
15 process for shutting that system down, reset, and the position of the
16 pumps and the valves?
17

18 CHWASTYK: Okay, in this case, after I had come to the conclusion that I
19 did not need the emergency equipment I had asked the, I believe it was
20 Chuck Adams, the shift foreman, who was in the back of the panel, I
21 asked him to shut the DHV8s. About that time Bryan Miller another shift
22 supervisor came over to the panel and asked why the building spray pumps
23 were running. I told them to shut 'em down by going full lock because
24 of course at that time I decided that we did not really need them. And
25

895 002

1 essentially, we did not reset the high pressure injection. We went to
2 the whole lock position on all the emergency valves. Now when the man
3 was going to close DHV8s of course we still had the -- but I am not sure
4 of this...I think one of the CROs reset the high pressure...the building...
5 channels for reactor building pressure.
6

7 HUNTER: If you did not reset those, the 108 valves would come back open
8 as soon as you let go of the switch.
9

10 CHWASTYK: That is right and I think after we tried to close the 8s they
11 started to go back open and that is when I had to zero...reset them.
12

13 HUNTER: And the containment spray pumps were in full lock?
14

15 CHWASTYK: Right. We put those directly in full lock so that we did not
16 have any problem.
17

18 HUNTER: Joe, did you take them back out of full lock as soon as everything
19 was reset?
20

21 CHWASTYK: After everything was reset yes I did take them out of full
22 lock. I remember taking all the equipment out of full lock just in case
23 something else did happen and we would have it in standby.
24
25

1 HUNTER: Do you have any feel for that, the time frame?
2

3 CHWASTYK: Oh, I have no idea. It was...there was a lot of things
4 happening. I remember it was just an oh-by-the-way type thing. How,
5 exactly how long after the spike I don't know.
6

7 HUNTER: Do you -- who turned off the containment spray pumps? Speci-
8 fically.
9

10 CHWASTYK: Bryan Miller.
11

12 HUNTER: Bryan Miller, okay. All right, at that time as far as the
13 cause was strictly a channel or pressure spike in the containment but
14 you did not have any feeling for what would cause that kind of problem?
15

16 CHWASTYK: No, I did not.
17

18 HUNTER: We have indications that some electrical buses tripped and that
19 same time, during that the same time frame possibly do you recall that
20 event?
21

22 CHWASTYK: Yes. I recall something about it but I think at the time I
23 just dismissed it as having anything to do with the reactor building.
24
25

895 004

1 HUNTER: Okay, I just wanted to make sure that we clarify that. You sat
2 there at low pressure for a period of time okay, on the core flood
3 tanks, and you had the console?
4

5 CHWASTYK: Yes.
6

7 HUNTER: And you were receiving your orders from who at that time?
8

9 CHWASTYK: For any changes I had to go through Gary Miller who was
10 essentially the man in charge of the control room.
11

12 HUNTER: How did Mike Ross fit in at that time?
13

14 CHWASTYK: Mike Ross apparently had been called in because Jim Floyd,
15 our normal Unit 2 shift supervisor operations, was down in Lynchburg, VA
16 at simulator training, and Mike had been called in. Apparently Mike and
17 Gary...Gary was running this, was totally in charge of it but Mike had
18 been running the control room, and, I guess I am not sure because I
19 wasn't there, was giving suggestions to Gary on what should be done.
20

21 HUNTER: Was Gary giving you the instructions and then you were instruct-
22 ing the changes in the control room?
23
24
25

895 005

1 CHWASTYK: Well, yes. Any changes that would come up, now. At this
2 time we were still just maintaining this flow rate through the vessel,
3 the core flood tanks, floating on the vessel.
4

5 HUNTER: Okay Joe, did you recall any specific instructions for main-
6 taining a certain level high pressure injection flow?
7

8 CHWASTYK: Yes, I think 80 gallons a minute seems to be whatever I
9 remember.
10

11 HUNTER: Eighty gallons a minute? Total or ---
12

13 CHWASTYK: If I remember correctly it was eighty gallons a minute.
14 Maintain 80 gallons a minute flow through the vessel. I don't think it
15 was any further instructions than that.
16

17 HUNTER: Again you had the makeup panel. I want to make sure that that
18 was your particular position.
19

20 CHWASTYK: Yes.
21

22 HUNTER: Again, we are talking in the time frame when we were down on
23 the core flood tanks and they had been depressurized. You were floating
24 on the core flood tanks and they were there. We can see this is 11:30 -
25

1 12:00 o'clock, 1300 right in that time frame. Apparently it went on for
2 quite a while...there is a building spike by the way...and then the time
3 frame that the pressure is sitting barely fairly stable. Do you recall
4 maintaining that high pressure injection flow rate for a substantial
5 period of time or at any time during that day did you receive word from
6 somewhere from like Unit 1 or Gary Miller or a source to increase high
7 pressure injection flow?
8

9 CHWASTYK: Well, later on of course, when we went to go solid but that
10 was afterwards somewhere in the neighborhood of 3 or 4 hours later.
11 Prior to that I suggested to Gary Miller that we continue the high
12 pressure injection but stop venting through the pressurizer so we can
13 get the heaters on to establish a bubble back in the pressurizer and
14 sometime later Gary came back to me and told me go ahead and do that, to
15 maintain your flow through the vessel but stop venting and get the
16 pressurizer, get a bubble back in the pressurizer.
17

18 HUNTER: And at time Joe, you closed which valve?
19

20 CHWASTYK: We closed the electromagnetic and the isolation valve I
21 believe.
22

23 HUNTER: So you stopped the flow using both valves? Put the heat, did
24 you put the heaters on at that time?
25

895 007

1 CHWASTYK: Yes. I know one thing I don't remember. The heaters were
2 actually on at that time I think they were off, and we turned them on.
3

4
5 HUNTER: We have a printout on the heater breakers so we may be able to
6 put that together. Okay. So they were either on or you put them on at
7 that time?

8 CHWASTYK: That is true.
9

10 HUNTER: Did you in fact verify the pressurizer temperature was increasing?
11

12 CHWASTYK: Yes, we did.
13

14 HUNTER: And where would you verify that, would you watch it on the
15 computer or where would you read it?
16

17 CHWASTYK: I read it on the console temperature indicator.
18

19 HUNTER: Right on the console?
20

21 CHWASTYK: Right.
22

23 HUNTER: Then there was, do you recall when that particular...when that
24 particular change in velocity occurred generally? I am trying to get...maybe
25 there was an event...?

1 CHWASTYK: It was not very long after the spike. Okay, and the reason
2 was I saw the spike of course and it had correlated with Fred Scheimann,
3 who was the shift foreman who was on the console at the time, had just
4 opened the electromagnetic relief valve and the spike occurred.
5

6 HUNTER: Question, Joe. The electromagnetic valve and/or the block
7 valve?
8

9 CHWASTYK: No. The block valve at that time was still open.
10

11 HUNTER: It had been opened from early this morning so you fellows were,
12 in fact, using the electromatic valve itself?
13

14 CHWASTYK: Yes.
15

16 HUNTER: So it corresponded with that particular activity?
17

18 CHWASTYK: That is right, it corresponded with that particular activity
19 and it was some time after the event...someone mentioned that they had
20 heard a loud noise.
21

22 HUNTER: Did you hear the noise?
23
24
25

895 009

1 CHWASTYK: No, I did not hear the noise. But that was the point at
2 which I had assumed that we did have some kind of explosion in the
3 building. And that is when I suggested to Gary Miller we no longer
4 cycle the electromagnetic relief valve because it had...the explosion...or
5 rapid rising pressure in the reactor building corresponded to opening
6 the electromagnetic relief valve.
7

8 HUNTER: Okay, did it cross your mind at that time Joe that...that...was
9 fuel damaged? I assume that during your turnover that you realized that
10 you had damaged the core to some degree or did you have any idea?
11

12 CHWASTYK: At the time I wasn't aware of how much damage, like there was
13 not a very good turnover. It was like I said, everybody was pretty busy
14 and I didn't want to stop anybody from what they were doing so I just
15 tried to get a feel for what was happening by looking around and asking
16 the operators at the panel what they were doing. Up until the time or
17 sometime after the explosion and it dawned on me what it was, I didn't
18 know how much core damage we had. Of course, that plus later on when we
19 did start to draw the bubble in the pressurizer at about 100 and...as
20 the pressurizer level was coming down due to the increased temperature
21 in the pressurizer, at about 150 inches I had instructed the control
22 room operators to open up some of the 16s further, okay so that we...it
23 looked like our pressure was dropping so rapidly that essentially I
24 thought at the time we were short some water in the reactor coolant
25

1 system. Maybe I had better explain that. As you draw the bubble in the
2 pressurizer, what happens is the water of course heats up and that
3 produces steam. That steam, the pressure in that pressurizer starts
4 increasing and forces the water from the pressurizer into the loops. Up
5 until this time I was under the impression that we had lost some water
6 from the reactor coolant system and the candy canes, though the hot legs
7 were essentially steaming, so after we started to cool the bubble,
8 normally your pressurizer, if your pressurizer is solid, that is normally
9 on a let's say after a fueling outage or something like that, we started
10 out with about 380 inches to draw the bubble. That is usually enough
11 water in the pressurizer to fill the candy canes. Now I knew at this
12 time that we had lost some water. I did not know how much. So at about
13 150 inches instructed the CROs to start opening up further on the i6 B
14 to get some more water into the reactor coolant system to compensate for
15 some of this water we had lost. We had -- now you have to remember this
16 is two months ago and I haven't really talked too much about it, but
17 we...I am not sure what the flow rates were. I had the flow rates
18 logged by this time we had a data taker standing behind the panel and I
19 ensured that everything I did I passed to him so he would get it logged.
20 At 150 inches we started to increase the flow through the reactor coolant
21 system but even with the increased flow the pressurizer level kept
22 dropping to the point that I was almost going to lose my heaters. In
23 other words, at 80 inches of pressurizer heaters would automatically
24 deenergize. So I stopped, I had them shut off the heaters, at somewhere
25

1 around 90 inches I believe it was because the level still coming down
2 pretty rapidly even though I was injecting at a fairly rapid rate and I
3 don't remember what that rate was. I had them then continue the injection
4 while and of course after I shut the heaters off, the pressurizer levels
5 started to come back up again. Now I remember the number that we injected
6 was around 20 thousand gallons of water. That is when I started...as a
7 matter of fact at 20,000 gallons of water we started to see the A reactor
8 coolant system loop fill and that is when it started to dawn on me that
9 we had evacuated quite a bit of water out of the reactor coolant system.

10
11 HUNTER: Excuse me, Joe, did you know that the A loop was filling...were
12 you watching a temperature indicator or what were you watching?

13
14 CHWASTYK: Watching a T_{hot} temperature, would come down, and T_{cold} would
15 start going up.

16
17 HUNTER: Okay.

18
19 CHWASTYK: Matter of fact, it happened a couple of times that because of
20 the problem with maintaining the heat in the pressurizer we had, and
21 again the sequence is a little fuzzy, but after I had them shut down the
22 heaters, I think that is about time we started to see some change in
23 temperature in the legs. Then after I had them shut down the heaters
24 that temperature went back to where it have been before. That happened
25

1 a few times during this evolution where the temperature would come down
2 on a T_{hots} because we could not maintain the proper pressure or level it
3 would go back up again, but eventually, and again times I am not sure
4 of, we did get enough water in there so that we ended up with about
5 20,000 gallons of water in there and A reactor coolant system loop full,
6 or it indicated full with temperatures. The problem was B would not, we
7 could not get that one filled for some reason. At the time I was a
8 little in the dark and why the one loop filled and the other one did
9 not. Since then I have had some time, of course, to think about it and
10 I think it was just simply due to the fact that we had a lot of more
11 noncondensable gases in that B loop that kept the pressure in the B loop
12 higher than the A so we could fill the A we just were not getting enough
13 pressure and volume in there to overcome the noncondensable gases that
14 we had in the B loop. Again, that is something I thought about afterwards,
15 but at the time we did get the A loop filled and I...like I say I had
16 asked...we had marked down specifically what the levels were in the BWSP
17 because that is where we were taking the water from and I noted time...it
18 was about 20,000 gallons of water we had pumped in and at the time and I
19 am not sure that the A loop was completely full at that time or not. It
20 had been full, like I said earlier the temperature would come down on
21 T-hot but then because we could not maintain pressurizer levels the way
22 we wanted to go it would back up again. This happened a few times
23 during the day. Exactly what the sequences were for each time it happened
24 I don't remember.
25

1 SHACKLETON: All right gentlemen, we are just about the end of this side
2 of the cassette. So we will terminate the interview just temporarily
3 and the time is now 8:34 a.m., EDT.
4

5 SHACKLETON: This is a continuation of the interview of Mr. Joseph J.
6 Chwastyk. The time is now 8:36 a.m., EDT, May 21, 1979. Okay Dor.
7

8 HUNTER: During the interview where we have been using the wide range
9 reactor coolant pressure, a copy of the wide range reactor coolant
10 pressure chart, as a key on the events for the record. Joe, you in-
11 dicated that with the A loop T_{hot} dropping, it indicated that you were
12 filling the loop or the loop was filled were you looking, do you recall
13 the steam generator A parameters and the delta T across the steam gener-
14 ator at that time? Did you look at those values?
15

16 CHWASTYK: I'll say that I looked at them. I did not see anything that
17 would key me to any problems so I don't think I paid too much attention.
18

19 HUNTER: Did you feel like you had established natural convection for
20 natural circulation through that steam generator at that time? Or at
21 least some natural circulation?
22
23
24
25

895 014

1 CHWASTYK: I don't know. I can't answer that. Because I don't remember.

2
3 HUNTER: Do you recall in the discussion, or recall looking or seeing an
4 increased atmospheric dump from the A steam generator indicating that
5 decay heat then was being removed? Or an increase in alternate feedwater
6 to the A steam generator at that time indicating that decay heat was
7 being removed through that vent?

8
9 CHWASTYK: I don't remember that.

10
11 HUNTER: Those are the indications that I am looking for to say okay,
12 the temperatures are coming together and in fact we are now starting to
13 move some water and transfer heat to the steam generators and to the
14 atmosphere.

15
16 CHWASTYK: For that I was looking at my T hot and T colds.

17
18 HUNTER: And they were coming together?

19
20 CHWASTYK: Yes, they were coming together. On the A loop only.

21
22 HUNTER: Okay but, and, what type of a delta T did you have at that time
23 still? Across the, I am saying across the steam generator, that will be
24 a hot and cold leg delta T. It was very large I think.

1 CHWASTYK: Yes that was, it was very large. Now when we started the
2 fill of course, it was in the neighborhood of you know, well I think the
3 T colds were somewhere in the neighborhood of 100 and something degrees
4 and the T hots were pegged. Now as we, as we filled and got some water
5 in the legs you could see that T-hot if I remember correctly came down
6 in the neighborhood of 550 and T-colds were up in the area of 300 or 350
7 somehwere in that general neighborhood.
8

9 HUNTER: So at that time Joe, you still had about a 200 degree or so
10 delta T across the steam generator. Could you tell if it was still
11 trending to T_h T_c were still coming together or did it hang up at that
12 point?
13

14 CHWASTYK: No I can't tell because again, like I mentioned earlier, it
15 was not a...we did not get the loop filled and it stayed filled until a
16 little bit later. It would fill and then because we would run out of
17 room with the pressurizer we'd have to stop the fill rate and slow down
18 the fill rate and of course the temperatures would then start to, straying,
19 wider apart.
20

21 HUNTER: If I am reading you right Joe, you are actually turning a,
22 filling, and with the high pressure and increasing the high pressure
23 injection flow, filling the pressurizer some, watching it and then
24 turning the heaters on and driving it back down?
25

1 CHWASTYK: We never turned the heaters off..we turned the heaters off
2 the one time when...the first shot we had at it when I thought, I didn't
3 know, how much water we needed in the reactor coolant system and like I
4 said earlier I think it is about 150 inches when I increased the flow
5 rate unit high pressure injection valves. That still was not enough to
6 maintain the pressurizer level. That is the only time I remember shutting
7 the heaters off and..we...the level came back up and again numbers, I am
8 not sure of but it was in the area of maybe 152 inches and I had the
9 header turned back on and then maintained a flow rate into the reactor
10 coolant system. The flow rate then was based on maintaining pressurizer
11 level at that time. increase flow rate if the level goes down or decrease
12 it if it was going up.

13
14 CHWASTYK: That is right.

15
16 HUNTER: All right. One of the problems Joe that we had, let me go one
17 step further. Can you, do you recall you sat there, you finally you
18 know, you were trying to establish bubble but there is a point that you
19 in fact then pressurized the system to take it solid and then, that
20 sounds...there is a philosophy change... all of a sudden somebody says
21 take the system solid, and pressurized to high pressure. Can you recall
22 that particular activity?

23
24 895 017
25

1 CHWASTYK: Yes I do and again I can only surmise on what we had sought
2 by pulling the bubble in the pressurizer. We did see the T-hots and
3 T-colds come in together in the A loop. Apparently based on that infor-
4 mation, someone, and by someone I mean the Gary Miller-Jack Herbein
5 chain, decided that we were in fact low in water level in the pressurizer
6 and the only way to get it up would be to go to higher pressure injection.
7 Now at the time like I said, when the order came down to go solid, we
8 had the A loop filled. Okay, again I thought we were fairly close to
9 having the B loop full so I kind of tried to argue against going solid
10 but of course my bosses overrode me. And we did start two high pressure
11 injection pumps and went with four high pressure injection valves to
12 start filling the system solid.

13
14 HUNTER: Did the pressure start up fairly, at that time did the pressure
15 start up, did the pressure start up like this or as I indicated it
16 started up fairly quickly. Do you recall? It is in the log when you
17 started the pump?

18
19 CHWASTYK: Yes, it is in the log when you started the pumps and we kept
20 a running account of rates into the reactor coolant system. We also
21 kept a running account of how much water we were taking out of BWST. It
22 seems to me the pressure did start to go up but it was not a very
23 ...fairly...rapid rise, which indicated that we were not solid. And now
24 as we injected, and again these are some of the numbers I remember from
25

1 the time and they may be completely wrong, but after having the A loop
2 full it seemed we injected another 30,000 gallons of water before we
3 started actually to see a good rise in the reactor coolant system pressure.
4

5 HUNTER: Joe that was based on your monitoring of the BWST.
6

7 CHWASTYK: Of the BWST.
8

9 HUNTER: The level of the BWST was decreasing fairly low late in the
10 evening. Was that a concern that you fellows had expressed that the
11 BWST water that you were in fact going low in the BWST?
12

13 CHWASTYK: Well, it was a concern, but it was to me it was a secondary
14 concern. My first concern was to get that reactor coolant system filled
15 and a bubble in the pressurizer so we knew where we stood.
16

17 HUNTER: The discussions at that time Joe on the way up concerning
18 starting a reactor coolant pump or starting a reactor coolant pumps
19 anytime during your stay?
20

21 CHWASTYK: I did not get involved in the discussion on starting the pump
22 until after we had stopped the, or slowed down the high pressure injection
23 going solid. If I remember right we got up to a rather high pressure
24 somewhere around 2300 lbs. when I, and we were throttling back to maintain
25

1 that 2300 lbs. Now it was sometime after this that Lee Rogers from
2 Burns and Rowe, or Babcock and Wilcox suggested that we try to bump one
3 of the pumps and it came as a complete surprise to me because I wasn't
4 expecting that to come so easily.
5

6 HUNTER: Okay, may I ask you a couple of questions Joe? In the pressure
7 increase, the pressure in fact doesn't increase very quickly at first.
8 It actually is hanging up, it is obviously not solid as you indicated,
9 that is your feeling, at a point though it started to increase fairly
10 substantially, do you recall that particular time?
11

12 CHWASTYK: I recall that point because at that time I was having the
13 operators decrease on the injection leg as that pressure was going up.
14 My primary concern, of course, was not to have that thing go completely
15 solid when we had 400 or 500 gallons flow rate into it because then of
16 course it would get up to the 2500 lbs. very rapidly.
17

18 HUNTER: What were the instructions that you gave before, to come to
19 this point and maintain below 2400 lbs. or whatever the numbers were, do
20 you recall?
21

22 CHWASTYK: I don't recall that there were any. At the time on my own
23 initiative, I cut back that flow rate, to keep from going solid to a
24 point where we went above our 2500 lb. limit. Of course at that time we
25

1 had radio communications established with...and Jack Herbein who was at
2 the observation center. Our every step that we were making was being
3 relayed to him. I think I -- after we got to about the 2300 - 2400 lb.
4 plateau, I asked his permission to maintain it there and not go any
5 higher. I think he did give his permission.
6

7 HUNTER: How did you maintain it there?
8

9 CHWASTYK: Essentially by just regulating our high pressure injection
10 flow rate and at the same time I asked permission to again establish a
11 bubble in the pressurizer and I was given that permission and we did
12 start to establish a bubble.
13

14 HUNTER: All right. Looking back over your shoulder now at the A steam
15 generator was it steaming at that time?
16

17 CHWASTYK: Yes.
18

19 HUNTER: Had it started steaming during the time that you were pres-
20 surizing?
21

22 CHWASTYK: I think it had started steaming prior to that. Prior to us
23 going solid. How much I don't know but I know the delta Ts at that time
24 were in the neighborhood of 200 degrees.
25

895 021

1 HUNTER: Still a fairly high delta T?
2

3 CHWASTYK: Still a fairly high delta T but at least they were coming
4 together slowly.
5

6 HUNTER: The pressure in this area stabilized fairly smoothly, not like
7 this, so there is obviously another...apparently another effect is what
8 controlled primary system pressure. Do you recall that? The mechanism
9 for controlling pressure? Did you open the EMOB or the power operated
10 relief valve? You had no spray pump, you had no reactor coolant pump
11 running so the spray wasn't helping.
12

13 CHWASTYK: That is right, no I think that was certainly the throttling
14 of the high pressure injection valves.
15

16 HUNTER: Do you recall, again it is in that log you started maintaining?
17

18 CHWASTYK: Yes.
19

20 HUNTER: Do you recall how low you got. Did you actually come down to
21 the minimum charging and letdown? Was let down still in operation at
22 that time?
23

24 895 022
25

1 CHWASTYK: Letdown was, I want to say let down was still in service but
2 I don't remember that specifically. I think it was and I think we were
3 maintaining some flow rate and it was very low at that time. At the
4 time we got the high pressure plateau. What that flow rate was I'd have
5 to look in the log.
6

7 HUNTER: Okay, then the word came out from whoever to bump a pump. You
8 had trouble with the k-3 relays on the reactor coolant pumps during that
9 day a lot of trouble.
10

11 CHWASTYK: Yes.
12

13 HUNTER: Did you have trouble at the time you were getting ready to bump
14 that pump?
15

16 CHWASTYK: There was some problem but I don't think anything...I think
17 by that time the k-3 relays were bypassed.
18

19 HUNTER: Were jumpered...did you have any trouble starting the pump?
20 That you recall?
21

22 CHWASTYK: It seems to me we did but I don't remember what it was.
23
24
25

895 023

1 HUNTER: When the pumps did start pressure dropped drastically to 1450
2 lbs, right, looks like a straight line. Then the pump was running ten
3 seconds apparently and then turned off. Is the pressure the only, is
4 there any other parameter or any other item that parameter change, that
5 was significant during that pump start that you recall? Pressurizer
6 level change?
7

8 CHWASTYK: I remember the pressure drop because that was a big concern
9 at the time.
10

11 HUNTER: Steam generator delta T? $T_h - T_c$?
12

13 CHWASTYK: The T-hots did come down further I believe but I don't remember
14 specifically.
15

16 HUNTER: Pump was turned off, pressure starts back up. Was the high
17 pressure injection flow at that time...
18

19 CHWASTYK: It was reinitiated because of the pressure drop.
20

21 HUNTER: The low pressure? Was it actually a high pressure injection or
22 did the fellows just increase the...
23

24 895 024
25

1 CHWASTYK: No that was a manual start on my orders to increase the flow
2 rate.

3
4 HUNTER: Then they waited 15 to 20 minutes, 15 minutes then they restarted
5 again and maintained the pump on after that.

6
7 CHWASTYK: That is right.

8
9 HUNTER: Do you recall any, at that time, the steam generator, $T_c T_h$
10 temperatures would have come together, and then you started. Do you
11 recall starting the steam at that time out of the A steam generator, the
12 A generator to the turbine bypass valve?

13
14 CHWASTYK: Uh, yes. Seems to me at that time we'd, about the same time
15 we had gotten in a vacuum back, and or soon there afterwards, again I am
16 not sure of the time that was.

17
18 HUNTER: Out on the chart then the 2205 it indicated that you finally
19 got a bubble in the pressurizer.

20
21 CHWASTYK: Yes.

22
23 HUNTER: During this time frame then you had the heaters on attempting
24 to heat up the pressurizer?

25
895 025

1 CHWASTYK: Yes, attempting to heat up the pressure. As I remember we
2 put a lot of fairly cold water into that system, the pressurizer, even
3 though we had the heaters on the pressurizer heaters just couldn't heat
4 that water up.

5
6 HUNTER: So it still took a substantial amount of time to get back, well
7 at 1,000 lbs. So you drew a bubble at saturation temperature for 1,000
8 pounds?

9
10 CHWASTYK: At 1,000 pounds, that's right.

11
12 HUNTER: Okay? Like to switch a little bit as far as the subject matter
13 and talk about another item and if there is anything you think of --

14
15 CHWASTYK: One thing before I go, I know when we started the reactor
16 coolant pump I knew then that we...we were steaming the generator and
17 that was the time I felt we had everything...I thought personally that
18 we had the thing under control now and it was essentially a matter of
19 recovery after that. Of course I didn't know what the damage was to the
20 primary head or anything like that, but I do want to mention starting
21 that reactor coolant pump relieved my mind tremendously.

22
23 HUNTER: Our investigation, by the way, runs through 16 hours because
24 that is the point we determined that from that point on the core was
25

1 being cooled. Some other people are going further but we felt like you
2 put the primary system, you know, the core was being cooled at that
3 time.

4
5 CHWASTYK: That is exactly the time I felt comfortable, after that time,
6 after that the pump was running.

7
8 HUNTER: I would like to go to another area and we will talk a minute.
9 One of the things that we got involved in in this there are two or three
10 things that came forth when we were looking at this event that we are
11 still trying to square away. One is that the core flood tank valve
12 were closed early in the event, that was before you got there, okay?
13 High pressure injection we are presuming that being blocked early, reset
14 and then taking control over to maintain the pressurizer level. We are
15 pursuing that, that particular aspect. The third item that we are
16 looking at is that the emergency feedwater valves the V-12 A&D were
17 closed at the start of this particular incident. Through some interviews
18 we, it's kind of like it has been made, we have been made aware of the
19 fact that those valves, the 5s, 12s and pumps have been found in the
20 other than normal position before, and reported to shift supervisor.
21 Obviously I am not going to say any more than that. I am going to turn
22 around now and ask you the obvious question is that you have been on
23 Unit 2, a substantial amount of time.

24 895 027
25

1 CHWASTYK: Yes.

2
3 HUNTER: Do you recall either finding in the emergency feedwater system,
4 and then I want to go a couple of steps further, or having reported to
5 you, okay, that the 5s, again the 5s valves, which are across the header
6 mouth, the 12 valves which are the header isolation valves, or the 11
7 valves in manual, or the pumps, a pump or any pump in full lock or any
8 abnormal condition. Do you recall that ever happening?

9
10 CHWASTYK: Oh, no not specifically. I remember we have had some problems
11 with the emergency feed lines.

12
13 HUNTER: You might elaborate on that if you would because we are really
14 trying to...

15
16 CHWASTYK: Okay, I am trying to think now what the problem was...we had
17 a...

18
19 HUNTER: I guess it could include the steam valves supplying the main,
20 the turbine pump feed.

21
22 CHWASTYK: No this was a problem with the ICS control valves. I don't
23 even remember what it was now. It was a ways back. It seems to me
24 where...no I don't remember. I remember having a problem with it but I
25 can't remember right now.

895 028

1 HUNTER: Okay. Would it be the type thing where the ICS valves, the 11
2 valves were in manual or just didn't function when they were supposed
3 to? That type of thing? Okay. Sometimes if you key your thought train
4 it might help.

5
6 CHWASTYK: I don't remember. It had something to do with the 11 valves
7 but it seems to me I am thinking of a leakage by the valves or something.
8 I don't know, I can't recall.

9
10 HUNTER: Same thought train, same questions looking at the core flood
11 valves, ECCS pumps that type thing, or even emergency diesel generators.
12 Have you ever found or been reported to you that any of that equipment
13 was in its normal position? It looked like these were left in that
14 position after surveillance. Usually where it happens once, it probably
15 will or has happened before, and we want to key on that issue.

16
17 CHWASTYK: Well, I don't remember anybody ever coming up to me and
18 telling me that those valves were out of position, although I have heard
19 rumors to the effect that it has happened. But I don't remember personally
20 any...

21
22 HUNTER: If it happened, it wasn't to you personally that it was reported?
23
24
25

895 029

1 CHWASTYK: I don't think so, I don't remember it anyhow.

2
3 HUNTER: Now the letdown flow system, the letdown flow was a terrible
4 problem during the day apparently.

5
6 CHWASTYK: Yes sir.

7
8 HUNTER: The flow meter was down scale and early in the morning I can
9 tell you that the Craig said that, and some of the operators said that,
10 okay, the flow was varied, +40, +or-20 indicating that a relief valve
11 was open. That type of thing that is the kind of activity they were
12 getting. We don't even know how long that went on or whatever, but
13 apparently we were getting filter DPs and demineralizer DPs, makeup
14 filter DP, you were really in a bind. Do you recall when you picked up
15 the panel, any specific items concerning the letdown, the condition. I
16 asked you a little bit and you...

17
18 CHWASTYK: I remember that the letdown flow, that the flow was indicating
19 zero but then we were getting spikes on it up to about 20 gallons a
20 minute and at the time there is a relief valve in just down stream of
21 the block valves and we thought that valve had been lifting.

22
23 HUNTER: The valve downstream of the block valve that you are talking
24 about, is that the 376 valve? The normal block valve there is a relief
25 valve right downstream of that?

895 030

1 CHWASTYK: Yes.

2
3 HUNTER: That relief valve relieves to the bleed tanks. That is upstream
4 of the flow meter.

5
6 CHWASTYK: Right.

7
8 HUNTER: Down stream of that through, were you still lined up to one of
9 the demineralizers do you recall? And then through the makeup filters,
10 was it the demineralizer filters, the makeup filter at that time?

11
12 CHWASTYK: There's a lot of activity with that letdown system. I think
13 one of the things we did was bypass the demineralizers and the filters,
14 and it didn't seem to help us would indicate a letdown fault. When that
15 was done I don't remember. That was done when I was...

16
17 HUNTER: From the interviews it would appear that maybe you thought you
18 bypassed them and the reach rod, the reach rod is disconnected from the
19 bypass valve.

20
21 CHWASTYK: Yes. That is some of the things that came up but...

22
23
24 895 031
25

1 HUNTER: At that time you thought you had bypassed them?
2

3 CHWASTYK: Well, we got into a lot of discussion on whether it was
4 bypassed or not. When it was bypassed. It actually got to a point
5 where we specifically sent operators down to check the bypasses and I
6 think if I remember correctly, I think one of the supervisors also went
7 down. Who it was I don't know.
8

9 HUNTER: Was this in the afternoon that a guy would have actually gone
10 down?
11

12 CHWASTYK: No I think that was later. I think that was later on that
13 even ng.
14

15 HUNTER: Okay, it was late in the evening?
16

17 CHWASTYK: Yes.
18

19 HUNTER: There's relief valves on the discharge side of the demineralizers.
20

21 CHWASTYK: Yes.
22

895 032
23
24
25

1 HUNTER: And they release to something called cups?
2

3 CHWASTYK: Right, to the sump.
4

5 HUNTER: Is this the floor drains?
6

7 CHWASTYK: Right, to the floor drains.
8

9 HUNTER: Those could have been, well yes, you know that they were in
10 service at that time and so those would have been subject to any pressure,
11 spikes or anything during that time.
12

13 CHWASTYK: Yes and it seem to me for some reason though we, and it
14 maybe just simply that we bypassed them that we ruled out those kind of
15 problems.
16

17 HUNTER: Okay. Would there be someone that we could talk to specifi-
18 cally and ask that particular question? Would Mike Ross be the gentlemen
19 to discuss bypassing the demineralizers, or was there another shift
20 supervisor who was specifically in charge of letdown? You guys split up
21 the panels apparently. A foreman on each panel or a number of foremen.
22
23
24
25

895 033

1 CHWASTYK: I don't remember who was working on it.
2

3 HUNTER: Okay. During the day that you had the panel the makeup flow
4 ...pressurizer was normally fairly full. There were a couple of times
5 it wasn't when you were drawing the bubble and all. Do you recall the
6 makeup system at that time? Was it in automatic, or I guess it is the
7 NE17 and 18 valves, that flow path? Was that ever an injection path
8 while you were that you are aware of while you had the pressurizer level
9 below the normal control point?
10

11 CHWASTYK: No, I don't remember if we used the 17s or 16s.
12

13 HUNTER: Okay Joe. I have no further questions. Bob?
14

15 SHACKLETON: I have a few that I want to go through. Sort of hate to
16 get you back up in time but we have to review this again.
17

18 CHWASTYK: That is okay.
19

20 MARTIN: Okay let's hit one, perhaps we will stick another tape on.
21 When you first came in that was the condition in which the core flood
22 tanks were floating on the line?
23

24 895 034
25

1 CHWASTYK: Yes.

2
3 MARTIN: Did you happen to look at the core flood tank levels?

4
5 CHWASTYK: No, well I had someone, there was someone in the back panel
6 that I asked to get levels and pressures and...

7
8 MARTIN: That would have been Hugh McGovern?

9
10 CHWASTYK: Hugh McGovern or Chuck Adams. I am not sure.

11
12 MARTIN: Did you recall them, do you recall if they told you anything to
13 the effect that the level indications, the redundant level indications
14 on the core flood tanks were not reading the same?

15
16 CHWASTYK: Yes, that was sometime later on and if I remember right one
17 was reading high and the other three were down fairly low. When I
18 looked at them I thought it is possible that the instruments had failed.
19 And I was tending more to believe the one that was reading high than the
20 other three that were reading about mid scale simply because I thought
21 it was possible that we lost some instrumentation. I did go back a bit
22 later. I am not sure when. One of the things we do is pull the gauge
23 out to see where the failed part is and put it back in and see how that
24 compares. Now when I did that the failed mid-scale was a little bit
25

1 lower than what the levels were actually reading. Okay. So then in
2 other words, when I pulled the gauge out and looked at the mid-scale
3 range and put it back in the gauge actually went up in that mid scale
4 range. And then --

5
6 MARTIN: What kind of pressure did you have on the core flood tanks?

7
8 CHWASTYK: 500 - 600 lbs.

9
10 MARTIN: Do you think it was down, was it down from the normal cover gas
11 pressure?

12
13 CHWASTYK: Yes.

14
15 MARTIN: Which would suggest that maybe there had been some decrease in
16 level?

17
18 MARTIN: Do you think perhaps now is a convenient time to stop?

19
20 SHACKLETON: All right this would be a good time. We will terminate
21 just for temporarily til we change tapes. The time now is 9:01 a.m.,
22 EDT.

23 895 036
24
25

1 SHACKLETON: This is a continuation of the interview with Mr. Joseph J.
2 Chwastyk. Time , now 9:06 a.m., EDT, May 21, 1979.
3

4 MARTIN: Did you have occasion to either need to, or for convenience
5 sake, make reference to the alarm printer during the course of the...your
6 tour in the control room?
7

8 CHWASTYK: No other than if an alarm came in someone either myself or
9 someone who was near the computer would silence it and read, of course,
10 the alarm out. That was about all.
11

12 MARTIN: Did the alarm printer appear to be running well behind real
13 time at that point?
14

15 CHWASTYK: It usually does. I don't remember in this case.
16

17 MARTIN: Say during a fairly rapid transient and major trip or evolution
18 where there is a chance for the alarm printer to run behind time, do you
19 make use of the computer very much? The alarm printer as a real time
20 aide in operation?
21

22 CHWASTYK: Afterwards.
23
24
25

895 037

1 MARTIN: Primarily post review kind of thing then rather than real time.
2 Do you recall the alarm printer started down late in the day? We had for
3 example, copies of the alarm printer output up until about 18:30, about
4 6:30 and the last hour or a half or so we don't have. Do you recall it
5 being out during the period of time you were going through the sequence
6 getting the pumps ready to go on the line?

7
8 CHWASTYK: I remember some of our computer people working on a computer,
9 but I don't know if that was that night or some later date. Uh, I don't
10 think I'd paid particular attention to the computer at all.

11
12 MARTIN: Do you recall we have had comment made by various people that
13 a lot of people were pulling data off of the computer. Do you recall
14 any regular or particularly heavy usage of the utility typewriter for
15 various data removal.

16
17 CHWASTYK: No, I don't. Like I said, I was not paying particular
18 attention to the computer. I was sort of had my hands full there at the
19 console.

20
21 MARTIN: Okay. Uh, thinking back through the entire course of that,
22 your time in the control room and not keying so much on any particular
23 event, but to give me a perspective on the activity level within the
24 control room, in terms of numbers of people. Did your supervision

25
895 038

1 either yourself, or Miller, or anyone in a supervisory kind of position,
2 find it necessary to sort of have to run extra people out of the control
3 room on a regular basis, or on a periodic basis to keep numbers of
4 people down in the control room?

5
6 CHWASTYK: No. The only thing and again I am not sure if this was this
7 day or later but I know there were occasions where I would have to quiet
8 things down in the control room...and simply say my operators could not
9 hear what I was telling them. Specifically, no I don't remember.

10
11 MARTIN: When you were...I can well appreciate that whenever you were in
12 respirators communication was a hell of a problem...we understand that a
13 lot of people solved that by when they had to say something they just
14 yanked the face piece away and yelled out what they had to say. After
15 you got out of the face masks, was communications a problem then except
16 for those few instances when you had to quiet the people down?

17
18 CHWASTYK: No, not that I noticed.

19
20 MARTIN: In general you thought you could communicate with your operators
21 and get instructions to them without any great difficulty?

22
23
24 895 039
25

1 CHWASTYK: Yes, that's true.
2

3 MARTIN: Okay, now there are 2 points in time, when you started the
4 reactor coolant pump, both when it was jogged late in the day, and then
5 again when it was started up and left running. In both of those cases I
6 think the pressure in the system dropped well below 1600 lbs.
7

8 CHWASTYK: Yes.
9

10 MARTIN: Did I understand you correctly that you did not get high pressure
11 injection in both of those instances, or either of them?
12

13 CHWASTYK: I don't remember specifically if we got the high pressure
14 injection. I remember charging into the reactor coolant system as the
15 pressure came down to try to keep it down but again for just for the
16 bump of the pump it was so short I don't remember specifically if we had
17 high pressure injection or not.
18

19 MARTIN: Later when the pump ran, continuously, if you go on that pressure
20 trace I think it was down after the pump went into operation, I think
21 the pressure had again dropped quite low below the 1600 point right?
22

23 895 040
24
25

1 CHWASTYK: Um hum.
2

3 MARTIN: And it stayed down for some period of time. Do you recall
4 having to reset high pressure injection, or to bypass it, or leave it
5 running, because it stayed down below that point for a good part of the
6 run?
7

8 CHWASTYK: I don't recall it specifically but it's very possible that my
9 operator reset it after asking me, "what do you want me to do with it?"
10 I don't remember specifically. I am sure at the time I would have told
11 him to bypass it because we had manual control at the console.
12

13 MARTIN: Okay. Now there was a period of time after the pressure spike,
14 after you came in, the core flood tanks were on the line, then you went
15 into the EMOV operation and got the pressure spike, but things in general
16 appeared, I would gather, to the staff, reasonably stable. At least
17 pressure was remaining stable. Conditions seemed reasonably stable.
18 And it was at that point that Miller and Kunder were required to have to
19 leave the site. Were you aware of them leaving the site? They had to
20 go offsite and I think brief the Lt. Governor.
21

22 CHWASTYK: I remember somebody going. Yes, it was Miller and Kunder.
23 don't remember when it was in the sequence of events.
24
25

895 041

1 MARTIN: It does turn out to be about that time period when they left.
2 In fact I think, it probably would have been about 4 o'clock in the
3 afternoon, so you don't really recall them leaving the site at that
4 time?

5
6 CHWASTYK: I do recall them having to go and brief the Lt. Governor, but
7 where it was in the sequence and at what...this and all I don't remember.
8

9 MARTIN: Well, the sequence I am not concerned about nearly as much as,
10 we understand that Mike Ross, is that right?
11

12 [?] Right.
13

14 MARTIN: Mike Ross was then made acting emergency director in Gary
15 Miller's place. Were you aware then at that point that you would be
16 getting your instructions for whatever actions that you would have to
17 take or that he was the point through whom you would clear your actions
18 as you were clearing them through Miller previously?
19

20 CHWASTYK: I remember George coming up to me and telling me that he was
21 leaving, now that you have sparked my memory he did say he was going to
22 brief the Governor or Lt. Governor, and Mike was there and I was there
23 and of course Bill Zewe I think was still there at the time. I guess was
24 your question did I know specifically that Mike was in charge of the --
25

1 MARTIN: Yes, because previously you had mentioned that before you made
2 any evolution changes on the panel that you were responsible for you
3 were to clear it through Gary Miller.
4

5 CHWASTYK: That's right. Okay.
6

7 MARTIN: I am looking to see if you were aware at that time who you
8 would clear your actions with.
9

10 HUNTER: Excuse me Bob. Let me go back and make sure I...we may have
11 gotten off track. Mike was the operational specialist. Joe Logan was
12 still there when Gary left and I think we have...the interviews indicate
13 that Joe Logan was made the emergency director.
14

15 MARTIN: Coordinator.
16

17 HUNTER: Oh, I am sorry. I let that slip. I was looking at Mike but
18 Joe was actually still there after Gary left and the conditions as I
19 understand it is that things were to be maintained fairly stable. The
20 question again then and when is Gary left...and then it was Gary and
21 Mike as being the operational group that type group...were you aware of
22 anyone else, either Mike or Joe Logan who had taken Gary's place? You
23 personally.
24
25

895 043

1 CHWASTYK: I was aware that both Mike and Logan were still there, all
2 right and whether or not anybody came up to me and specifically said
3 they were in charge now I don't remember. But their presence alone was
4 enough to indicate that to me.
5

6 MARTIN: Okay fine, I just wanted to see what the interactions would be.
7

8 HUNTER: When you put the A pump on that evening, when you bumped the A
9 pump and ended up putting it on and leaving it on, you recall reactor
10 coolant flows? Were they normal?
11

12 CHWASTYK: Yes, I remember looking at just the percent indicator and it
13 looked reasonably normal. It was in the area of 30%.
14

15 HUNTER: For the one pump operation that you actually were involved in?
16 Okay. And you indicated that you had established a vacuum you'd think
17 about the same time you actually were steaming the condenser at that
18 time?
19

20 CHWASTYK: Yes.
21

22 HUNTER: There were some instructions earlier not to steam to atmosphere.
23
24
25

895 044

1 CHWASTYK: That is right.

2
3 HUNTER: Were you aware of those instructions?

4
5 CHWASTYK: Yes I was.

6
7 HUNTER: And that if you could not steam to atmosphere, what would be
8 your decay heat removal path as the shift supervisor with that plant?

9
10 CHWASTYK: If I could not steam to atmosphere?

11
12 HUNTER: Right.

13
14 CHWASTYK: My next mode would be to fill the generators completely and
15 recirculate back to the condensor. I remember one time here we were also
16 contemplating decay heat removal? That's when we were down in the 500-600 lb.
17 range.

18
19 HUNTER: Do you recall a reason when you couldn't go into decay heat
20 removal?

21
22 CHWASTYK: Yes, we couldn't get the pressure down.

23
24
25 895 045

1 HUNTER: Was there discussions at that time why you couldn't get the
2 pressure down or...

3
4 CHWASTYK: No. I think it was more in effect that we just we it was
5 just the fact that we couldn't get it down. It wouldn't -- there was no
6 way to get it down.

7
8 HUNTER: Did the discussion include any noncondensable problems at that
9 time, or it was just steam bubble discussion that you couldn't get flow
10 through the hot legs?

11
12 CHWASTYK: No, I think it was still steam bubble type thing. Again that
13 was 2 months ago and there was a lot of discussions on what was happening.
14 I am sure we hit the whole spectrum one time or another.

15
16 HUNTER: Bob?

17
18 MARTIN: No, I have no further questions at this time.

19
20 HUNTER: I have no further questions at this time.

21
22 SHACKLETON: Joe, at this time this is an opportunity for you, it can
23 help us and the industry if you have any recommenagations that you can
24 make or observations from your experience that would be valuable to
25

1 other plants, things that you think should be done. It would be a good
2 time to express yourself. We appreciate any comments, recommendations.
3

4 CHWASTYK: I don't think I have any at the time.
5

6 SHACKLETON: Okay. We thank you very much for your presence here and for
7 your help in trying to recall what transpired. We will close this
8 interview. The time is now 9:18 a.m., EDT.
9

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11 895 047
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