

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

50-320T

1 In the Matter of:
2 IE TMI INVESTIGATION INTERVIEW
3 of
4 Steve Mull
5 Auxiliary Operator B
6
7
8

Trailer #203
NRC Investigation Site
TMI Nuclear Power Plant
Middletown, Pennsylvania

9
10
11
12 March 30, 1979

(Date of Interview)

13 July 2, 1979

(Date Transcript Typed)

14
15 96

(Tape Number(s))

16
17 7908290666
18
19
20

21 NRC PERSONNEL:

22 Bob Long
23 Don Ruppert
24
25

1 MET ED: Interview at 0600 hours March 30, 1979, by Bob Long and Don
2 Ruppert interviewing Steve Mull and, we'll ask Steve to identify himself
3 and tell us his position.
4

5 MULL: My name is Steve Mull, and I am an Aux Operator B.
6

7 MET ED: Steve, were you on the shift the morning of the event?
8

9 MULL: Yeah, I was working out at industrial waste treatment.
10

11 MET ED: Okay, could you just, maybe starting like an hour or so before
12 the turbine trip, describe what you were doing, and then what you did
13 as a result of the trip?
14

15 MULL: Just, you know, the normal functions out there, dumping line
16 bags and things like that in to different tanks. I was mainly, and
17 like, about the time when the reliefs lifted, I was taking readings out
18 there. And I remember that, you know, I could hear it, it was really
19 loud. So I walked out front and I came back in and finished up with the
20 readings. And Dale Lauder Milch paged me and told me to come on in, they
21 needed some help; so I went to gate 7, which is adjacent to the turbine
22 building there, ground level, and I couldn't get in there 'cause I
23 didn't have a badge. So the security guard drove me up to the processing
24 center here, and I went through, down through Unit 1 into the building,
25

1 went up to the control room and waited for an assignment there. And, I
2 guess the first thing they had me do was go out and check to see if the
3 turbine was still running, or still turning. So I went out there and
4 it was; and I came back in and let them know. And about 15 minutes
5 later they wanted me to go out and wait around until it stopped, put it
6 on a turning gear. It didn't go on automatically--it did go on auto-
7 matically. After that I went back in -- there were so many odd jobs,
8 like, Bill Zewe then, at one time, instructed me to go out and shut
9 down second stage reheat valves manual isolations on the moisture
10 separator reheaters. Went out and did those... There was one other
11 thing I can't remember what I did...if you want to cut that you can.
12 [the tape]

13
14 MET ED: No, that's alright.

15
16 MULL: Trying to remember, I think went with Terry and Don Miller
17 somewhere, but it was just to check something and then I came back. It
18 was in the aux building and I came back out cause they could handle it
19 themselves, and I went back up stairs then...and I think that was about
20 it.

21
22 MET ED: Did you notice anything unusual or either before where you
23 were--you indicated hearing the noise. Anything else during the time
24 that you were moving around?
25

1 MULL: You mean through the plant or...

2
3 MET ED: Yeah.

4
5 MULL: Or in industrial waste?

6
7 MET ED: Well, or after the event, when you started to move toward the
8 control room, did you hear any sounds or notice anything unusual,
9 because some of those things, you know, may fit in somewhere.

10
11 MULL: Well, really...

12
13 MET ED: Depending on where you were and what you saw and heard, it
14 might fit in and help clarify the picture.

15
16 MULL: Not really, because, like I said I went right through the buildings,
17 you know, that small hallway we just come up through...I can't remember
18 anything, anything that would be unusual, more abnormal than was.

19
20 MET ED: Have you been in the plant when there has been turbine and
21 reactor trip before?

22
23
24
25

1 MULL: Uh huh...I know--down in the basement--I know what else I did. I
2 went down in the basement and isolated--we have pressure indications
3 when the discharge valves or the polisher beds. Bubba Smith told me to
4 go and decrease the pressure, you know, it was already decreased, but
5 just to throttle down the valve there and reset them. That was --
6 while I was down there, I noticed that the suction on--let's see, it
7 would be the C booster pump--overhead it was really leaking pretty bad.
8 And well, that was already notified 'cause Terry Daugherty and some of
9 the other guys was running around the area right then. They said they
10 had told them. But there was, you know, there was a couple of leaks
11 around and you could...
12

13 MET ED: Where were you when the site emergency was declared? What did
14 you do under those circumstances?
15

16 MULL: I was--what time was that? Do you remember?
17

18 MET ED: Right around 7:00.
19

20 MULL: 7:00?
21

22 MET ED: Yeah.
23
24
25

1 MULL: I was in the Unit control room, you know, like all those jobs
2 that I had done, or were doing, was, you know...

3
4 MET ED: Leaving the Control Room for a short time...

5
6 MULL: Yeah, yeah

7
8 MET ED: ...and going back?

9
10 MULL: 'Cause, you know, I was, I figured that was the best place I
11 could be if they really needed someone to check something quick, you
12 know they...

13
14 MET ED: What, when did you become aware that this was something more
15 than a routine turbine/reactor trip, 'cause you have been through other
16 turbine...

17
18 MULL: Um huh

19
20 MET ED: ...reactor trips...

21
22 MULL: When Dale called?

23
24
25

1
2 MET ED: When things go smoothly...

3
4 MULL: When Dale Laudermitch called and let me know that there was, you
5 know, there was a problem in there and they could use some help. You
6 know I had, I would say it was...I guess the reliefs lifted about 4:00
7 and about 25 after, maybe 4:30 was when I had started to come in. I
8 got in about a quarter of, maybe, somewhere around there.

9
10 MET ED: Um huh. How long did you stay on shift that day?

11
12 MULL: (LAUGHTER)

13
14 MET ED: Did you stay at working, or...

15
16 MULL: Um huh. I think it was 1:00 somewhere, wait a minute -- 1:00 or
17 1:30. The other guys was writing down all the time.

18
19 MET ED: Okay, but through noon time, anyway.

20
21 MULL: Yeah.

22
23 MET ED: Do you remember anything at all there unusual or just...
24
25

1 MULL: Yeah, I was beat! (LAUGHTER)
2

3 MET ED: I'm serious.
4

5 MULL: By then, you know, like the other shifts had come in and things
6 that had to be done, you know, were more or less, you know, designated
7 to them to go, you know, they were like giving us a break... That's
8 about it.
9

10 MET ED: And did you, have you worked the last two, you obviously work
11 this night. Didn't you work last night also?
12

13 MULL: Yeah, we worked till 9:30 yesterday.
14

15 MET ED: Don, you have any other questions?
16

17 MET ED: No, I don't think so.
18

19 MET ED: You were getting most of your directions from the CROs?
20

21 MULL: Um huh
22

23 MET ED: Anybody in particular?
24
25

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

MULL: I'd say probably... It was, you know... They were thinking of things to do and then whoever was closest to me at the time when would say something. I'd say Craig Faust was probably telling me most of the things to do.

MET ED: Um huh. And you don't have anybody that you would have been communicating with on the kind of things you were doing, I guess, other than...you know, you don't have a communication link to somebody else?

MET ED: Right.

MULL: What do you mean?

MET ED: In terms of...

MET ED: Anybody that worked for you

MET ED: Anybody working for you...

MULL: Oh, no

MET ED: Okay, well that, that's all we need. And just add that to the group.

1 End of interview with Steve Mull.
2

3 LONG: This is Bob Long conducting an interview with Don Ruppert and
4 we're talking with Bill Zewe. It's about 6:23 hours on the 30th of
5 March. And Bill, could identify yourself and your job function?
6

7 ZEWE: Bill Zewe and I'm a station shift supervisor.
8

9 LONG: You were shift supervisor during the turbine trip the other
10 morning?
11

12 ZEWE: Yes, I was. I was in the Unit 2 control room, in my office at
13 the rear of the control room, at the time of trip.
14

15 LONG: Okay, could you maybe just back up, like, an hour or so before
16 the trip and identify what you were doing and then kind of just go on
17 from there? To the best of your recollection, describe the events?
18

19 ZEWE: Okay, the plant was operating normally at about 98% power and
20 everything was operating quite normally. We were in a normal electrical
21 lineup, normal primary lineup, normal secondary lineup that we would
22 have for this configuration. The only problem that we had in the plant
23 was that we had been trying to transfer for several hours, the resin
24 bed from No. 7 polisher to the receiving tank down at the condensate
25

1 polisher skid. Then we had an operator there that was working on
2 trying to free up the resin clog in the line--and with moderate success
3 up to this point. I was in my office, I had just finished reviewing
4 some papers and then I was just about to leave to go out and see how
5 the operator was doing. And the last time I looked at my watch, it was
6 just before the trip, it was almost exactly 4:00. I was just about to
7 gather up my papers and leave whenever I heard the alarms out in the
8 control room. Looked out through the glass, which I do for every
9 alarm, and I noticed that we had every alarm, or just about every alarm
10 on panel 15 which was, it monitors mostly ICS parameters for feedwater
11 limit by reactor, reactor limit by feedwater, BTU limits, and so forth.
12 Most of these were lit, and I jumped up and I could see that both of
13 the control room operators were up at the panel--one was by the primary
14 plant and the other operator was over by the feedwater. And as soon as
15 I had seen that, then I jumped up and just as I got there to the door I
16 looked and I seen that we had a turbine trip mass drill. So we had a
17 turbine trip, and I took about another step or so, and got up to about
18 the first few desk there and then the reactor tripped. So I just yelled
19 out to carry the needed actions for a reactor trip. Then I went over to
20 the page to announce to the plant that we had a turbine trip and a
21 reactor trip. My shift foreman, who was at the polishers at the time,
22 so that he could come back to the control room and that the other
23 operators could take action on the plant. So then as soon as I announced
24 that, I went right over to the panel there and I told the operator you
25

1 know to verify the turbine trip and then verify the emergency feed, and
2 then I went over to the primary plant and the operator there was looking
3 at pressurizer level and primary pressure, and I said, "well let's
4 start the A makeup pump and then catch the shrink from the pressurizer
5 level." So the pressurizer level was heading down so we put on the A
6 makeup pump and opened up the one high pressure injection valve to 1690
7 to try to catch the shrink on the normal trip. Up to this point, I
8 didn't know at this point that we had an abnormal condition at all
9 because it just looked like a normal trip on loss of feed. The turbine
10 had tripped because we lost the steam pumps and then the reactor tripped
11 on high pressure and then the pressure turns right away whenever you
12 have a trip, and then you put on the makeup pump to keep the pressurizer
13 from shrinking out.

14
15 LONG: You been on a shift before when there's been a turbine reactor
16 trip?

17
18 ZEWE: Oh yeah. I've had a couple of them before. So then, we started
19 to recover pressurizer level. It got cut down somewhat under 150 inches
20 and then it started to recover. So then I went over and then, just
21 about this time, which was just about a minute into it or so, the
22 operator was having trouble with the emergency feed and he yelled out
23 that the emergency feed valves, the EFV 12s which isolate the automatic
24 valves, were shut and I said 'what do you mean by shut?' and he said
25

1 'there shut'. So he grabbed them just as I had got there, you know, to
2 open them up right away so that we could establish some cooling. And
3 then, it was just a few seconds but then we, that the primary pressure
4 went down further and then we hit the point of high pressure injection.
5 This too, I didn't think was too unusual because putting on the emergency
6 feed, with a plant that was already cooling down, when it is certain no
7 colder water in the steam generators and push pressure a little lower.
8 All right. So, then at this point, the pressurizer level was still
9 coming up and we had pressure leveled off at somewhere around 1100 or
10 1200 pounds. And then we went and since we got the pressurizer level
11 coming up and we had control of it, then I wanted to isolate from the
12 ES actuation so the we stopped the A makeup pump and then shut the high
13 pressure restriction valves after we had verified that everything had
14 leveled off with the high pressure injection. And then the other
15 operator was still trying to get the emergency feed levels up around 30
16 inches. Where they shifted control after a loss of feedwater pumps.
17 All right, so he was handling that and the pressurizer level kept on
18 increasing. And--

19
20 LONG: You are still talking about minutes now?

21
22 ZEWE: Yes. We're, you know, I don't know, 5 minutes into it maybe, I
23 don't know. The time span here, I really can't get down to fractions
24 of minutes or anything like that.
25

1
2 LONG: But it's still within, you say, the the first 10 minutes?

3 ZEWE: Yeah.

4
5 LONG: Yeah.

6
7 ZEWE: And while he was trying to do that, establish the feed the steam
8 generators, we were, I wanted to be sure the steam generators didn't go
9 dry. And the steam generators, as I recall, never got less than 10
10 inches the whole time. And he was handling that and my shift foreman
11 arrived before we even got to this point. He was up in the control
12 room, so it was the 4 of us after about a minute. And I told him to get
13 the pressurizer level and to handle the primary side for the makeup
14 system there with my one control room operator, and my other control
15 room operator was handling the feedwater. All right. We had, the
16 operator had called that we had a leak, a real bad leak on the suction
17 side of the COP 2A. All right. And we, of course had no caustic pump
18 running, no booster pump running and no feed pump running. And the hot
19 well level was going out of sight, high. I also called over the shift
20 supervisor from Unit 1 and he was in the control room at time then,
21 too. And I instructed a couple of B&W guys who had been in Unit 1, and
22 ran over to help out, and started to call some people to get some help.
23 You know they called the Unit Superintendent, the Unit Superin-
24 tendent-Technical Support. And then my shift foreman was saying 'the
25

1 pressurizer level is still coming up'. So I said, "try to go to max
2 let down, to try to let down hold the pressurizer level." And then we
3 thought that the pressurizer level instruments were failing, so we
4 checked all three pressurizer levels. He had started that anyway. And
5 they all read pretty close to the same and then we checked the computer,
6 compensated the computer level, and then we checked the inverse of the
7 DP on the computer too. And we sent an operator down to the auxiliary
8 building to check that out too. And then the hot well is out of sight
9 high. The operator had called me about that leak, so Ken there and
10 Fred and Ed and Craig and it looked like that Fred was holding the
11 level at about 390 or so, holding it and the pressure was still fairly
12 steady. And I felt that the pressure was low because we had had problems
13 with the pressurizer heater breakers and in the M20 area where the
14 relief valves are, once it gets real hot and humid there that we had
15 had a problem with tripping our breakers. We have had a very limited
16 pressurizer heater capacity. So then the operator yelled, you know,
17 that he couldn't get the valve shut and there was water everywhere, so
18 I rushed down there since we had so many people up there. So I went
19 down there and I still didn't know yet why we had lost feed, all right,
20 for sure. When I'm down there, the leak at the valve is right beside
21 the condensate polishers and I looked and all the polishers were iso-
22 lated. Alright. Just before we left the control room, the operator had
23 started a condensate pump but we didn't have any suction pressure to
24 the booster pump to try to get it going because I wanted to try to
25

1 reject the hotwell so that we didn't flood over and loose the vacuum,
2 to the vacuum pump from the high hotwell level. So when I got out, I
3 seen that the polisher was isolated and then I thought that that's
4 probably what caused the loss of feed was that some how the polishers
5 had isolated themselves and had isolated the suction to the booster
6 pumps and also isolated the discharge of the condensate pump and that's
7 why the line blew. But I don't know that for sure at this point. So
8 then I wanted to try to open up the bypass around the polishers so that
9 we could reject the hotwell down. Okay. So the I was down there for
10 several minutes and then we finally got COB12 partially opened to where
11 we could open it from the control room. We had tried earlier to open
12 it from the control room but the motor wouldn't drive it open. So then
13 I planned to go back up to the control room and George Kunder was there
14 at this time looking at the pressurizer level with Fred and Ken, all
15 right. So then--

16
17 LONG: About what time did you go down there?

18
19 ZEWE: I'd say around twenty minutes maybe, or half hour at the most
20 maybe. George would probably recall when we got there, but I really
21 wasn't paying much attention to the time. When I got out there then he
22 was already there. I had noticed before I went down that I went back
23 to look at the drain tank and that we had high temperature in the RC
24 drain tank and zero pressure in the cooling pump, and a very low dis-
25

1 charge pressure means that we had ruptured the RC drain tank. So
2 before I had left to go down to get the polishers job, I had asked Ken
3 Bryan, the other shift supervisor, to check the discharge temperatures
4 on the relief valve, but they didn't look abnormally high since the
5 electromatic had lifted. It was about 228 or 230° and they had been
6 running about 170 or 180 so I figured that it was still warm from when
7 it lifted 'cause it didn't indicate that it was still open, which we
8 found out later that it was passing by, but at this time I didn't know.
9 So George and I and Ken, along with the control room operators, were
10 trying to figure out why we couldn't get the level back down. It just
11 didn't make sense. And then the RB pressure was coming up and we were
12 up to just about 2 pounds at this time, all right, and I figured that
13 that was from the RC drain tank. At this point the only really radiation
14 monitors that we had abnormally high were the intermediate letdown
15 monitors, which have a very low setpoint and are very susceptible to
16 background. And they are right by the RB sump themselves and we figured
17 that the water that was from the drain tank was going into the sump
18 because we did get the sump pump running alarm on the computer and we
19 had the primary operator check the reactor building sump level and it
20 was high. It was at six feet, which was the maximum reading so we had
21 him put the sump pumps in off so they wouldn't automatically transfer
22 water from the reactor building sump to the aux building sump. That
23 was done in like, 45 minutes after the trip. Okay, so that's just some
24 of the side things that were happening also. So we--
25

1 LONG: Somewhere in there you must have decided that this was an unusual
2 circumstance. Do you know when you began to get that feeling that
3 "hey, this is not . . ."

4
5 ZEWE: At some...well, before I left the control room whenever the
6 pressurizer level still came up and it came up to like 395 and then we
7 got it down to about 390 and it was just waving down there. Something
8 was wrong but I couldn't put my finger on it. And Ken was there, the
9 other shift supervisor, and we just couldn't come up with why, so
10 that's why we checked all the other instruments. And then that was
11 when, you know, that not only informed George and Joe and everybody
12 that we had this trip but asked them to come on in that I needed some
13 more eyes. Because we were into either something that I was missing or
14 just so unusual that I couldn't put it together.

15
16 LONG: Yeah.

17
18 ZEWE: So then George and them were there, and we kept milling over in
19 our minds, you know, what it was. So then we said we have to leave the
20 pressurizer level actually high but how else can we get water in there.
21 It took us a little while, you know, to look over the things that in
22 and everything else that it'd say, you know, we don't, it doesn't seem
23 true. So then we initiated high pressure injection again and stopped
24 the letdown.
25

1
2 LONG: All right.

3
4 ZEWE: Because we said, well, maybe we are actually down and it's just
5 a fake pressurizer level high. All right. We also, then we...and then
6 a couple more people showed up about this time and another shift supervisor,
7 Brian Mehler, was reviewing the computer stuff and he says, "well the
8 RCRV2 doesn't look much higher but let's go ahead..."

9
10 INTERRUPTION

11 _____: Guess what. The counts up again. Put your masks on.

12
13 _____: Here're your respirators.

14
15 _____: I didn't bring mine over. I knew I could grab another one.

16
17 _____: That one.

18
19 _____: That was one of your guys?

20
21 _____: That was Fred was running it.

22
23 _____: Sorry about that.
24
25

1 _____: Can they hear us through the thing [respirator]?

2
3 _____: Yah.

4
5 ZEWE: So then when Brian Mehler reviewed the discharge temperatures of
6 the relief valve, the RCRV2 was still higher than the other ones. So
7 we went and shut RCV2, to block valve for the electromatic, and the
8 pressure in the building took a marked drop down. Just prior to that,
9 just to back up for a second, was that we had a pressure differential
10 between the B steam generator and the A steam generator, okay, which
11 was about 250 to 300 pounds. I thought that maybe somehow we had a
12 leak off one of the steam generators that was pressurizing the building.
13 So we went and isolated the steam generator and as soon as we did that
14 the RB pressure stopped going up and took a slight downward trend. So
15 I thought maybe we had found the source of pressure in the building,
16 but whenever we isolated that RCV2, the pressure came down very markedly
17 then. It took a rather large drop so we were sure that the electromatic
18 had been leaking by and that that would cause us to depressurize at
19 that point. And then somewhere around here, we still had reactor
20 coolant pumps running and the RC temperature was beginning to come up,
21 and then we were looking at the temperature pressure curves for the
22 coolant pumps and we started to get some abnormal fluctuation in our
23 flow instruments for the reactor coolant pumps. So I decided to stop
24 two of the reactor coolant pumps at this time. We were about, I think
25

1 it was somewhere around 540° average temperature at this point. So we
2 secured two of the coolant pumps and then the flow came down to about
3 50% and stayed like that for, I am not sure how long, but a couple of
4 minutes anyway, and then the flow started to fluctuate some more. So I
5 went and secured all the coolant pumps and then we kept on feeding with
6 the high pressure injection pump at this point. We kept on going without
7 the coolant pumps and then I had the operator raise the steam generator
8 level in A, since I stuck it and still had a problem with B. It started
9 up toward 50 inches, all right. And then I thought well, we probably
10 don't have a problem with B but the level in B was still up somewhat.
11 But since we isolated RCV2 and the pressure dropped down markedly, then
12 we went later on and set up the B steam generator too. Then today we
13 had up first to about 50% to increase natural circulation. We had
14 quite a hard time trying to hold the level in the steam generator,
15 using the emergency feed, because the eleven valve didn't really respond
16 to holding twenty-one feet or 50% on the operating range, and we were
17 resorting to taking more manual control to do this, and also even the
18 EMV eleven valves, the throttle valves, where the level was leaking by
19 and causing the level to go higher, so we ended up throttling on header
20 isolation valve, the five valve. So then we were like this for a while
21 just feeding up trying to get natural circulation going.

22
23 LONG: So you were trying to get the natural circulation going again.
24
25

1 ZEWE: Right, before we actually went into this, before we took to
2 bumping that, Mike Ross was there--he's the Supervisor of Operations in
3 Unit 1--showed up, because we had called him earlier. And then shortly
4 thereafter Joe Logan came in the too--the Unit Superintendent. And then
5 we were still evaluating it and then we ended up to where we went to
6 feed the B steam generator after I had had it isolated. And shortly
7 thereafter, we tried to start a reactor coolant pump again. We tried
8 to get them into circulation because the temperatures, the key hotlegs
9 were now showing fairly high temperatures, the valves scaled at 620.
10 So we were trying to start a reactor coolant pump to see if we could
11 get some circulation, and we tried to start one pump and the breaker
12 closed but the pump was only going 100 amp, and we weren't really sure
13 that the pump had ever tried. So we tried the second reactor coolant
14 pump in the A loop this time, and it started, got high starting current
15 but then it also dropped off to 100 amps and it wasn't pumping anything,
16 so then we just went ahead and secured it after that. So then . . .

17
18 LONG: About what time was that, do you know?

19
20 ZEWE: No. This was like, you know, quarter after 6:00 or 6:30, because
21 it was just after we jogged the, or filled up the B steam generator, or
22 started to fill it, and then we jogged the pump and we began to get all
23 the radiation alarms in the auxiliary building and the fuel handling
24 building. All right. Then I declared a site emergency, I think it was
25

1 about 6:50 or ten of seven, in that neighborhood, declared a site
2 emergency because the activity levels were going up and it was getting
3 out of hand and we really didn't know at that time exactly where the
4 activity was coming from. And then we had a report that the aux building
5 drains were backing up, and that the water that was in the drain were
6 the source of the radiation and it was pouring out the station vent and
7 all our radiation monitors in the building showed this. Also, once I
8 fed that B steam generator, we had our off-gas monitor come up in a
9 very high range, indicating that we now had a primary to secondary leak
10 in the B steam generator. So we went and we isolated the B steam generator
11 again. And then we went on like this for awhile . . . and I'm trying
12 to--

13
14 LONG: Excuse me. It was your decision to initiate the site emergency?
15

16 ZEWE: Well, it was really--Jim Seelinger was there too, and Joe Logan
17 was there, and Ross was there and it was a collective decision to go
18 ahead and declare the site emergency, so I announced that a 10 till
19 7--I think that was the exact time. And then we went to carry out
20 procedures of the site emergency, make the notifications and the evac-
21 uations and everything. And then, shortly, just after that then Gary
22 Miller showed up, the Generation Manager here at the site, and he took
23 charge as the Emergency Director from Joe Logan and Jim Seelinger, who
24
25

1 had been doing it earlier. And then we just then tried to evaluate the
2 situation to see where we were. We had determined, about this point,
3 that we had transferred the bubble into the loop from the pressurizer.
4 We were then trying to come up with a way to try to transfer the bubble
5 back to the pressurizer, and we started to get problems and loose some
6 of the pressurizer heaters because they were shorting out. We were
7 spraying down to try to reduce some of the pressure by using the electro-
8 matic valve straight through the building and watching the building
9 pressure. We had tried first to press up and to compress steam bubble,
10 with not much success the first time, and then we went back and tried
11 to depressurize it and tried to close the core flood tanks on the
12 system and to keep the high pressure injection flow, but at a reduced
13 rate, trying to reduce pressure by venting into the building. We were
14 venting by the spray valve, we had it open, we had the electromatic
15 open, and we had the pressurizer vent open, trying to get pressure down
16 so that we could dump the core flood tanks and then reduce the pressure
17 and then hopefully get down in the neighborhood of 300 pounds to put on
18 decay heat removal. We were unsuccessful in trying to come down so
19 then we finally, later on in the afternoon, then we came up and closed
20 the electromatic and the vent and then pressed up the, tried to compress
21 the bubble again from the hotleg. Try to compress it and then run the
22 reactor coolant pump to get circulation, which is just up to point that
23 I left that night
24
25

1 LONG: About what time was that?
2

3 ZEWE: I left about 6 or 6:30 that night, I think it was. We were just
4 about solid in the pressurizer when I left. I was monitoring the
5 computer and looking at the level. We had the high pressure injection
6 pumps on, just in pressing up the system with what heaters we had
7 available, trying to compress the system.
8

9 LUNG: You indicated several things which you felt didn't work properly.
10 Is there anything in your equipment that did not function in particular
11 or...?
12

13 ZEWE: Well, the only ones that I can remember that were either mal-
14 functioned or weren't right were, you know, the polishers did isolate
15 themselves and we found out later that we had an excessive amount of
16 water in the air system, which would have caused the polishers to
17 isolate themselves. The EMV 12 A and B, of course, were shut and they
18 should have been open.
19

20 RUPPERT: Have you any idea how they got closed?
21
22
23
24
25

1 ZEWE: Well, my idea is that the last surveillance that was done on the
2 emergency feed pumps--and I am not sure when it was done, but I think
3 it was done within a week of the problems that we had Thursday--was
4 done in the emergency feed system, which requires me to have the valves
5 shut for the particular surveillance test, and it's in my head that it
6 had been shut then and we just failed to notice it. But I am not sure
7 when this test was exactly because I get called mainly to surveillances
8 that were due or upcoming rather than does that had been completed.
9 But if I recall, that was to be done not too many days prior to it, but
10 I am not sure of the exact date, but I feel that maybe then when it was
11 shut it was just never reopened and nobody noticed it for some reason.
12 That's just my guess at this point.

13
14 LONG: Okay. Did you use any procedures anywhere...?

15
16 ZEWE: Oh yes. As soon as we had the trip, we pulled out the emergency
17 procedures to follow the reactor trip and turbine trip and also the
18 high pressure injection. We followed those with what we did and then we
19 also pulled out the site emergency plan when we declared a site emergency
20 and so forth. But, at the onset of it, it was just an unusual trip
21 after the first few minutes. But as far as the radiation levels in the
22 aux building, we really had no problem with, you know, like the declaring
23 the site emergency or anything else, until about quarter of seven,
24 whenever we got the water into the auxiliary building. And that is
25

1 still in my mind--I don't know why or how we got so much water that was
2 standing in the reactor, in the aux building floor because the sumps
3 backed up. Everyone thought at the time that it went, the reactor
4 building sump pumps overflowed into the aux building, but that isn't
5 true because we had that off and the operator who I told--to the control
6 room operator had reported to me that the aux operator said that it was
7 high, so I said have Terry Daugherty shut off the pump so that we don't
8 flood out the aux building and he relayed that to Terry and Terry got
9 back to us that it was shut, and then he had walked around the building
10 for quite some time after that and after the pumps had secured, and the
11 floor drains were not coming up. Right now I still haven't found a
12 very good explanation for how we got so much of that high contaminated
13 reactor coolant into the aux building, which really resulted in the
14 problem with the respirators that we're now wearing. It was mainly
15 caused from the water from the auxiliary building--either a release in
16 the makeup system, which does not go to either the miscellaneous waste
17 holdup tank or the reactor coolant bleed tank must have lifted, blowing
18 water on the floor. It wouldn't have taken much to overflow the sump
19 because the sump wasn't very far from overflowing when we came on
20 shift. We were just waiting for the evaporator of Unit 1 to process
21 some more water. But, it wouldn't have taken a great deal to do that,
22 but it wasn't from the reactor building sump. And, we really didn't
23 have any indication of any of the other tanks, like the bleed tanks or
24 anything else, overflowing so I feel that it must have come somewhere
25

1 from the letdown makeup system, either a release in the letdown system
2 or a release from the makeup pump somewhere that was putting water in
3 the aux building sump.
4

5 LONG: When you began to see the high radiation levels, just before
6 7:00, what kind of procedures happened to initiate sampling--is that
7 part of the plan that it's kind of on your hands, or in terms of enviro-
8 nmental sampling and inplant radiation monitoring, are there some
9 special things that happen now?
10

11 ZEWE: We'll, once we recognized the magnitude of the radiation levels
12 that we were starting to see, all right, we announced, I announced to
13 all the stations that I was declaring a site emergency in Unit 2 and
14 then once we did that then we sound the alarm for the site emergency,
15 and then that keys all the personnel to proceed to the emergency control
16 location either to be deconned or to use the people we know to help to
17 rectify the situation. At that point, then we strictly follow by the
18 site emergency plans themselves, and I, as Shift Supervisor, am the
19 Emergency Director until I am relieved by a senior member, and they
20 were already there at that point. We already had three or four other
21 Emergency Directors there that took charge, so really they were there
22 before the point. So, I just had the responsibility then of the plant
23 operations as directed by the Supervisor of Operations, who was Mike
24 Ross. Gary Miller was there within about 5 to 10 minutes of the site
25

1 emergency. Then he declared he would be the Emergency Director and that
2 Mike Ross was responsible for the plant operations and Joe Logan and
3 Jim Seelinger and Mike were the input to gear it in for his function as
4 the Emergency Director. And then everything from there on in was pretty
5 much automatic and we had trained for before, contacting the agencies
6 and so forth, and getting the repair parties available for any work,
7 and the on-site team and the off-site team and so forth to monitor the
8 release and to feed back with the levels to make a further determination.
9

10 RUPPERT: How about the interactions that went on in the control room
11 between you, the CRO, the Shift Foreman, the Auxiliary Operators--how
12 did you characterize that?
13

14 ZEWE: At this point in time, now you mean, after the site emergency
15 was declared?
16

17 RUPPERT: No. No. Back towards, back at the beginning...How would you
18 characterize these interactions, and the communications that went on?
19

20 ZEWE: Well, we talked between ourselves. We tried to resolve the
21 problem, we tried to figure out what the problem was that we had and we
22 listened to each others' ideas and then we tried to plan them accordingly,
23 to try to systematically try and find out exactly, from the indications
24 that we had, where the problem was and what to do about it. And we just
25

1 used the auxiliary operators strictly, you know, to look at this,
2 isolate this, go and do that. We were just trying to evaluate the
3 situation and try to look at every aspect, all right, to try to determine
4 exactly what the best move should be made next.
5

6 LONG: Don, do you have any questions?
7

8 RUPPERT: One. When the general emergency was declared, Bill, what...
9

10 ZEWE: The general emergency was declared about a half hour later,
11 about twenty after seven.
12

13 RUPPERT: It was based on what kind of radiation levels, or readings?
14

15 ZEWE: Well, that was strictly when Gary Miller called data, all right.
16 I had heard it as they announced it. But frankly, at that point, I was
17 busy doing other things for Mike Ross under his direction and I really
18 didn't get back to say like, 'what point in the general emergency are
19 we at', all right. But as far as I know, at that point we did not meet
20 the specified criteria for the general emergency, that I knew of at
21 that point in time. I think that we went to it early but just in a
22
23
24
25

1 safe direction, you know, that we still didn't have control of the
2 situation, as far as the possible releases to the public go, so we went
3 one step further in the plan.
4

5 RUPPERT: You may have made some recommendations to Mike Ross or any of
6 the other fellows in the room. Did that happen and how did they respond?
7

8 ZEWE: Well, both George and Mike and Brian Mehler and Ken Bryan were
9 most helpful in trying to assess the situation as they see it, and we
10 were all pretty much at working as a team, kind of advising each other.
11 And it's just more brain power, if you will, and more eyes to look at
12 more phases and try to come up with some, you know, something more to
13 go on, something more positive. And it wasn't a case of one person
14 listening to only one person, you know. We were looking--the two control
15 room operators had some pretty good ideas and those we tried also, and
16 Mike had some good ideas, so we just listened to everyone and then
17 just, based on the information and suggestions, and then just tried to
18 do the best that we could. It's always the same team really, you know,
19 because you certainly don't ignore any suggestion that could be good
20 and they are all pretty highly trained people and their words all had a
21 lot to say.
22
23
24
25

1 LONG: I think you told us Bill, but let me make sure I understood. You
2 were the one who, I think you asked the B&W people to notify the other
3 station people that you needed help. Is that right?
4

5 ZEWE: Uh hum
6

7 LONG: It was your decision to get out to George and ...
8

9 ZEWE: Right. Plus I called the Unit 1 Shift Foreman, all right, and
10 told him to call some other people.
11

12 LONG: Okay.
13

14 ZEWE: All right. They're the actual ones who called Miller and Mike
15 Ross, and then the guys in Unit 2 who were calling Logan and George
16 Kunder and so forth. George is really the best that I use first because
17 he only lives about 2 miles from here, well probably a mile and a half
18 maybe, so George was here you know in a matter of about 15 to 20 minutes
19 at the most.
20

21 LONG: Okay, and then the notifications to the state agencies and those
22 kind of things, that Gary Miller took care of.
23
24
25

1 ZEWE: Right. That's all made from the people from the--the engineers
2 and everything that come up in the control room on the site emergency
3 or the general emergency, you know. They are all assigned certain
4 duties and tasks, phone calls and everything else. They notified the
5 agencies then. I had nothing to do whatsoever with any of that.
6

7 LONG: Okay. You clearly have a pretty complete picture, more so than
8 any of the others.
9

10 RUPPERT: Yeah.
11

12 LONG: Do you have other questions?
13

14 RUPPERT: No, I can't think of any.
15

16 LONG: We may think of some others, Bill, as we go along. So that's
17 really been very helpful.
18

19 ZEWE: We did have one other failure now, come to think of it, too,
20 that I failed to mention. We did have a problem starting the A makeup
21 pump one time, when ever--we were going back on a high pressure injection
22 mode and we did have a problem once with beginning the A makeup pump to
23 start, so that we just went to the B and C makeup pump then. But that
24 was about the only other failure that we had beside the other ones that
25

1 I've mentioned so far. We also tried to reduce the RB temperature
2 prior to this. We had went to emergency river water booster pumps and
3 tried to cool the reactor building and to go to fast feed on our plan
4 to try to cool the atmosphere.
5

6 LONG: Anything else that you think of would help put the puzzle together?
7

8 ZEWE: Not really.
9

10 LONG: Okay. Well let's call it quits. This will be the end of the
11 interview with Bill Zewe.
12
13
14
15
16
17
18
19
20
21
22
23
24
25