

16-3a

INTERVIEW OF:

Mr. Randy Bruce Snyder
Shift Supervisor/Plant Vogtle
March 26, 1990, 3:27 p.m.

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APPENDUM TO INTERVIEW OF

Rank 1 Source Index
(Print Identity of Interviewee)

Page Line

Correction and Reason for Correction

1-70	Various	Replace "y" in Snyder with "i". Name misspelled
2	30	Replace "they were" with "it was" - singular form not plural
2	21	Delete "M-3's were in the house" were in
3	19	Other take add wife - make more tense
4	4	Delete "locks" - not technically correct
4	10	Replace "trapper" with "trap" - incorrect term
4	19	Replace "or" with "and" - not but to be correct
4	23	Change "pull out" to "pull-to-back" - correct term for position
5	2	A03 should be A02
5	2	Add "two volt" before "tester" - technical correction
5	2	hooker should be "hookers" - misspelling
5	8	A03 should be A02
5	9	Replace "fifty" with "four eighty" - technical
5	17	Replace "weekly" with "annually"
5	19	Replace "ALCW" with "NICW" - misspelling
5	22	Delete second comma - not required
5	23	"annunciate" should be "annunciate" - misspelling
7	8	Replace "was" with "it was"

Rank 1 Source Index

APPENDIX TO INTERVIEW OF

Randy Bruce Smith
(Print Identity of Interviewee)

Page Line Correction and Reason for Correction

6 12 Delete first comma - not repeated

6 12 Explain and with rate

6 13 Explain the with to - technical

6 14 Explain status with established

6 18 Explain which with when

6 24 902 should be 903 - technical

7 25 Explain not with to end on act for

will with notes to send you to an act for

10 9 Explain the with just

10 9 Explain at the RFE with decay heat

11 10 "reactive" should be "nonreactive" - spelling

11 14 "reactive" should be "nonreactive"

12 19 four should be core

22 13 Explain policy had with polishing here and

22 24 Explain tube with loop - surging

21 5 Explain had at with have

23 7 Explain a with and

23 17 Explain bonding with manually

24 6 Explain to pressure the button up with

the pressure button up

Page 2 Date 10/14/74 Signature R Bruce Smith

ADDENDUM TO INTERVIEW OF Reedy Bruce Lander
 (Print Identity of Interviewee)

Page	Line	Correction and Reason for Correction
24	7	Replace 'to about the valves' to 'the check valves'
24	19	NFCW should be NSCW
24	21	Replace 'till' with 'when'
24	22	Replace 'reached' with 'released the'
27	6	Replace 'ai' with 'an'
27	7	Replace 'best' with 'ESTAS'
27	12	Replace 'as best' with 'ESTAS'
27	18	Replace 'tube' with 'loop'
28	5	Replace 'tube' with 'loop'
28	14	Replace 'tube' with 'loop'
30	5	Replace 'tube' with 'loop'
31	11	Replace 'out-spread' with 'out in the spread'
32	4	Replace 'tube' with 'loop'
32	7	Replace '91-E' with 'near 1-E'
32	9	Replace 'a release to' to 'to release a'
32	14	Replace '91-E' with 'near 1-E'
34	17	Replace 'that' with 'I'
36	17	BO3 should be AA03
37	25	A 02 should be AA02
37	6	'near warning' should be 'near 1-E'
39	18	'they lost the' should be 'the loss of'
39	21	'tread' should be 'trip'

ADDENDUM TO INTERVIEW OF Randy Bruce Snider
 (Print Identity of Interviewee)

<u>Page</u>	<u>Line</u>	<u>Correction and Reason for Correction</u>
41	23	'cucking' should be 'starting'
42	1	'RAT' should be 'reactor'
42	11	'side' should be 'site'
42	11	'Unit Two' should be 'two units'
43	8	'reached' should be 'reset'
43	10	'break' should be 'breaker'
43	22	'Chronic Fatigue' should be 'clearance and tagging'
43	25	'switch key room' should be 'switch gear room'
46	21	'key' should be 'tank'
51	1	'generated' should be 'generator'
52	4	'tube' should be 'loop'
56	1	'temperature' should be 'temporacy'
56	20	'success' should be 'inaccess'
57	17	'and pulled back' should be 'into pull-to-lock'
59	8	'tube' should be 'loop'
60	18	'alternative' should be 'alternate'
60	23	'float' should be 'flow'
62	11	'caught' should be 'galled'
62	13	'steam' should be 'debris'
62	14	'still is' should be 'filling'

ADDENDUM TO INTERVIEW OF

Randy Bruce Sailer
 (Print Identity of Interviewee)

<u>Page</u>	<u>Line</u>	<u>Correction and Reason for Correction</u>
63	20	'tubi' should be 'loop'
66	16	'have yet' should be 'that are'
67	11	'sync' should be 'sink'
67	18	'size' should be 'sink'
69	22	'part' should be 'powered'

1 June -- May of last year.

2 MR. CHAFFEE: May of last year?

3 MR. SNYDER: Yes, sir.

4 MR. CHAFFEE: Okay, what we'd like to do is
5 just have you go through what you can remember that transpired
6 during the event that was on Tuesday, which I think was March
7 20th, and just tell us in your own words, you know, what
8 occurred and please relax as much as you can and just, you
9 know, tell it, and what we'll do is listen for the most part
10 and if there's something we don't understand, like terminology,
11 we'll ask a couple of questions and then after you've gone
12 through it, we'll probably ask some more questions, you know,
13 based on things that we're interested in.

14 MR. SNYDER: Okay. I'll assume that you've
15 already been told what our electrical lineup was, basic initial
16 conditions of the plant. We weren't in a normal electrical
17 lineup, basically we had one source of power going into Unit
18 One and that was from our "A" RAT going to both our "A" train,
19 1-A switch gear and "B" train, and our "B" train diesel was
20 tagged out. Our "B" RAT was tagged out so they were not
21 available. NS-3's were in the lineup we were in. The events
22 started, we lost power to the "A" RAT. Later I found out,
23 actually in the middle of all that happened after that, found
24 out that a truck had knocked over a pole or insulator, knocked
25 down one of the feeder lines, is the reason we lost the RAT, I

1 didn't know it at the time.

2 When we lost power, the "A" train diesel started up,
3 as it should have. Tied to the "A" -- to the 1-E bus and the
4 NSCW pumps, which supplies the coolant water to the diesel
5 which are required to come up, did start up, the valves started
6 repositioning, as they should have, and then the diesel
7 tripped. Did not know the reason for the diesel trip. The
8 alarm -- didn't notice which alarm came in first, there were
9 several operators in the control room. Immediately got a PEO
10 to go out to the diesel, sent another shift supervisor and my
11 BOP down to the sequencer to see if there was a problem down
12 there.

13 The reactor operator and I talked about what we
14 should do, looked through our AOP for loss of 1-E power, looked
15 through the AOP for loss of RHR, which was my big concern at
16 the time was, we were at mid-loop and I knew the core was going
17 to start heating up. We watched in-core thermocouples, which
18 we had on the plant computer, also kept an eye on vessel level
19 but we had a guy in the containment on a Tygon tube was
20 watching the level. As a matter of fact, we were raising level
21 at the time the accident, or the incident, whatever happened.
22 We had to have an operator go down and manually shut a valve
23 that we were filling the RCS with.

24 MR. CHAFFEE: Why were you filling it?

25 MR. SNYDER: Level had dropped down slightly,

1 cooling down a little bit, whatever, and we just wanted to get
2 level back up to -- to what we had been keeping it at, and
3 normally we did that from the control room with a motor
4 operated valve locks, but we lost power to it so we had the guy
5 go down to shut it. Heard back from the -- well, the reactor
6 operator and I were watching in-core thermocouples. We had two
7 temporary thermocouples that the temperatures were starting to
8 go up, we were keeping an eye on those. Got a report back from
9 the diesel, the only indication of what had tripped it was a
10 160 or any indication of any kind of tripper or anything was a
11 160 relay was in, which I didn't know what that was and still
12 haven't found out what that was, but it's not one of the ones
13 that would trip the diesel that I knew of.

14 Got a report from the sequencer that said the
15 sequencer was locked up, so the decision was made -- well, the
16 reactor operator and I guess John Hopkins was there, several
17 other people talked about it and said, "Well, we don't know
18 what tripped it. We'll make sure people are out at the diesel
19 to monitor parameters. We will reset the 160 relay or reset
20 the sequencer and once the sequencer is reset, we should get
21 another auto start since we have no power and see if we could
22 supply the bus again. Also we put all the other pumps, except
23 the NSCW pumps, in the pull lock so we wouldn't overload the
24 diesel once it started. So we did, we reset the 160 relay. As
25 soon as we reset the sequencer, the diesel restarted as we

1 thought it would. Again, since we had lost power on the bus,
2 AO2 on under voltage, the feeder breaker should trip. They did
3 not re-close. We had to re-close those once the diesel
4 started. Once we did that the NSCW pumps started up, the
5 valves repositioned --

6 MR. CHAFFEE: I'm sorry, which -- you said
7 when the diesel started, you had re-shut what breakers?

8 MR. SNYDER: Coming off AO2, you've got
9 feeder breakers going into your forty volt switch gear. Those
10 are tripped on under voltage and they will not automatically
11 come back on, on a diesel start at that time. I don't think
12 they're shown on there (referring to diagram). Yeah.

13 MR. CHAFFEE: Oh, I see.

14 MR. SNYDER: Then you've got another
15 transformer underneath that and then you've got --

16 MR. CHAFFEE: Okay, I understand.

17 MR. SNYDER: So anyway, so we had to mainly
18 close those in one at a time. I said, "Make sure we don't
19 overload the diesel." So the NECW valves repositioned, NECW
20 pumps had started, discharge valves started opening and the
21 diesel tripped again. On this trip, both, I guess it was John
22 was the first one that noticed it, was the low jacket water,
23 pressure trip. I looked up and saw the enunciator and said,
24 "Yeah, that's what had tripped it." So I sent another shift
25 supervisor -- we talked about it, sent another shift sup, which

1 was John Acree, out to the diesel and told him we were going to
2 take the diesel local and we were going to do a local emergency
3 start which, on that kind of start, it will bypass the low
4 jacket water pressure trip among others.

5 We also had people out there to monitor all the
6 parameters, make sure that, you know, even though the trip was
7 bypassed, we didn't want to tear up our diesel basically, and
8 used my only source of power at this time. So we're going to
9 monitor pressures and temperatures and make sure we weren't
10 going to damage the diesel. Again check core, thermocouples,
11 they were probably at about 125 degrees by this time because
12 they had gone up from like 96 degrees. Put the NSCW pumps and
13 pull the lock, like I said again, concerned about overloading
14 the diesel. Status communication between the diesel and the
15 control room, had them do a manual local emergency start of the
16 diesel. It started up, all the parameters indicated normal.
17 Again we had to manually shut the 480 volt feeder breakers. We
18 then started up the NSCW pumps, which they were running,
19 supplying cooling water to the diesel, made sure everything was
20 still at normal to diesel and we started up our CCW pumps and
21 then we started up our RHR again.

22 Then after that, it was more into recovery. Went
23 into getting the "B" RAT back and getting back to a more normal
24 lineup, leaving A02 on the diesel supplying all our 1-E
25 equipment. And sometime during all this, which I think it was

1 before we started the diesel the second time, we did enter a
2 site area emergency due to loss of power for greater than
3 fifteen minutes. That's basically it.

4 MR. CHAFFEE: That's basically what happened.
5 Did you have any involvement in the activities to get the steam
6 generator manways put back on?

7 MR. SNYDER: No, we got to -- well, I got to
8 that point in the AOP, it says, you know, start buttoning up,
9 basically button up containment, get the equipment or hatch put
10 back on, restore the RCS, but by the time I got there, John
11 Hopkins had already made arrangements with the person that was
12 in containment, or Westinghouse to go ahead and put the manways
13 back on. We had at least one check valve torn apart; getting
14 it back -- the cap put back on it and getting the equipment
15 hatch restored and the air lock restored. So he'd already done
16 that, so I did not really get involved in doing that.

17 MR. CHAFFEE: Did you encounter any problems
18 in dealing with the event?

19 MR. SNYDER: Other than there was no -- the
20 biggest problem I had, there was no procedural guidance I had
21 to really cover the situation I was in.

22 MR. CHAFFEE: Did that surprise you or --

23 MR. SNYDER: No. I knew it from our
24 training, whatever, that I had an AOP for loss of 1-E switch
25 gear which only covers one train loss, not to send an AOP for

1 loss of RHR watch -- and loss of CCW and loss of NSCW which
2 basically tell you to get the parameter, or get the equipment
3 on the other train started or verify they're running, which I
4 had no other train. The only other recourse was an EOP which
5 is not really valid in the plant conditions we were in so once
6 the accident started, I pretty much knew that there wasn't a
7 lot of guidance but -- so I did go through and -- loss of RHR,
8 once you get through checking the other train, it does get you
9 to start buttoning up the RCS, buttoning up containment. But
10 for a loss -- a total loss of power, loss of RHR, and mode six,
11 there wasn't any procedure specifically for that.

12 MR. CHAFFEE: How was the activity split up
13 between you and John in terms of handling the event? Sounds
14 like he was doing some things and you were doing some things.

15 MR. SNYDER: I was more directly involved
16 with getting power restored to the bus. That was my main
17 monitor -- I was monitoring the, you know, RCS level, RCS
18 temperatures, that type thing. He was more involved in, I'd
19 say getting containment bottled up and making sure the
20 emergency plan and actions concerning emergency plan were taken
21 care of. He also -- we also had a trip on Unit Two that he had
22 to keep some attention on. But basically he backed me up and
23 his was backing me up in getting power restored and I said
24 again, more the site concerns, containment, getting the
25 emergency plan started and getting the emergency personnel down

1 there.

2 MR. CHAFFEE: Why don't you go ahead and ask
3 some more questions till I get back.

4 MR. LAZARUS: Did you have any involvement in
5 the EP aspects of the classification of the event or
6 notification forms?

7 MR. SNYDER: No, I did not. As I said, John
8 took care of that until, I guess Jeff Gasser came down. He was
9 off-shift OSOS, and I know Mr. Swartzwelder was down there, but
10 I have no -- my main concern was getting diesel power back, or
11 getting power back, and I did not get involved in that aspect
12 at all.

13 MR. JONES: What are your comments on the
14 initial plant conditions and your feeling -- I guess basically
15 I'm getting to the point is how much -- how comfortable would
16 you feel with the initial plant conditions and does operations
17 have input to the planning of the outage schedule to that
18 extent?

19 MR. SNYDER: Operations does have input. We
20 have operations personnel that works in work planning and with
21 work planning and a lot of people -- I won't say a lot --
22 there's quite a few in work planning that came out of
23 operations. So there is some input and -- now, anytime you're
24 in an abnormal lineup you don't feel real comfortable, but I
25 knew we were within tech specs; I knew that the diesel

1 generator should have come up. Well, it did, the supply power,
2 and you only have power on one bus which was all I needed, and
3 I didn't have a real major problem or concern that we only had
4 the one RAT and the one diesel.

5 MR. CHAFFEE: Would you have been comfortable
6 to have been in this condition if you'd done it right after
7 shutdown?

8 MR. SNYDER: No, I would not have. You mean
9 like shut down, you're talking much more of the KEE
10 temperatures would have gone up much more rapidly and I would
11 have not been comfortable at all, having just one power supply
12 for everything in that condition.

13 MR. CHAFFEE: Did the people that planned the
14 outage, did they -- with those kind of considerations, is that
15 why this all came together when it did? I mean, did people
16 recognize how all this stuff was, you know, this was going to
17 occur, tense at the end of the outage or -- was it that much
18 thought put into it or --

19 MR. SNYDER: I couldn't tell you. I've never
20 really worked in work planning. I don't know how -- don't
21 really know what goes into scheduling everything. I would hope
22 that it had some consideration, but I couldn't say for sure.

23 MR. CHAFFEE: Was there a lot of incentive to
24 make the outage be really short or was there --

25 MR. SNYDER: There's always incentive to make

1 it short. We are here to make power and make money and if
2 you're shut down, you're not doing either one, so there is an
3 incentive to get outages done as rapidly as possible.

4 MR. CHAFFEE: And what's the number one
5 priority around here?

6 MR. SNYDER: Keep the plant safe, as far as I
7 can tell. That's still the bottom line. If you don't operate
8 safely, you might as well -- you shouldn't be operating.

9 MR. WYCKOFF: You were right there watching
10 the enunciator panels on the diesel generator and there's
11 something that's kind of vague in my mind yet, we've not hit
12 anybody to nail it down, or maybe we didn't ask the right
13 questions. After the first outage of the diesel generator, can
14 you recall when enunciators came up? It wasn't more than the
15 jacket water or -- do you know? Maybe you -- so much was going
16 on you don't even know.

17 MR. SNYDER: There was a lot going on after
18 -- well, once -- if a diesel trips you get -- there's several
19 annunciators in. You get under frequencies, you get low oil
20 pressure, you get low jacket water pressure.

21 MR. CHAFFEE: Do you get low jacket water
22 pressure anytime you get a trip? I mean, in other words, do
23 you get it because of the trip or do you --

24 MR. SNYDER: A lot of times you do. I won't
25 say every time. I've never -- I haven't seen a diesel trip

1 that often. But generally on a trip you're going to get
2 various low pressure alarms because of the trip itself.

3 MR. CHAFFEE: Oh, because of the trip itself.

4 MR. WYCKOFF: Oh, so these alarms that people
5 have been saying maybe to, are to the trip.

6 MR. CHAFFEE: It's possible.

7 MR. SNYDER: Well, it is possible. The low
8 jacket water pressure I saw come in before the others did.
9 John, I think John was the first one to point it out, but it
10 was definitely in when I looked up and it was the only trip
11 signal I saw in.

12 MR. CHAFFEE: How long was it in before the
13 others came in? Was it just a flash or a second or any idea?

14 MR. SNYDER: I can't really say. I looked at
15 the diesel, I saw the amber light on the breaker as soon as it
16 tripped, but when John mentioned that was tripped, saw that
17 that was the only -- most annunciators are in a concentrated
18 area; it was the only annunciator on. As soon as I saw that, I
19 turned around and went back over to look at what my four
20 thermocouples were. I didn't --

21 MR. CHAFFEE: Does your plant computer print
22 out various annunciators when they come in?

23 MR. SNYDER: Proteus does do that.

24 MR. CHAFFEE: Do you have any idea if it has
25 captured that information for this?

1 MR. SNYDER: I have no idea whether it did
2 that day or not.

3 MR. CHAFFEE: Do you happen to know if they
4 have a policy here that when they have an event, that they
5 capture that information? I mean, you know, sometimes there
6 are buffers and you lose it but --

7 MR. SNYDER: There is a general policy that
8 in the event -- we have an event critique team that is set up
9 later, but generally any event, we get both the computer
10 printouts from Proteus and we also get printouts and tapes from
11 our ERF computer. And I know the ones we've gotten for ERF; I
12 don't know about Proteus.

13 MR. CHAFFEE: The ERF computer is -- what's
14 that? Can you explain it to us?

15 MR. SNYDER: It's our --

16 MR. CHAFFEE: Is that Emergency Response
17 Facility, is that what --

18 MR. SNYDER: Basically it's a emergency
19 response computer that monitors -- its major concern is, or
20 major function is monitoring critical safety functions. Okay.
21 Now, it's got other information on it and other things you can
22 do with it, but that's its primary -- the primary function is
23 post accident concern. And I said it has the magnetic disc
24 back in the TSC and like I said, I know those were retained.

25 MR. CHAFFEE: Is there any kind of a first out

1 function -- did you guys ask that -- first out function
2 associate with a diesel annunciators that tell you which first
3 came out?

4 MR. SNYDER: No.

5 MR. WEST: Is that the case both in the
6 control room and at the annunciator panel at the diesel room?

7 MR. SNYDER: As far as I know, that's true.

8 MR. WEST: Do you have first out at all in
9 the control room?

10 MR. SNYDER: Not for the diesel.

11 MR. WEST: I mean other than

12 --

13 MR. SNYDER: The only first out panel I know
14 that we have is for reactor trips.

15 MR. WEST: Turbine trips?

16 MR. SNYDER: Well, it's --

17 MR. WEST: Just wonder if --

18 MR. SNYDER: Well, okay, for a turbine trip,
19 there is a first out. The panel in the -- the EHC panel that's
20 in the back of the control room basically, it does have a first
21 hit capability also for turbine trips. But the annunciator in
22 the control room for the turbine, no, it does not have a first
23 out. You can go back to that panel for a turbine trip, get a
24 first hit.

25 MR. DIETZ: Does the local diesel control

1 panel have a first out on the (inaudible)?

2 MR. SNYDER: I do not think so. I'm almost
3 sure it doesn't, but --

4 MR. DIETZ: Are there alarms on that panel
5 that are not also up in the control room?

6 MR. SNYDER: As far as I know, every alarm
7 that's -- as far as I know, they're practically images of each
8 other. I think all the ones that are on the diesel panel are
9 also on the control room panel. Matter of fact, there's been
10 some confusion at times. You look at the -- our annunciator
11 response procedures and the one for -- well, there may be one
12 annunciator that's different, seems like there is. They were
13 looking at the one for the control room and they said, "Well,
14 it's the same as the one out at the diesel except for this one
15 item," which I can't remember what it was; some minor, what I
16 call minor annunciator. But they are practically the same
17 panel, as far as I know.

18 MR. WYCKOFF: Randy, was that also true then
19 -- so on the first one you're not sure -- there's a lot going
20 on and it may have been the jacket water came up first. Is
21 that also true the second trip, you don't know what came first
22 but they all kind of came sooner or later?

23 MR. SNYDER: The low jacket water pressure
24 alarm came in first on the second trip. I have no doubts about
25 that. The first one I could not say 'cause I was looking at

1 other things and it was -- the annunciators were reset before I
2 really -- well, before anybody really sat and looked. But by
3 the time I looked, there were many alarms in for the diesel the
4 first time.

5 MR. LAZARUS: Isn't the low jacket water
6 pressure -- that's normally low in the diesel, it's up off
7 line?

8 MR. SNYDER: No, when it's tripped and --
9 well, it's got a -- I'm not going to say I'm an expert on
10 diesel and diesel alarms, but it's got a time delay that once
11 it's tripped, it will only stay in for some amount of time.
12 That's the same for the load that we'll trip and the other
13 trips that come in. They will generally only stay -- well,
14 basically till the diesel is reset, if I remember right. Once
15 it's reset --

16 MR. LAZARUS: The pressure is low but the
17 alarm resets --

18 MR. SNYDER: Yes.

19 MR. LAZARUS: So it allows another starting?

20 MR. SNYDER: Yes. Right. And a lot of times
21 on a -- well, a lot of times when it's started, you'll get this
22 alarm sent for a period of time. They're locked out for a
23 period of ninety seconds on a start because like I said, they
24 are low to start with and it takes the diesel -- the diesel's
25 got to go on to the diesel driven pump for lube oil and for

1 jacket water. So there's a ninety, like I said, a ninety
2 second lockout for those trips on any start.

3 MR. WYCKOFF: Did you say nine or ninety?

4 MR. SNYDER: Ninety, for those trips on a
5 normal start.

6 MR. CHAFFEE: You know, because they start off
7 being low. I guess that it must be that it takes that long to
8 get them up.

9 MR. WYCKOFF: But this didn't run ninety
10 seconds.

11 MR. CHAFFEE: No, I think it ran a hundred --

12 MR. SNYDER: It ran at least ninety seconds.

13 MR. WYCKOFF: On both times?

14 MR. SNYDER: At least, yes. I'd say that it
15 -- it ran long enough that NSCW valves repositioned and, like I
16 said, the NSCW pumps came up like they should have which
17 doesn't take ninety seconds, but for the valves to reposition
18 takes a good while. And I said, the second time I know we
19 started getting NSCW pressure which takes at least sixty -- if
20 I remember right -- sixty-five seconds from the time the pump
21 starts. So there is at least -- like I said, the diesel had to
22 start, the breaker had to shut, we tied the 480 volt switch
23 gear on and then you have the sixty-five second time delay. So
24 at least that much time happened before the diesel tripped the
25 second time.

1 MR. WYCKOFF: Would I be right then that the
2 time on the oil pressure is more like ten seconds or eight
3 seconds on oil pressure?

4 MR. SNYDER: I'm not sure I understand what
5 you're asking.

6 MR. WYCKOFF: Or the delay. If it --

7 MR. SNYDER: There's a ninety second time
8 delay. The diesel starts and all trips are locked out when
9 they normally start for ninety seconds.

10 MR. SNYDER: So it ran at least ninety
11 seconds the first time and the second time before it went.

12 MR. CHAFFEE: Do you think there's any chance
13 that the -- that maybe the reason it tripped was those
14 particular features never actually cleared, you know, that
15 actually took -- that's a bad question, never mind. Are you
16 familiar with any other problems with these diesels in the
17 past, you know, past history of problems with these diesels?

18 MR. SNYDER: None that I'm aware of. We do
19 test them monthly, if I remember right, per tech specs and we
20 are not in a -- if you have problems with them failing tests,
21 whatever, you go on to an increased frequency test which we
22 have not been on them since when we first started up Unit One,
23 so I don't know of any other real problems with diesels.

24 MR. CHAFFEE: How about Unit Two, any problems
25 there?

1 MR. SNYDER: They had some problems, I guess
2 it was about a month ago, maybe two months ago, that -- I'm not
3 sure of all the problems they had. I know after one
4 surveillance the -- we have a stopping light that's supposed to
5 go out in the case that everything's resetting, and it has to
6 go out before you can basically put it in standby to say it's
7 operable. And they had a problem with the circuitry, it
8 wouldn't quite reset due to -- I know one problem was a
9 solenoid valve was sticking, was one time and it might have
10 been -- it happened twice, I think it might have been the
11 second time also.

12 MR. WEST: As the -- excuse me.

13 MR. SNYDER: That's the only problems I can
14 think of. There might have been another one on Unit Two but I
15 can't recall what it is right now. I think one of them on Unit
16 Two is on an increased frequency, surveillance frequency right
17 now, because of this problem we've had.

18 MR. WEST: As the Unit One supervisor up
19 there, at the time of the event, were you aware that the truck,
20 the fuel truck was in the switchyard area?

21 MR. SNYDER: I was not aware that it was in
22 the switchyard area, no.

23 MR. WEST: Is there any requirement that
24 you have to be notified if it -- given that it was there?

25 MR. SNYDER: If it's already on site which it

1 obviously was, no, there are -- I should say in the switchyard
2 area or in the protected area, there's no requirement for me to
3 be notified, no.

4 MR. WEST: You commented earlier on the
5 procedures and your thoughts on how adequate or not in terms of
6 the events you were going through that you were using there in
7 the control room. Do you have any sense of how adequate the
8 procedures were that the operators were using in the diesel
9 Or to put it another way, how adequate the procedures are.

10 MR. SNYDER: As far as the SOP they were
11 using for the local start of the diesel, as far as I know it's
12 very adequate for what they were doing. Now, most procedures
13 could use more detail, a little policy hand there, but as far
14 as I know, basically it's a good procedure. From what I heard
15 from the shift supervisor out there, he pretty much followed it
16 just like it's written and had no problems.

17 MR. CHAFFEE: Have you received any kind of
18 training for how to deal with problems in shutdown operations,
19 you know, like loss of shutdown cooling or --

20 MR. SNYDER: We've had some training but the
21 training we've had is -- well, we've had like loss of one of
22 your switch gear, both operating and shutdown type scenarios,
23 but you've got the other train available. We've also had the
24 same scenario, mid-lube operations in the simulator, mid-lube
25 operations and you lose one train of RHR, but you've got the

1 other train available. So it's been some training but not to
2 the extent that we had -- not that I recall.

3 MR. JONES: Have you trained on industry
4 events?

5 MR. SNYDER: We hadn't, especially since we
6 knew we were coming up for refueling. We have talked about and
7 discussed, yeah, that, you know, if you lose RHR, you're going
8 to be boiling much quicker than originally thought and as a
9 matter of fact, they just revised the procedure not too very
10 long ago, to include graphs and charts that said that they'd
11 give you a time versus -- time after shutdown versus time the
12 saturation type occurs, that type thing. So it has been
13 discussed. Like I said, we haven't -- it wasn't really
14 presented on the simulator that I can recall, having both a
15 loss of power and a loss -- or total loss of power in those
16 conditions. But it has been discussed as far as, yeah, this is
17 what you got to look at versus -- used to the consensus was you
18 had so many hours and hours before it happened and now we're
19 finding that's not really true. So it's been pointed out, but
20 not really trained in that much detail.

21 MR. CHAFFEE: How much time do you think you
22 would have had on Tuesday if you hadn't gotten RHR back on
23 line?

24 MR. SNYDER: Well, we went in -- it was
25 approximately forty minutes from the time we lost power to the

1 time we got RHR back. In that amount of time, temperatures --
2 in-core temperatures went up from approximately 96 degrees to
3 136 and I think later I heard somebody calculate it, it was
4 like a point six degree a minute heat up rate. There were
5 other ways we had to cool the core which I was -- hadn't really
6 thought about at the time but was headed in that direction. We
7 wouldn't have had as much time as I'd have liked, but I think I
8 would have sufficient time to -- well, I know I'd have had
9 sufficient time to get some other kind of core cooling in
10 before we reached boiling in the core.

11 MR. CHAFFEE: Do you think you had a hour, a
12 couple of hours or --

13 MR. SNYDER: At least. From the initiating
14 event till then, at least that much.

15 MR. CHAFFEE: Till you got to the point where
16 you had boiling?

17 MR. SNYDER: Yes, like I said, we were --
18 well, it's kind of hard to say because our heat-up rate was,
19 seemed like it was -- the heat-up rate was getting bigger the
20 more we heated up and as, you know, as it kept on going, as it
21 got close to boiling, I don't know if that would have slowed
22 down or kept increasing, so that's hard to say. But I think,
23 like I said, based on what I saw, I think we'd have had two
24 hours.

25 MR. CHAFFEE: How much longer would you have

1 -- I know this is hard, but if you had not got the diesel back,
2 and I guess you got it back in like thirty-six minutes, but if
3 time had marched on another twenty minutes or thirty minutes,
4 would you have started getting into some alternate ways of
5 cooling it?

6 MR. SNYDER: I would at least have started
7 discussing it with John in the TSC. We'd already initiated
8 getting the "B" RAT back in service. Turns out they had --
9 they had completed the oil change with it and we had -- as a
10 matter of fact, we'd already started getting it back in
11 service, releasing a clearance on it by the time we got "A"
12 train back.

13 MR. CHAFFEE: How else could you have cooled
14 the core?

15 MR. SNYDER: Well, like I said, we were
16 filling the core already, filling the RCS already. We had to
17 manually shut a valve. I could have had that valve banding
18 opened again and either filled up the RCS and gone out to head
19 vents or I had people in containment, I could open the drains
20 off the intermediate legs, drained to the RCDT if I had to. So
21 I could have -- as long as I didn't reach boiling and reach a
22 pressure, I couldn't gravity flow from RWST; I could have
23 cooled the core.

24 MR. CHAFFEE: If you had taken water from the
25 RWST and let it gravity fill in, would it have reached the core

1 or would it have been diverted elsewhere? Without the ?? pump
2 swimming.

3 MR. SNYDER: It would have filled the core.

4 MR. CHAFFEE: Would it? Okay.

5 MR. SNYDER: Well, like I said, we started
6 buttoning things up so we had to pressurize the button up. We
7 had to check the valves back in so it would have filled the
8 whole system.

9 MR. DIETZ: Randy, what was the status of
10 the -- I believe the "B" RHR unit. You were operating on "A,"
11 what was the status of "B?"

12 MR. SNYDER: "B" was available if I had
13 power.

14 MR. DIETZ: All of it, part of it?

15 MR. SNYDER: All of it.

16 MR. DIETZ: The heat exchanges and
17 everything.

18 MR. SNYDER: Everything was -- well, like I
19 said, if I'd have had the power to start up, NECW, CCW and the
20 RHR pump, I could have run "B" train. As a matter of fact, we
21 ran "B" train once we got -- once we got the "B" RAT back, till
22 we reached clearance, we got the "B" RAT back, and we started
23 that "B" train equipment and put "B" RHR in service before we
24 ever took the diesel off of the 1-A switch gear.

25 MR. DIETZ: Was that using the "B" heat

1 exchange of the "A"? You had transferred it entirely over on
2 to the "B" train?

3 MR. SNYDER: Everything, yes. We made sure
4 that it was entirely "B" train and we made sure it would cool
5 the core before we ever took the diesel off "A" train.

6 MR. DIETZ: Had you had any problems with
7 the "B" pump, high vibration?

8 MR. SNYDER: There was a high vibration
9 problem. They had done maintenance on "B" pump. When they
10 restored it, there was a vibration problem. Matter of fact,
11 there's still a caution tag on the hand switch that says,
12 "Notify maintenance before operating." Maintenance has gone in
13 there and they determined one of the problems to be the base
14 plate bolts and studs were not -- had either worked loose or
15 was not -- not tight enough or something about the base plate;
16 I don't know all the details. They went back and redid those
17 studs and from what I heard, vibration was back in the
18 acceptable band. The only precaution was, they don't want to
19 use it for an extended period of time till they can do more
20 studies on it. But it is available for use and like I said, we
21 did use it Tuesday. And it has been -- it has been run for
22 surveillance tests since then.

23 MR. CHAFFEE: Is there any particular reason
24 why they had to do the work on the "B" diesel and the "B" RAT
25 at the same time, that they couldn't have had them be phased a

1 little bit?

2 MR. SNYDER: I don't know of any particular
3 reason. I don't know if it was -- I don't know if it was
4 scheduled to be split and one started earlier or one hung late,
5 or whether they were both scheduled together. I think they
6 were both scheduled together, the theory being, "Hey, we'll
7 take out one whole train of power, diesel, RAT, switch gear,
8 whatever," and it turns out they didn't take out the switch
9 gear till we got the rest of it back. But they do, I'd say,
10 basically a whole train at a time.

11 MR. CHAFFEE: You said they later did take the
12 switch gear out?

13 MR. SNYDER: They had planned to take "B" A03
14 down this past weekend.

15 MR. CHAFFEE: Oh, I see.

16 MR. SNYDER: That was the original schedule
17 was to get -- well, to get -- to get the RAT back, I said,
18 they're still working on the diesel. As far as I know, they're
19 planning to get the diesel back also and then, I said, take
20 down the switch gear itself for PMS, whatever work had to be
21 done on it. So at least -- that part of it at least was going
22 to be split up.

23 MR. CHAFFEE: Is there any reason why that
24 work couldn't have been done at a time other than when you were
25 in that lube, both the "B" diesel work and the "B" RAT work? I

1 mean, is there something about the outage that it has to be
2 done then or it could it have been done --

3 MR. SNYDER: Not that I know of. There may
4 be some reason, but not that I'm aware of. I know one of the
5 reasons the switch gear work was done, say, in the last part of
6 the outage instead of the very beginning, is we did have as
7 best test to do on both trains in the beginning of the outage,
8 so we had to keep all -- basically all the safety related
9 switch gear up for that at the very beginning of the outage.

10 MR. CHAFFEE: Because you want to test it in a
11 insidious status when it's all --

12 MR. SNYDER: Right, we had to -- like I said,
13 we had to keep it up, basically for the as best testing. So
14 that was like the first -- well, the first week of the outage.
15 So that's one reason it was held off till later. There may be
16 other reasons for scheduling it like the way it was.

17 MR. CHAFFEE: How long of a window do you have
18 to go into for mid-lube ops when you're -- I guess you go in
19 initially when you're getting into the outage and then you do
20 it again when you're getting out as you're -- is that right, or
21 do you just do it for one time near the end of the outage? I
22 guess that depends on what work you have to do?

23 MR. SNYDER: It depends on what work. We
24 went into it -- I guess we drained down once -- the initial
25 drain-down, whatever, removing the head, doing all this,

1 whatever, flooded back up. Then we had to drain down again
2 for, like I said, we were doing check valve inspections, RCS
3 check valves, on charging and some of the SI lubes, so we had
4 to drain down again for that and for seal work.

5 MR. CHAFFEE: So you drain down the mid-lube
6 to remove the head?

7 MR. SNYDER: I know we had a reactor pump
8 seal work also going on.

9 MR. CHAFFEE: Oh, I see. Okay, yeah.

10 MR. SNYDER: It depends on what's going on in
11 the outage as to how often or when you will be down in mid-
12 lube.

13 MR. CHAFFEE: Yeah, I understand why you went
14 to mid-lube for the seals and I understand why you would do it
15 for the -- like Eddy current testing, but why do you do it for
16 taking the head off? I mean --

17 MR. SNYDER: Well, I shouldn't have said
18 taking -- you've got to do it for putting the dams in, okay.

19 MR. CHAFFEE: And you do that to set up for
20 Eddy current testing --

21 MR. SNYDER: Eddy current testing, whatever
22 else has -- we do sledge lancing on the generators also,
23 various other things.

24 MR. CHAFFEE: So you went into it once earlier
25 in the outage to get this --

1 MR. SNYDER: Correct.

2 MR. CHAFFEE: Do you know how early in the
3 outage you did that? Was that, you know, a few days or a week
4 after shutdown or --

5 MR. SNYDER: I don't remember. I was in
6 training the first week of the outage and then I was on Unit
7 Two for the second week I was back, so I didn't really get
8 involved in Unit One outage type things. So I'm not sure what
9 the schedule was for the first drain down.

10 MR. CHAFFEE: Do you guys shift back and forth
11 between Unit Two and Unit One? Is it like every --

12 MR. SNYDER: We -- well, most shifts -- most
13 shifts like on "B" shift, most of them -- we've got three shift
14 suits so we rotate, you know, one and two, then back in as
15 support shift sup. and we rotate.

16 MR. CHAFFEE: I see, it's a three --

17 MR. SNYDER: Right, so that way we --

18 MR. CHAFFEE: How often do you change?

19 MR. SNYDER: "B" Shift, the one I'm on, we
20 change every week. I was on Unit One last week, I'll be on
21 Unit Two this week, and then I'll be support shift sup. the
22 next week. Most shifts, I think, do it that way. "E" Shift
23 that I was on before the outage, that's the way we rotated.

24 MR. CHAFFEE: Does anybody take a look at the
25 overall outage from a perspective of -- I mean, what we're

1 getting at here, which is how do we do all this stuff so we
2 minimize our vulnerabilities to the unexpected in terms of mid-
3 lubes and stuff like that? Does anybody do that, that you're
4 aware of?

5 MR. SNYDER: Like I said, I've never gotten
6 involved in scheduling or work planning here really. I don't
7 know what really goes into figuring out the schedule. Like I
8 said, I know like the manager and several people in work
9 planning do come out of operations, so they at least have some
10 feel for, well, let's wait to do this later, whatever. But
11 exactly what process they go through and what all the
12 considerations are, I don't know.

13 MR. CHAFFEE: When you're coming back out, you
14 know, after you've got your -- I guess you guys were in mid-
15 lube this time, just trying to button things up in a sense; you
16 were coming up out of the outage. How long a time is that? I
17 mean, when did you go in, when were you planning on going out,
18 and what are the things that you had to do in order to finish
19 that process?

20 MR. SNYDER: I'd have to look at a schedule
21 and see what it says. I don't have a good feeling for how long
22 -- when, exactly they went into it. We just came out of it
23 Saturday, as a matter of fact. I was there when we flooded up,
24 was it Saturday or Sunday? Yeah, Saturday was when they
25 flooded up. So this time, like I said, most of it for this

1 last time we were in, was for doing check valve work.

2 MR. CHAFFEE: Has there ever been any talk
3 about, you know, off loading the core to be able to do some of
4 this stuff, or did you off load the core?

5 MR. SNYDER: We did off load the core.

6 MR. CHAFFEE: Why was that done?

7 MR. SNYDER: That's our method of refueling.
8 Every -- well, like I said, the last -- the first refueling we
9 had on Unit One and this one, the decision's been made that it
10 is quicker, less confusing, whatever, to do a total off-load
11 and then swap RCCAs, new fuel, whatever, out-spent fuel pool,
12 and then reload the core.

13 MR. CHAFFEE: Is there a reason why once the
14 core is off-loaded, they don't go ahead and do all this kind of
15 work, you know, let's check out stuff and get it all done then
16 when, you know, being in mid-lube wouldn't be a particular
17 problem?

18 MR. SNYDER: Because you don't want to have
19 to drain down the cavity and decon it twice. That's a major
20 evolution to do.

21 MR. CHAFFEE: Explain that one to me. Sounds
22 good, but what does that -- why do you have to do that? I need
23 to understand the dynamics.

24 MR. SNYDER: Okay. Well, to do a refueling,
25 you flood up the cavity which is our big --

1 MR. CHAFFEE: Right.

2 MR. SNYDER: -- a'ea, whatever. To do any
3 work on check valves going into the RCS, you have to drain down
4 to mid-lube, so you have to fill up the core, or fill up the
5 cavity to de-fuel, and all the way down, do all the decon's so
6 you can get in the cavity and get whatever. I guess you
7 wouldn't have to decon, but --

8 MR. CHAFFEE: You have to live with it un-
9 deconed until you've finished it and then --

10 MR. SNYDER: Well, there's -- if you don't
11 decon it, you've got a very high risk of having airborne
12 contamination, so you'd have to -- practically you'd have to
13 decon the cavity, do all your work, fill the cavity back up
14 again, refuel, drain it back and decon it again so it wouldn't
15 --

16 MR. CHAFFEE: Oh, I see, okay.

17 MR. SNYDER: Would not work out.

18 MR. CHAFFEE: Anybody else have any questions?
19 Go ahead.

20 MR. KENDAL: Randy, I missed a part of the
21 discussion, so if I ask questions that we've -- you have been
22 through and go back and look at the record later on. Were you
23 going through a thought process of how to get power to the "A"
24 train safeguards bus or warning bus if the diesel had tripped
25 and you couldn't get it back?

1 MR. SNYDER: Not really. I know there's no
2 easy way to do it and I also knew we were starting to do the
3 clearance to get "B" RAT back, and from seeing the second trip
4 on the diesel, I knew what had tripped it and I knew if we did
5 an emergency start, we could take care of that problem. It
6 wouldn't trip on low jacket water pressure. I know there's no
7 easy way to get power from your 91-E to your 1-E buses. I
8 don't even know if it can be done for sure. And I said, we're
9 starting a release to clearance to get "B" RAT back and re-
10 energize "B" train, and I felt I could get that back in a
11 reasonable amount of time if I really had to based on, I said,
12 during thermocouple temperatures and the people we had working
13 on it. So I didn't really start to thinking about, I said,
14 trying to get some kind of 91-E power into the 1-E bus.

15 MR. KENDAL: Did the options that were
16 clearest in your mind were trying to get the diesel and keep it
17 going or get the RAT back?

18 MR. SNYDER: Yes, which, I said, we're
19 heading in both directions, but I felt pretty confident about
20 the diesel once I knew what had tripped it.

21 MR. WEST: Was the --

22 MR. KENDAL: Excuse me. Please go ahead.

23 MR. WEST: Was the safety monitor display
24 system available.

25 MR. SNYDER: Are you talking about ERF or are

1 you talking about --

2 MR. CHAFFEE: Is that your term for SPDS?
3 That's what you're asking, right?

4 MR. SNYDER: Yes.

5 MR. CHAFFEE: Is that the same -- ERF is what
6 the --

7 MR. SNYDER: Yeah, it's the --

8 MR. CHAFFEE: -- is the SPDS? Okay.

9 MR. SNYDER: Most of it was not -- if I
10 remember right, most of it the -- for instance, the -- I know
11 all the digital inputs were indicated purple which indicates
12 it's inoperable. We have our safety -- like I said our
13 critical safety function down the side, the little squares.
14 Most of those were purple, which indicates they're inoperable.

15 MR. WEST: What about the STA's role. What
16 was that?

17 MR. SNYDER: That was the STA.

18 MR. CHAFFEE: Well, how was your role?

19 MR. SNYDER: I was concerned about the safety
20 plant and I figured out how to take care of it. That's -- I
21 monitored the functions that I knew affected the core safety
22 and I took care of it.

23 MR. CHAFFEE: Would you have found it helpful
24 to have had a separate person as an STA to assist you?

25 MR. SNYDER: Not really. Like I said, I had

1 my support shift supervisor. John Hopkins was there. I had --
2 MR. CHAFFEE: Does each unit have a support
3 shift supervisor?
4 MR. SNYDER: There's one for --
5 MR. CHAFFEE: -- for outages?
6 MR. SNYDER: There's one for both units;
7 however, now, during the outage, we are covering so that there
8 are two -- at least two extra shift supervisors or support
9 shift supervisors.
10 MR. CHAFFEE: On the shift?
11 MR. SNYDER: On every crew, yes.
12 MR. CHAFFEE: One of them was pretty much
13 assigned to the plant that's in outage and the other one roving
14 or just he catches --
15 MR. SNYDER: Both of them do whatever has to
16 be done, so they had -- Clay was my normal support shift sup.
17 I don't remember who the extra was that day. I also had two
18 day shift supervisors were there, Keith Pope and John Acree. I
19 also had two extra OS's that came down later, so I had
20 sufficient help and technical assistance that I did not feel
21 any need for any extra people.
22 MR. CHAFFEE: How would it have gone if this
23 had occurred at mid-graveyard?
24 MR. SNYDER: Well, we'd still had the OS,
25 we'd still had the two support shift supervisors. It might

1 have been, like night shift, it might have been helpful to have
2 another person. It's hard to say. With the two support shift
3 sups. and one thing that made a difference that I noticed, if
4 the unit trips, the other unit shift sup. comes over and helps
5 out, you know, if nothing's going on in his unit. This didn't
6 happen this time because Unit Two tripped. That surprised me
7 when that happened, too. But anyway -- so on night shift, if
8 Unit Two had not tripped, you know, you've got another shift
9 sup. available that can help. Normally, that's how it works
10 out.

11 MR. CHAFFEE: Is the plant designed so that
12 something happening in one unit shouldn't impact the other?

13 MR. SNYDER: That's correct. As far as I
14 know, Unit Two should not have tripped when we lost our RAT.
15 They did lose their "B" RAT, which comes off the same power
16 feed which I expect them to lose. They should have lost one 1-
17 E bus, B03, and that's all that should have happened to Unit
18 Two.

19 MR. JONES: It got a little bit confusing
20 there. Let me ask it this way: if Unit Two had of had a
21 problem, could you have functioned with STA on that unit and
22 still done your duties on the unit?

23 MR. SNYDER: Assuming that Unit One is not in
24 an incident or a situation like we were in if, you know. If we
25 were just doing basic outage things or if we were up and

1 running, whatever, the other unit should have -- can function
2 at STA for like Unit Two, yes. As a matter of fact, for "B"
3 shift there's only two of us that can be an STA, so if one of
4 us happens to be a shift sup., that's the way it was Monday. I
5 was -- on the books said STA, but I was also unit shift
6 supervisor. So if something -- if something had happened on
7 Unit Two Monday and nothing had happened on my unit, yes, I
8 could have assisted and acted as STA for Unit Two.

9 MR. JONES: In this case where something
10 happened on your unit and if something had happened on the
11 other unit, you wouldn't have been able to do it, but there was
12 an extra person on that crew?

13 MR. SNYDER: Yes, support shift sup. could
14 have covered -- well, as a matter of fact he did cover some --
15 he did have both units and, like I said, we had several other
16 people on that helped out and could have, you know, could have
17 served as a STA type function on either end if it had been
18 required.

19 MR. WEST: What's your feel on the number
20 of people that were in the control room from not enough to too
21 many?

22 MR. SNYDER: I didn't really pay much
23 attention to how many people were there. At one point -- well,
24 after we got the diesel tied on to -- tied on and staying on,
25 after we emergency started it on A-02, several day shift people

1 came in and it got somewhat crowded then. That was the only
2 time I really noticed, but they were not there long. Okay. It
3 didn't impact what I was doing. They didn't really get in the
4 way. When it first happened when I was first taking action to
5 get the diesel on the bus, I couldn't tell you how many people
6 were there, other than I had enough people to help me. So
7 there was at least enough that I could have probably made do
8 with less but there was not enough there to get in my way. And
9 then later, once the site area was declared, there was quite a
10 few up on the podium. Let's see, I know George Bockhold was
11 there, and Jim Swartzwelder was there, and Hopkins was up there
12 and Jeff Gasser was up there and several others, but they were
13 up on the podium and I didn't really pay much attention to how
14 many were up there. So they didn't bother what I was doing.

15 MR. WEST: You mentioned that you were only
16 replacing the equipment hatch, I believe. How long does that
17 take?

18 MR. SNYDER: I don't have a good time
19 estimate. I know it was done -- well, I don't know when John
20 told them to do it. I don't know when the order went out for
21 him to do it. It did not -- we had gotten RHR back. It wasn't
22 too much longer after we got RHR back, so I would say an hour.
23 That's just a big ball park figure. I don't have a real clear
24 idea.

25 MR. WYCKOFF: I have two questions, Randy.

1 Number one, if you hadn't had normal power, could they have
2 replaced the manway covers in the steam generators and the
3 access to the containment?

4 MR. SNYDER: I'm not sure. They could have
5 probably got the manways back on. I'm not sure about the
6 equipment hatch 'cause it does come off one of the non-warning
7 buses, I do believe.

8 MR. WYCKOFF: They'd have to do the manway
9 covers by hand, and you think they can do that? Then I have
10 one other very different question. Do you have any feeling
11 about whether you think there should be an emergency start
12 button for the diesel generator in the control room? Do you
13 have any feeling for that? I don't know if it's good or bad,
14 I'm just asking.

15 MR. SNYDER: I don't know about an emergency
16 -- well, I don't know about emergency start button. I think
17 that any start -- any auto start of the diesel ought to be an
18 emergency start. Right now the way it's set up, they lost the
19 power start. It's called a normal start. And I said any --
20 all the normal trips, such as low jacket water pressure and
21 there's several others, will still tread the diesel.

22 MR. WYCKOFF: Then that would be an emergency
23 start.

24 MR. SNYDER: Well, if you get a safety
25 injection signal, it's called an emergency start and you only

1 have four trips to the diesel, only four, and most of the time
2 on a safety injection, the diesel should not tie into the bus;
3 all they do is start and run. It would make more sense to me
4 that a loss of power should be an emergency start. But as far
5 as emergency start button in the control room, I don't know
6 that -- I don't have any real feeling for it.

7 MR. KENDAL: Has the fact that it's been in
8 the -- that it only exists locally in the diesel room been a
9 problem?

10 MR. SNYDER: Uh-huh (yes).

11 MR. KENDAL: How about the same question for
12 automatic reset of the -- or for manual reset of the sequencer?
13 Would -- is that something they would seem to be preferable to
14 have in the control room?

15 MR. SNYDER: Well, in a way it would be good,
16 just like the emergency start. In a way it would be good; in
17 another way, you don't know the condition of the diesel or the
18 sequencer if you do everything in the control room.

19 MR. KENDAL: So there's a merit to having it
20 where it is --

21 MR. SNYDER: There is some merit to it in
22 that to reset signals, you have to go down to the sequencer, so
23 you know what the situation is with the sequencer before you
24 try to reset it.

25 MR. KENDAL: Does the sequencer have a local

1 panel that has indications of its status and --

2 MR. SNYDER: Yeah, the sequencer itself.

3 MR. KENDAL: -- similar to the diesel?

4 MR. SNYDER: Yes.

5 MR. KENDAL: Let me ask another question in
6 regard to emergency starter, the emergency break glass start of
7 the diesel.

8 MR. SNYDER: Okay.

9 MR. KENDAL: You mentioned that the controls
10 for the equipment were placed in pull lock to decrease the load
11 the diesel would see. Is that something done by procedure on
12 the emergency break glass start or is that just kind of good
13 common sense through training?

14 MR. SNYDER: That was just common sense. If
15 you look at -- for the loss of power scenario in the EOP's
16 which we would use if we were up at power, whatever, it gives
17 you specific instructions to put everything in pull lock except
18 NSCW. So that was in the back -- that's basically why I did it
19 then. It was in the back of my mind, said, hey, this is a good
20 thing to do if you're going to start the diesel and don't want
21 to overload it. I want to make sure we're not overloading
22 'cause I knew it was the only source I had.

23 MR. KENDAL: Was the subsequent racking of
24 the loads, is that something that was done by procedure or is
25 that pretty much normal routine?

1 MR. SNYDER: It's normal routine. My RAT
2 operator had already looked through the procedures while we
3 were -- we were over here looking at the diesel, whatever, he
4 was monitoring his temperature and also glancing through
5 procedures for starting all equipment 'cause he knew he was
6 going to have to do it. Plus it's fairly -- starting up NSCW,
7 starting CCW and since we've been on RHR a lot, those are
8 pretty much straightforward, typical things to do and the
9 actual starting is not that involved. So --

10 MR. JONES: So there are four different
11 sequencers on this side, right, for Unit Two?

12 MR. SNYDER: That's correct.

13 MR. JONES: You reset the ones for Unit Two
14 the same as you set the ones for Unit One if you had this kind
15 of a situation --

16 MR. SNYDER: No, not yet anyway. Unit Two
17 was designed and built. They have a reset push button for this
18 type of situation, loss of power diesel trips type deal.

19 MR. JONES: To reset the sequencer?

20 MR. SNYDER: Yes.

21 MR. WYCKOFF: In the control room?

22 MR. SNYDER: No, it's on the sequence panel.
23 It's a little red button. Unit One has just installed this
24 reset button during this outage. It has not been tested yet.

25 MR. JONES: After the event or --

1 MR. SNYDER: No. It was installed -- I don't
2 know when the DCP was actually put in. It was already
3 installed before this. It has not been tested and it's not
4 been hooked up yet. It has not been tested.

5 MR. KENDAL: So reset right now of the Unit
6 One sequencer or at the time of the event is a more complicated
7 process other than a push button?

8 MR. SNYDER: The way it was reached at this
9 time was you open the breakers on it, it's got a little --
10 well, it's got a break on the front of the panel, you turn it
11 off and you turn it back on and that resets it.

12 MR. KENDAL: Oh, so it's not much different
13 than a push button?

14 MR. SNYDER: Not much different, no, but it's
15 --

16 MR. KENDAL: In terms of difficulty?

17 MR. SNYDER: Yes. The actual circuitry,
18 whatever, is quite a bit different, but the end result is you
19 end up resetting the signals.

20 MR. DIETZ: That's a locked panel. Where's
21 the key kept?

22 MR. SNYDER: Clarence Antegie (phonetically
23 spelled), back in the support shift sup. office.

24 MR. DIETZ: So when you went down there to
25 do all that, did you pick up the key for switch key room?

1 MR. SNYDER: The BOP -- well, the BOP, the RO
2 and the shift supervisor all have keys. A submaster key will
3 open those rooms, so the BOP had the key with him. I did have
4 to get a sequencer key.

5 MR. LYON: Any problem getting a sequencer
6 key?

7 MR. SNYDER: Evidently not.

8 MR. LYON: But you're not aware of that
9 process?

10 MR. SNYDER: Well, it's not that involved.
11 You've got to unlock the key cabinet and get the key out, but
12 it's not --

13 MR. LYON: I understand.

14 MR. SNYDER: It's not --

15 MR. LYON: But you're not aware of whether
16 there was any difficulty --

17 MR. SNYDER: Oh, no. No.

18 MR. LYON: -- because of lighting or
19 anything of that with your loss of power?

20 MR. SNYDER: No. No. No. I'm not aware of
21 any. Like I said, I wouldn't think there was much of a problem
22 getting it.

23 MR. JONES: These are well-labeled and easy
24 to find?

25 MR. SNYDER: If you know what you're looking

1 for. If you went back there -- if you went back there and had
2 never seen the key cabinets, had never looked through the book
3 to find the key, it would be difficult to do. But operators,
4 PEO's, it's not that complicated.

5 MR. LYON: At any time did anyone give you
6 an indication of how much air remained in the tanks, the air
7 tanks, to start the diesel?

8 MR. SNYDER: Yes. At one time, which I don't
9 -- I think it was before the second start and I don't remember
10 the exact pressure he gave me, but it was -- I knew it was
11 sufficient to start it -- seems like it was 210 pounds. I need
12 you to tell me what the pressure was.

13 MR. LYON: Well, what is your understanding
14 of how many starts you can get on stored air if you don't have
15 any makeup?

16 MR. SNYDER: On stored air, on normal starts
17 you're guaranteed at least five starts.

18 MR. LYON: Were all of these considered
19 normal starts that it went through the three, with respect to
20 that criterion?

21 MR. SNYDER: The third one was not. The
22 third one's an emergency start.

23 MR. LYON: Does that mean it would take
24 perhaps more or less air?

25 MR. SNYDER: Could take more.

1 MR. LYON: Okay. Is there a minimum
2 pressure, a low which you cannot start with a normal start and
3 below which you can't start with a break glass start?
4 MR. SNYDER: I'd have to look at the book and
5 make -- yes, there is a low pressure -- or lower limit for
6 emergency start which --
7 MR. LYON: That's okay. We can look in the
8 book, too, if you don't remember offhand.
9 MR. SNYDER: I want to say it's 150 pounds,
10 but I can't guarantee that.
11 MR. LYON: For the feedback, those are the
12 numbers I've been hearing in both cases.
13 MR. SNYDER: Okay.
14 MR. KENDAL: Did you ever receive any diesel
15 generator starting air system trouble alarms? Are you aware of
16 any?
17 MR. SNYDER: I think we did get a low
18 pressure alarm, but that's again -- I think we got one.
19 MR. KENDAL: Okay.
20 MR. SNYDER: But you'll get that on either
21 air bag being below the limit. It indicates you may have a
22 problem; it doesn't tell you for sure.
23 MR. LYON: At one point we were asking
24 questions about the scheduling. About how long a period of
25 time does it take to maintain the diesel? Say the B-diesel?

1 How long would that have to be out? Do you have any feel for
2 that?

3 MR. SNYDER: Well, it was already tagged out
4 by Tuesday and it's still not back. I'm not sure when it was
5 tagged out prior to Tuesday. Probably over the weekend. I
6 said they were still testing it Saturday when I was in.
7 So at -- talking at -- from what I can see, at least a week.

8 MR. LYON: When one typically gets an alarm
9 or a bunch of alarms come in, do you often hit an acknowledge
10 followed by another reset that wipes all of those annunciators
11 out so it's no longer visible? Any problems with anything of
12 that nature? Did you lose any information or have any
13 difficulties?

14 MR. SNYDER: I'm sure we did.

15 MR. LYON: But nothing that you recall --

16 MR. SNYDER: Well --

17 MR. LYON: -- specifically?

18 MR. SNYDER: Not specifically. The first --
19 the first diesel trip we brought, there may have been an
20 indication in first.

21 MR. LYON: Right.

22 MR. SNYDER: Once they trip, you get several
23 annunciators in, so you can't really say. Unless you're
24 looking at the board at the time or happen to catch it, it's
25 hard to say, yeah, this one came in first or not. You can't

1 really say what tripped it. Once you get -- I said, four or
2 five of these annunciators in because of the trip, there's no
3 real valid reason for leaving them up there. You know they're
4 due because the diesel tripped.

5 MR. LYON: From the time that you first
6 lost electrical power --

7 MR. SNYDER: Uh-huh (yes).

8 MR. LYON: -- until you finally got RHR
9 essentially permanently restarted, was RHR ever started?

10 MR. SNYDER: No.

11 MR. LYON: Okay. At the time this
12 happened, I understand, we had a number of people in
13 containment doing various activities.

14 MR. SNYDER: Uh-huh (yes).

15 MR. LYON: We got into a discussion of
16 manpower and availability kinds of things, but I don't recall
17 us ever getting into what might have been the situation if all
18 those people weren't in containment doing those kind of
19 activities. Would that have in your opinion, significantly
20 influenced the time in which you get the hatch back on, the
21 time of closure of the RCS, and if so, how would that have
22 changed the kinds of things that you were doing?

23 MR. SNYDER: I wouldn't have impacted on the
24 things I was doing. Like I said, I was trying -- my attention
25 was on the plant getting power back. So I didn't get that

1 involved yet with that aspect of it. I said John was pretty
2 much taking care of that.

3 MR. CHAFFEE: Did you realize he was doing
4 that? Is that --

5 MR. SNYDER: Not until after it had already
6 -- not until after he had already sent out word or whatever to
7 do it and I had gotten to the place in the AOP that says
8 evacuate -- get all unnecessary people out of containment and
9 start buttoning up. At that point, when I started to make the
10 announcement to evacuate containment, he said, "No. I've
11 already taken care of all that. I'm already doing all of
12 this." So at the time he did it, no, I wasn't aware that he
13 had done it.

14 MR. CHAFFEE: Okay.

15 MR. SNYDER: If -- if those people had not
16 been in there already working, yes, it would have impacted
17 getting all of that stuff done, and it may have had a major
18 impact. Probably would have had a major impact on getting it
19 done.

20 MR. LYON: Would you describe what you mean
21 by major impact?

22 MR. SNYDER: Okay, it would have taken --
23 first we'd have to get the personnel together to go in and do
24 it. Second, had to get them into containment to do the work,
25 and it may -- it would have taken -- it may have taken a long

1 amount of time to either get them or get them in containment.

2 MR. LYON: Could you hazard a guess?

3 Anybody -- are we talking about say an hour? Two, three, four
4 hours? Thirty minutes?

5 MR. SNYDER: Oh, no. It would -- if
6 Westinghouse had not been in doing their work, which most of it
7 was Westinghouse doing the work from what I understand, have --
8 we would have had to get maintenance personnel together to go
9 in which could have taken fifteen to twenty minutes. Maybe
10 half an hour at the most and getting them into containment
11 could have taken another ten minutes.

12 MR. LYON: Tools and stuff readily
13 available?

14 MR. SNYDER: If there had been -- well,
15 talking check valve. If you're talking about manway covers,
16 which maintenance couldn't have done that anyway, I don't
17 think, and if they'd had to get all the tools together to do
18 manways, check valves; equipment hatch wouldn't have been a
19 problem, basically. But to do manways, if the tools hadn't
20 been available and we had to get maintenance to do it, it could
21 have been a couple of hours.

22 MR. LYON: Now, you have --

23 MR. CHAFFEE: You said Westinghouse did that
24 work?

25 MR. SNYDER: I should have -- Westinghouse or

1 some contract organization, steam generated manways, in
2 particular.

3 MR. CHAFFEE: And if for some reason this had
4 been the in back shift and there wasn't time to put those back
5 on and they were off and they were off-site, you couldn't have
6 had your own maintenance people on-site do it?

7 MR. SNYDER: We could have done it but as far
8 as making sure -- to get tools and to get whatever to get it
9 done, you see, it may have taken a good bit of time --

10 MR. CHAFFEE: Okay, I understand.

11 MR. SNYDER: -- depending -- depending on if
12 the tools are left there, if they're locked up. I'm sure
13 they're left in there but --

14 MR. CHAFFEE: Okay, I understand.

15 MR. LYON: Would you have had enough people
16 on a back shift, typically, to be able to tackle both
17 containment closure and so-called mid-lube closure
18 simultaneously or would you had to have done it sequentially?
19 And if so, which one would you have done first?

20 MR. SNYDER: Probably -- I can't say for
21 sure. I don't know what kind of manning we've got, as far as
22 maintenance goes and who's available at all times. Probably we
23 would have to do it sequentially.

24 MR. LYON: Which would have the priority?
25 Closure of the containment or the RCS pressure boundary or

1 would you jump back and forth?

2 MR. SNYDER: Well, what I probably have done
3 is to get PEO's to close the equipment hatch and get
4 maintenance to start on mid-lube.

5 MR. LYON: Okay. You indicate --

6 MR. CHAFFEE: Is there any reason why -- the
7 same question I had before, why you had to have all these
8 things at the same time? Could you have had to equipment
9 hatch closed while you were in mid-lube? Did you have to have
10 it open while you were in mid-lube with all the -- didn't you
11 have manways and stuff off or -- again, was there a reason for
12 that?

13 MR. SNYDER: I couldn't tell you for sure --

14 MR. CHAFFEE: Okay.

15 MR. SNYDER: -- other than it's -- you know,
16 easier access for the different contractors or whatever to get
17 their equipment in and out for the work they were doing and
18 there was no reason -- no, I wouldn't say there was no -- no
19 real reason to have it -- to have it in place at that time.

20 MR. LYON: You had indicated that at some
21 point RCP seal work was going on. Do you know if that had been
22 completed?

23 MR. SNYDER: No, it had not been.

24 MR. LYON: It had not. Were the impellers
25 backseated? Was it backseated essentially?

1 MR. CHAFFEE: Where were they in that work? I
2 mean --

3 MR. SNYDER: That I couldn't tell you.

4 MR. LYON: So that wasn't complete. I
5 hadn't realized that until just now.

6 MR. SNYDER: Well, I don't -- and I won't --
7 I say I don't know what kind of work they were actually doing
8 on the seals and I never saw a work package come through that
9 they were actually working it on my shift.

10 MR. LYON: Okay, would it be normal that
11 they would backseat those during the refueling shutdown?

12 MR. CHAFFEE: What do you mean by backseat? I
13 don't understand that term.

14 MR. SNYDER: It depends on what kind of work
15 they were doing.

16 MR. LYON: Okay, do you want to explain
17 backseat or do you want me to try my ignorant approach to it?

18 MR. SNYDER: I don't know if I can explain it
19 or not. Basically, you're -- you uncouple the motor or the --
20 the base of the motor from the pump.

21 MR. LYON: Right

22 MR. SNYDER: And it drops down and actually
23 forms a seal or a barrier.

24 MR. CHAFFEE: Oh, I see.

25 MR. SNYDER: It's not really a backseat.

1 Well, I guess it's a back --

2 MR. LYON: In a way.

3 MR. SNYDER: In a way, it's a front seat and
4 whatever but it forms a seal, okay, when it's uncoupled. I
5 don't think they were ever uncoupled.

6 MR. LYON: Okay.

7 MR. SNYDER: I don't think they ever actually
8 took the seals apart or anything like that.

9 MR. LYON: Once it is backseated, so to
10 speak, and it's been disconnected and all of the seal stuff is
11 opened up, you can reach a certain pressure within the RCS and
12 it will lift and relieve.

13 MR. SNYDER: I don't think that was done. I
14 don't think they were actually taking seals out or that type of
15 thing.

16 MR. LYON: When the RHR tripped,
17 you said your man in containment said that the level went up
18 significantly. Did it -- or I thought I heard that.

19 MR. SNYDER: I didn't hear that.

20 MR. LYON: Okay, that's right. It wasn't
21 you that said that. It was John.

22 MR. SNYDER: Okay.

23 MR. LYON: Okay, you didn't have that piece
24 of information then?

25 MR. SNYDER: No.

1 MR. LYON: At anytime did you see or get a
2 report of any significant level changes?
3 MR. SNYDER: No.
4 MR. LYON: Okay.
5 MR. SNYDER: At the time I asked for a report
6 or by the time I got it, it was basically the same as it had
7 been. Like I said, we had been filling earlier and it --
8 MR. DIETZ: What instrumentation -- did you
9 have or indications that the water level were operable at this
10 time?
11 MR. SNYDER: As far as I know, we still had
12 the temporary level indicator hooked up to the accumulator and
13 we also had a Tygon tube watch.
14 MR. DIETZ: What do you mean by temporary to
15 the accumulator?
16 MR. SNYDER: Okay, one of the -- actually two
17 of the level indicators off the accumulator, we disconnect
18 from the -- well, not disconnect. We disconnected from or
19 reset it, I don't know a good word for it; basically, readjust
20 it, reset it so that it will measure RCS level rather than
21 accumulator level. We have a wide range and a narrow range.
22 It reads out on the accumulator -- accumulator level
23 instruments there in the control room. And there's an operator
24 aid -- a chart there that gives you a scale of various heights;
25 Tygon tube versus parameters in the core versus what you're

1 temperature indication there in the control room.

2 MR. DIETZ: Is that chart recorded, too?

3 MR. SNYDER: No.

4 MR. DIETZ: It's just an indicator.

5 MR. SNYDER: Just the indicators. We've also
6 got a RVLIS indication that is on the recorder. But since we
7 had Tygon tube, that's who I -- well, anytime I'd start, I'd
8 asked him what Tygon tube level was. That's what I was going
9 by.

10 MR. DIETZ: Is this the first outage that
11 you've used that new instrumentation with?

12 MR. SNYDER: No, it was used -- used in the
13 last outage also.

14 MR. CHAFFEE: This -- the accumulator -- is
15 the accumulator (inaudible) if the bottom of it goes below the
16 level of what the water is in the RCS and mid-lube or do you
17 tap it differently as this indication?

18 MR. SNYDER: I'm not sure.

19 MR. LYON: You've given us a picture, at
20 least it's one I've received, of watching your encores
21 and having a pretty good understanding of that and sort of
22 working with your diesel starter and perhaps being quite
23 deliberate with it and taking your time. Would you say that
24 was accurate?

25 MR. SNYDER: Yes.

1 MR. LYON: You probably know what my next
2 question's going to be.

3 MR. SNYDER: Yes.

4 MP. LYON: Okay, had you been much earlier
5 in the refueling outage and these guys were going up in
6 temperature a factor of three faster, would you have done
7 anything different with your diesel starts and if so, what?

8 MR. SNYDER: If it had been going up much
9 more, I would probably have, instead of the second time, let it
10 auto start from the sequencing the way we did. I would
11 probably have gone ahead and done an emergency local start on
12 the second attempt rather than the third.

13 MR. LYON: Would you have used the same
14 pull the lock technique that you used so that you started and
15 then loaded manually?

16 MR. SNYDER: Probably not. I would have put
17 CCW and RHR and pulled lock. I would've left NSCW in auto
18 like we -- like we did on the second start, probably.

19 MR. LYON: All right. You, as I said
20 before, were following your thermocouples pretty carefully.

21 MR. SNYDER: Uh-huh (Yes).

22 MR. LYON: Suppose this had happened
23 fourteen hours earlier and you didn't have any thirteen hours
24 of that; would you have done anything differently or is this
25 something that just made you feel, hey, I know I'm on the right

1 track because I have them?

2 MR. SNYDER: More -- more I knew I was on the
3 right track because I had them. I -- I don't know that I
4 would've done anything differently.

5 MR. LYON: Okay.

6 MR. SNYDER: I would've been more nervous
7 about what was going on because I wouldn't know, but --

8 MR. LYON: Did your procedures in the
9 control room at the time have heat up rate in those blocks or
10 was this something that was perhaps coming?

11 MR. SNYDER: They had them in there. I
12 didn't really go back and look at, you know, the specific
13 charts. I knew they were there in the procedure but like I
14 said, I had my indications in front of me so --

15 MR. LYON: Okay.

16 MR. SNYDER: I didn't feel a real need to
17 know how much time I had 'till saturation. Like I had
18 temperatures and I knew when it was getting there.

19 MR. LYON: Okay.

20 MR. CHAFFEE: I've got a question. The
21 thermocouples were put in place fourteen hours before the
22 event; something like that or some time period? They get put
23 in -- what? When do they get put in? Is it coupled to some
24 activity?

25 MR. SNYDER: It is. Once the head is put on,

1 I don't know if there is a time requirement or not, but
2 basically once the head is set in place, within a short period
3 time after that, they are connected. You can't -- until the
4 head's set down you can't connect them anyway.

5 MR. CHAFFEE: Until the heads are put in, you
6 have no method of monitoring?

7 MR. SNYDER: Not a directly measured
8 temperature other than -- well, in mid-lube here, they don't
9 have any wide range of temperature, either.

10 MR. CHAFFEE: Did they try to insure that the
11 -- did they go into -- they must have -- did they go into mid-
12 lube -- they must have gone into mid-lube before they put the
13 head on? Is that right? They had to go into mid-lube to put
14 the head on?

15 MR. SNYDER: You don't have to go to mid-
16 lube.

17 MR. CHAFFEE: You have to drain down to the --

18 MR. SNYDER: You've got to be below the
19 flange, is the only requirement. As a matter of fact, we were.

20 MR. LYON: Do you know if they tried to
21 time the mid-lube activities so that it occurs in proximity to
22 when you're going to put the head on to minimize the time
23 you're running without thermocouples?

24 MR. SNYDER: They did this time. Like I
25 said, they put the head on and got the encores up pretty much

1 before we went on down to mid-lube.

2 MR. LYON: Okay.

3 MR. CHAFFEE: Well, that's a good question
4 then. Did you not go into mid-lube until after the head was on
5 -- this most recent thing?

6 MR. SNYDER: As far as I know.

7 MR. CHAFFEE: Okay.

8 MR. SNYDER: I don't know if that was the
9 only consideration but that's --

10 MR. CHAFFEE: The way it turned out.

11 MR. LYON: Let me move to a little bit
12 different thing. You had indicated that you were aware of ways
13 of getting water in and one of them was the normal charging
14 path or -- it was -- was it an alternate charging or a normal
15 charging you folks were using to fill it by gravity when this
16 thing happened?

17 MR. SNYDER: It was a -- well, it was normal
18 charging path through the alternative charging valve.

19 MR. LYON: Okay. I got that twisted up,
20 didn't I?

21 MR. SNYDER: No, it was -- we basically -- we
22 could charge the one or two loops. One's called a normal
23 charge and one's called a alternate. But it's the same float
24 path up to the point it gets in right -- almost to the RCS.

25 MR. LYON: Okay, do you have a feel of what

1 flow rate you can achieve by that path?

2 MR. SNYDER: By gravity drain?

3 MR. LYON: Just a rough --

4 MR. SNYDER: I couldn't tell you.

5 MR. LYON: Okay. What other specific paths
6 do you think are readily available to you?

7 MR. SNYDER: Well, with no power, there
8 wasn't paths, other, readably available.

9 MR. LYON: And if you're not aware of any,
10 that's a fair answer. In fact, I find that one of the easiest
11 questions to answer.

12 MR. SNYDER: I -- readily available -- I
13 don't know that many.

14 MR. DIETZ: Does the RHR or loss of RHR
15 give any procedure give any paths for charging the water?

16 MR. SNYDER: I don't believe it does.

17 MR. LYON: Okay, I recognize that we had
18 not gotten to that part of the procedure.

19 MR. SNYDER: No.

20 MR. DIETZ: Do you have a procedure that
21 deals with a loss of coolant while shut in the shutdown type
22 conditions?

23 MR. SNYDER: Loss of coolant at shutdown?
24 We've got our AOP which doesn't -- it doesn't specify what mode
25 you're in but it does not -- if I remember right, it doesn't

1 really specifically give guidance for a mode six or mid-lube.

2 MR. DIETZ: For the loss of coolant, okay.
3 Are you aware of any events recently where --or in the past
4 where people have lost a lot of coolant by shutdown?

5 MR. SNYDER: (No response).

6 MR. DIETZ: Let's ask it a different way.
7 Do you see anyway you could lose the coolant?

8 MR. SNYDER: Oh, you could always --
9 especially during refueling, you can always have mispositioned
10 valve or -- as a matter of fact, we had a -- a valve that --
11 part of the assembly was caught up and they could not guarantee
12 we'd have integrity with it. So you could have a weak weld, a
13 weak spot or whatever that gave way; strains left open.

14 Again, when we lost power, we were still in the RCS then. We
15 hadn't -- we had not manually shut a valve, we could have
16 ended up putting water where we didn't want it.

17 MR. DIETZ: Have you ever have trouble with
18 the RHR suction relief valve here at Vogtle?

19 MR. SNYDER: None that I know of.

20 MR. DIETZ: What's the -- do you know what
21 the size of that valve is? [Inaudible].

22 MR. SNYDER: Suction -- eight inch line, ten
23 inch line; something to that order you could lift that relief
24 to. Seems like its happened, I won't say recently, but --

25 MR. DIETZ: It did -- within six months.

1 MR. LYON: You had indicated that one thing
2 you might -- I think you did, tell me if I'm wrong --
3 MR. SNYDER: Okay.
4 MR. LYON: -- that one of the things that
5 you would have done to prevent boiling was to initiate cooling
6 with gravity feed.
7 MR. SNYDER: Uh-huh (yes).
8 MR. LYON: Do you have a feel for what flow
9 rate would be needed to prevent boiling?
10 MR. SNYDER: Not really. It shouldn't take a
11 whole lot.
12 MR. LYON: Okay, to do that I have to have
13 a place for the water to go as well as get in.
14 MR. SNYDER: That's true.
15 MR. LYON: We talked a little about this
16 Friday.
17 MR. SNYDER: Yeah. Actually, I could have
18 filled up and I could go out to head vents if I had to or I
19 could -- the only other alternative I can think of off the top
20 my head was opening the lube-drain valves and go to the RCDT
21 which I can open the drain valve on it and go to the
22 containment sump if I had to.
23 MR. LYON: How big a pipe is that? Do you
24 recall?
25 MR. SNYDER: Small. It's like a drainage --

1 or like a one inch line maybe.

2 MR. LYON: I was going to guess a little
3 bigger.

4 MR. SNYDER: Something -- well, it may be
5 but it's somewhere along, you know, the one to two inch size.

6 MR. LYON: Okay. Yeah, I was within that.
7 One last -- let me see if I can really say that. No, I can't
8 quite reach the point I can say one last one but I'm getting
9 close. The loss of RHR procedure -- let me come back to that.
10 How much of that was worthwhile to you and how much was
11 useless?

12 MR. SNYDER: Most of it was useless.

13 MR. LYON: All right.

14 MR. SNYDER: I didn't go all the way to the
15 end of it, but I would say ninety percent of it is checking
16 parameters on the other train and or parameters on that train;
17 i.e. suction valves open, discharge valves open, pump running;
18 that type of thing. If not, you go look at the other train.
19 All of this stuff aligned, but I had no other train so all that
20 was wet pages.

21 MR. LYON: So there was no go-to up near
22 the front that says, if other train unavailable, jump all this
23 stuff?

24 MR. SNYDER: Well, there is after you get
25 through -- I forget how much of the procedure. I won't say at

1 the very front. It's like -- maybe a quarter of the way
2 through, it says if, you know, if you don't have either train
3 then you can go to step whatever.

4 MR. LYON: Was that area useful?

5 MR. SNYDER: Yeah, that's the one that told
6 me to start buttoning up containment.

7 MR. LYON: Okay.

8 MR. SNYDER: So that -- that was basically in
9 there after -- if you're in the normal and then go all the way
10 through it, you can't -- you know, you've checked everything
11 for both trains and nothings available, then you start
12 buttoning up containment and buttoning up the RCS.

13 MR. LYON: So those kinds of things were
14 there?

15 MR. SNYDER: Uh-huh (yes).

16 MR. LYON: That's where the temperature
17 increase rate information would be or is that -- do you recall?

18 MR. SNYDER: As a matter of fact, I think
19 there's a note or a caution at the very beginning of the
20 procedure to these charts, you know, for timing the seconds.
21 It says like chart two or figure two is for time of duration.
22 Figure three is -- I forget whatever, but it references those
23 at the beginning.

24 MR. LYON: Okay, I've got one last category
25 of questions and then we'll let you feel relief by keeping

1 quiet, and that involves the training that you've received to
2 give you a picture of behavior. Did that training get into
3 boiling in the RCS and do you have an understanding of what
4 goes on within the RCS during boiling?

5 MR. SNYDER: Yes, mostly.

6 MR. LYON: Could you just kind of -- a
7 quick synopsis?

8 MR. SNYDER: A quick synopsis of boiling in
9 the core?

10 MR. LYON: Yes. How is the energy removed
11 kinds of things with the RCS maybe with an opening and with it
12 closed up.

13 MR. SNYDER: You're going way back now. If
14 you've got it closed, and it's a lot easier if you got it
15 closed up. Basically, what you're going to do -- then you've
16 got these steam generators have got full of water. So
17 basically, you're to heat up -- have to heat up all of this
18 water first, which takes a good bit of time.

19 MR. LYON: How are you going to heat over
20 there?

21 MR. SNYDER: Okay -- this is assuming you
22 fill up --

23 MR. LYON: Say I'm at about mid-lube?

24 MR. SNYDER: If you're at mid-lube, you're
25 still going to -- once you start boiling, you're going to

1 transfer this heat up, basically through the metal up into your
2 steam generator of water. So you're still going to get your
3 heat transfer up -- up through the steam generators. It won't
4 be nearly as efficient as using tubes or whatever with water in
5 them, but it'll get there.

6 MR. LYON: By -- you mean by conduction
7 through the pipes and stuff?

8 MR. SNYDER: Conduction and convection
9 through the pipe. I don't think it would be hot enough for any
10 radiated heat, but -- so you're still going to have -- your
11 heat sync is still going to be your steam generators basically.

12 MR. LYON: Okay, now let me go to the RCS
13 being opened.

14 MR. SNYDER: If you're open you're going to
15 have, again, boiling in the core and you're going to start --
16 steam formations that all it's going to do is blow out through
17 your hole in your pipe. So that's going to be your -- your
18 heat sync is going to be containment atmosphere through steam
19 production.

20 MR. LYON: Let me take the situation of --
21 let's have a steam generator manway off, and I'll do two
22 things. First, I'd like to look in the RCS. If I had a cold
23 side steam generated manway off and an outside one on and I
24 started boiling, do you have -- what would be a picture of what
25 would happen or shall we just throw up our hands and say, hey,

1 wait a minute, I don't know. And the reason I'm probing is to
2 get a feel of both here and perhaps a data point for generic
3 understanding. And as I say, if you don't remember, that's
4 okay. This is not an examination.

5 MR. SNYDER: I'd have to sit and think about
6 it a while.

7 MR. LYON: Okay, that's fine. No, that's
8 okay. Let's just skip on to -- my last question is, if I start
9 boiling, do you have any feel for the amount of steam that
10 might be going out the opening into containment and whether
11 that would be any kind of a hazard to people inside
12 containment?

13 MR. SNYDER: Oh, it's definitely going to be
14 a hazard from radioactive contamination if nothing else. And I
15 think you're going to have enough steam that -- well, depending
16 on whether the containment is open or closed.

17 MR. LYON: Does it make a difference?

18 MR. SNYDER: Well, if the containment is
19 opened, you're not going to pressurize the containment.

20 MR. LYON: Okay. Let's have containment
21 open.

22 MR. SNYDER: And so your steam is basically
23 going to go up to the top and sit there and eventually, if you
24 get enough steam in there, it's just going to go out the door
25 or get blown through, whatever.

1 MR. LYON: Okay. Do you have any feel for
2 the amount of steam?
3 MR. SNYDER: Well, if you're not putting any
4 more water in --
5 MR. LYON: Okay, we'll assume that.
6 MR. SNYDER: -- which --
7 MR. LYON: Yeah, I'm cooperative. I'll
8 assume that.
9 MR. SNYDER: -- there's still -- I don't know
10 how many -- how many thousands of gallons of water is in the
11 RCS, but there is a considerable amount of water. There would
12 be a considerable amount of steam coming out, but I couldn't
13 tell you how much.
14 MR. LYON: Okay. I'm done.
15 MR. CHAFFEE: Anybody else have any questions?
16 MR. WEST: I have one last question. Earl
17 or you mentioned that you -- I believe you mentioned that you
18 established communication with the diesel generator room.
19 MR. SNYDER: Uh-huh (Yes).
20 MR. WEST: Did you yourself -- how did you
21 do that?
22 MR. SNYDER: The -- through the sound part
23 headsets in the control room and out in the diesel.
24 MR. WEST: And the other part of my
25 question is, did you yourself have this communication similarly

1 also with the sequencer? Were you actually the person that was
2 dialoguing back and forth --

3 MR. SNYDER: No.

4 MR. WEST: -- with those individuals?

5 MR. SNYDER: No.

6 MR. WEST: You had someone else that was
7 handling that?

8 MR. SNYDER: Yeah, the operators were
9 handling the communications. I did not directly get on the
10 phone with anyone.

11 MR. WEST: Was the same operator handling
12 both or --

13 MR. SNYDER: No.

14 MR. WEST: -- separate operators?

15 MR. SNYDER: Separate operators. One of them
16 was on the telephone -- well, one of them was on the telephone
17 down to the sequence room and then -- well, I said then when we
18 were starting the diesel, I had a separate operator on the
19 phones out to the diesel room. It's a separate -- separate
20 type of phone and separate people.

21 MR. WEST: Thank you.

22 MR. LAZARUS: Anything else anyone? All
23 right, thanks very much.

24 [INTERVIEW CONCLUDED AT 5:05 P.M.]

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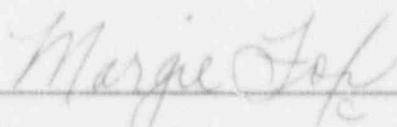
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RICHMOND COUNTY

I hereby certify that the foregoing interview was reported by the method of Stenomask with Backup, and the testimony given therein were reduced to typewriting by me or under my direction; that the foregoing pages numbered 1 through 71 represent a true, correct, and complete transcript of the evidence given on March 26, 1990, by the witness, Randy Bruce Snyder, that I am not a relative, employee, attorney or counsel of any of the parties; nor am I financially interested in the action.

This the 27th day of March 1990.



MARGIE FOX

CERTIFIED COURT REPORTER, B-1176

INTERVIEW:

Mr. Randy Snyder
Shift Supervisor/Plant Vogtle
March 26, 1990

ERRATA SHEET FOR THE INTERVIEW OF
RANDY SNYDER TAKEN ON MARCH 25, 1990

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This, the _____ day of _____ 1990

RANDY SNYDER

WITNESS:
