

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

1 In the Matter of:
2 IE TMI INVESTIGATION INTERVIEW

3 of

4 Edward W. Houser
5 Chemistry Foreman
6
7
8

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

13 April 24, 1979
14 (Date of Interview)

15 June 20, 1979
16 (Date Transcript Typed)

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18 (Tape Number(s))
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21 NRC PERSONNEL:

22 Gregory P. Yuhas, Radiation Specialist

23 Larry L. Jackson, Radiation Specialist

24 Owen C. Shackleton, Investigator
25

893 001

1 SHACKLETON: This is an interview of Mr. Edward W. Houser. Time is now
2 11:36 p.m., April 24, 1979. This interview is taking place in trailer
3 203 at the Three Mile Island Nuclear Power Plant. The trailer is
4 located just outside the South security gate. Present to conduct this
5 interview from the United States Nuclear Regulatory Commission is
6 Mr. Gregory P. Yuhas. Mr. Yuhas is a Radiation Specialist from Region
7 I. Also present is Mr. Larry L. Jackson. Mr. Jackson is also a Radiation
8 Specialist assigned to Region II. My name is Owen C. Shackleton. I am
9 an Investigator assigned to Region V and will be acting as a moderator
10 this evening in the interview of Mr. Houser. Prior to this interview
11 on tape I presented to Mr. Houser a two-page document from the U.S.
12 Nuclear Regulatory Commission which explains the purpose and the scope
13 of this investigation and the authority to conduct the investigation by
14 the U.S. Nuclear Regulatory Commission. Also are set forth the rights
15 that Mr. Houser has to not be interviewed. In addition, at the end of
16 this document are three questions. Mr. Houser, in writing, answered
17 all three questions affirmatively. At this time, Mr. Houser, I would
18 like to repeat these questions to have your response placed on tape.
19 Did you understand both pages of the document?

20
21 HOUSER: Yes, I did.

22
23 SHACKLETON: And do we have your permission to tape this interview?
24
25

893 002

1 HOUSER: Yes.

2
3 SHACKLETON: And would you like a copy of the tape?

4
5 HOUSER: Yes, I would.

6
7 SHACKLETON: Allright, fine, we'll see that that is done. And now,
8 Mr. Houser, because there are many people extremely interested in what
9 transpired here at the Three Mile Island Nuclear Power Plant beginning
10 on March 28, 1979, and because of your important position in the opera-
11 tion of this facility, would you please give a background regarding
12 your education and work experience that brought you and your involvement
13 in the nuclear industry?

14
15 HOUSER: Well, I'm a high school graduate. Shortly after I got out of
16 high school, I went into the service, in the Navy. I spent four years
17 there as a machinist, machinist mate I was not in the nuclear Navy.
18 And I spent...after I got out of the Navy, I went for an interview with
19 Metropolitan Edison Company as a machinery repairman. I didn't get
20 that job, I went into just a utility pool, which...eventually I knew
21 they were going to take people here at the Island, so I took the test
22 to come down to the Island as an analyst and started as an analyst
23 through analyst senior. Then they combined our departments, put the
24 radiation protection and the chemistry together. And I became the
25

893 003

1 radiation chemistry technician senior. And then, about a year ago, it
2 was March 6 a year ago, I was offered the chemistry foreman job and I
3 accepted.
4

5 SHACKLETON: Allright, thank you very much. And now I'll turn the
6 questioning over to the two gentlemen that are here with me this evening.
7

8 YUHAS: Ed, how long have you been with Met Ed?
9

10 HOUSER: Ten years.
11

12 YUHAS: Ten years, okay. Could you describe the chain of command of
13 your organization effective March 28, 1978?-- 1979, excuse me.
14

15 HOUSER: You mean who I reported to...
16

17 YUHAS: Right.
18

19 HOUSER: Oh, I report to Dick Dubiel. Dick Dubiel reports to Dave
20 Limroth, and Dave Limroth will report to Gary Miller. Gary Miller
21 reports to, well, he would report to Sandy Moyer, and then Moyer to
22 Jack Herbein.
23
24
25

893 004

1 YUHAS: Who works for you?
2

3 HOUSER: All the technicians, the radiation chemistry technicians.
4

5 YUHAS: These are the people that are referred to in the FSR description
6 as rad chem techs?
7

8 HOUSER: Right.
9

10 YUHAS: Approximately how many fellows normally work for you?
11

12 HOUSER: About 24.
13

14 YUHAS: Twenty-four. Are you responsible for Unit 1 or Unit 2 or the
15 Laboratory?
16

17 HOUSER: Unit 1 and Unit 2 and the labs.
18

19 YUHAS: Okay. Is Mr. Reed and...
20

21 HOUSER: Horner.
22

23 YUHAS: Horner, are they your counterparts?
24
25

893 005

1 HOUSER: Yes.

2
3 YUHAS: The three of you share the total responsibility, then.

4
5 HOUSER: Right.

6
7 YUHAS: Okay, fine.

8
9 YUHAS: Let's begin with the night of the 28th. Were you on duty at
10 the time of the incident?

11
12 HOUSER: No. I was coming in at 7:00 that morning.

13
14 YUHAS: Were you called at home?

15
16 HOUSER: No.

17
18 YUHAS: Okay. So you came in at about what time?

19
20 HOUSER: I was at the gate probably at about five minutes to seven.

21
22 YUHAS: What gate?

23
24 HOUSER: The North gate.

25 893 006

1 YUHAS: Okay. What were the conditions at the North gate at the time
2 of arrival?
3

4 HOUSER: There was guards there and they were passing people off to the
5 observation center and I knew something was wrong, but I didn't know
6 exactly what. But, then I saw Fred Dube, who is the HP foreman. He
7 came out around the traffic and they waved me right through and then I
8 saw there was no vapor coming out of the cooling tower, so I knew the
9 plant was shut down. So, as soon as I got up there I told them, you
10 know, I was chemistry foreman and they waved me in too. They didn't
11 really tell me, they just said Unit 2 had tripped last night, so I
12 didn't know what to expect.
13

14 YUHAS: Did the guards at the North gate tell you just that a site
15 emergency had been declared?
16

17 HOUSER: No
18

19 YUHAS: Okay. Allright, so you drove in. crossed the bridge to the
20 process center.
21

22 HOUSER: Yeah, right.
23
24
25

893 007

1 YUHAS: What were the conditions in the process center at the time of
2 your arrival?

3
4 ...[SILENCE]...

5
6 YUHAS: Normal, abnormal?

7
8 HOUSER: I would...I think sort of normal because I think everything
9 was almost normal until I got to the lab.

10
11 YUHAS: Okay, and you went straight to the process center to the Unit 1
12 chemistry H.P. area?

13
14 HOUSER: Yes.

15
16 YUHAS: What did you find there?

17
18 HOUSER: People stirring around and trying to take samples and stuff
19 like that.

20
21 YUHAS: Who were some of the folks that were in the Unit 1 chem H.P.
22 area at the time of your arrival?

23
24
25 893 008

1 HOUSER: Dave Zider, one of our technicians. Tom Davis, Dean Keisler,
2 Carl Myers, Dick Benner, Mike Kuhn. Those are about all I can remember.
3

4 YUHAS: Who filled you in as to what was going on when you arrived
5 there?
6

7 HOUSER: Well, I went to the Unit 1 lab and there wasn't anybody around
8 so I went over to the Unit 2 lab and I found out that...well I actually
9 went to the control room.
10

11 YUHAS: The Unit 2 control room?
12

13 HOUSER: Yeah.
14

15 YUHAS: Okay.
16

17 HOUSER: And, you know, everybody was scurrying around saying 'What had
18 gone on' and someone in the control room, the shift foreman, said they
19 thought they had a primary to secondary leak in the generators.
20

21 YUHAS: Okay. When you entered the unit control room, Unit 2 control
22 room, this was about what time?
23

24 HOUSER: Apparently it was a quarter after seven.
25

893 009

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YUHAS: Who was in the unit control room? Roughly. Were there four people in there, that's normally what you would expect to find. Is that correct?

HOUSER: About four, yeah.

YUHAS: Okay, how many people were in the Unit 2 control room at a quarter after seven when you arrived?

HOUSER: I really don't remember. I have no idea. I can't remember...

YUHAS: Were there a lot of people? Few people? Did you recognize anyone?

HOUSER: I don't think there was an abnormally large amount of people. It was sort of, you know, sort of plus the shift turnover so there may have been two shifts for the people there.

YUHAS: Uh-huh. And who briefed you when you got into the Unit 2 control room?

HOUSER: I think I talked to... it was either the control room operator or the shift foreman.

893 010

1 YUHAS: Okay, the shift foreman would have been Bill Zewe?

2
3 HOUSER: He's the shift supervisor.

4
5 YUHAS: Okay, shift foreman was...

6
7 HOUSER: Seelinger?

8
9 YUHAS: No, not Seelinger, uh Fred Scheimann?

10
11 HOUSER: Fred Scheimann?

12
13 YUHAS: Okay.

14
15 HOUSER: I may have. Yeah, I think I did talk to Fred. I'm not sure,
16 but I think I may have.

17
18 YUHAS: It might have been Ed Frederick?

19
20 HOUSER: I know I talked to Ed too. Ed Frederick, yes.

21
22 YUHAS: Okay. So you talked to a few of the people who are on watch
23 for that shift. Okay, and what did they tell you?

24
25
893 011

1 HOUSER: That, you know, the plant, the conditions of the plant, that
2 we were shut down and they thought there might have been a primary to
3 secondary leak.
4

5 YUHAS: Did they indicate what generator?
6

7 HOUSER: No, they didn't, know.
8

9 YUHAS: Okay. Did they tell you anything else?
10

11 HOUSER: A lot of activity in the building, you know. High activities
12 from their monitors.
13

14 YUHAS: Could you see the area radiation or the effluent monitoring
15 panel from where you came into the control room, they're telling you
16 this?
17

18 HOUSER: I don't think I even looked at it.
19

20 YUHAS: Okay. Did they request that you do anything in particular?
21

22 HOUSER: No, I went back down to the lab right after that. Because,
23 well, if they had a primary to secondary leak we have to secondary
24 sample our generators running into the secondary lab. And we...I
25

893 012

1 valved them into the primary lab so, you know, they wouldn't contam-
2 inate the secondary lab. I didn't know how bad this thing was going to
3 get.

4
5 YUHAS: You went to the Unit 2 chemistry lab in the Unit 2 Auxiliary
6 Building.

7
8 HOUSER: It's the control building...

9
10 YUHAS: Unit 2 control building. You changed the valve line up such
11 that the water that would normally be directed to a sink there for
12 sampling would be directed to the Unit 1?

13
14 HOUSER: Right. Unit 1 primary sampling room.

15
16 YUHAS: The Unit 1 primary sample room. Did you line those up to
17 recirc or did you just do a valve line up?

18
19 HOUSER: I just did a valve line up. Well--

20
21 YUHAS: You did not initiate flow at that time.

22
23 HOUSER: There was a flow initiated.

24
25 893 013

1 YUHAS: Okay, there was a flow initiated.

2
3 HOUSER: Yeah...

4
5 YUHAS: Did you have a survey meter with you when you initiated flow?

6
7 HOUSER: No.

8
9 YUHAS: Okay. Allright, so you did that. Now, what did you...

10
11 HOUSER: I stopped at HP and... they were really busy at HP by this
12 time, it was apparently around 7:30, quarter to eight. And they were
13 really busy, they were taking air samples and smears and, you know, it
14 was, the levels were starting to increase in that area at that time.

15
16 YUHAS: Okay. This is in Unit 2 Auxiliary Building 305' elevation?

17
18 HOUSER: Yeah, at the HP lab right there.

19
20 YUHAS: Okay. So you stopped by but you didn't bother them because they
21 were too busy?

22
23 HOUSER: Yeah.

24 893 014

25

1 YUHAS: Okay, then where'd you go?
2

3 HOUSER: I think I... Oh, okay. I think, what I did, I went to Unit 1
4 because the levels were increasing there. I went over to Unit 1 into
5 the primary lab to get a sample of the steam generators. Meanwhile I
6 had talked to someone, well, when I had talked to them and they said a
7 primary-secondary leak I figured I had better get a sample of it. So I
8 went to Unit 1 and got two new poly bottles and went to get samples of
9 steam generators in the primary lab, which I did.
10

11 YUHAS: What did you find after you drew the samples?
12

13 HOUSER: Well, there was activity in the one just with the frisker, you
14 know. Holding the frisker outside.
15

16 YUHAS: Which generator?
17

18 HOUSER: Well, that's what sort of screwed us. On that sample it was
19 the A generator.
20

21 YUHAS: Uh-huh.
22
23
24
25

893 015

1 HOUSER: It's apparently...I don't know if somebody tagged the things
2 wrong or not, but that one showed the A generator but when we got them
3 later on that morning, I got them again in the Unit 2 secondary sampling
4 room again and then it was, you know, that's what we...I know the
5 valving is right. And it was the B generator.
6

7 YUHAS: Okay. The first sample that you took over in the Unit 1 pri-
8 mary sample station, you said you measured that with a frisker. Was
9 that with an Rm-14, HP-210 probe?
10

11 HOUSER: Yes.
12

13 YUHAS: Approximately what did that read?
14

15 HOUSER: Uh...
16

17 YUHAS: Pegged it, did not peg it?...
18

19 HOUSER: Yeah, it probably, we probably pegged it on the 10 scale.
20

21 YUHAS: Pegged it on the 10 scale? And you're confident in saying that
22 that was the B OSTG, right? Once-through steam generator...
23
24
25

893 016

1 HOUSER: Well, that was the... well, the ones I took in the Unit 1 it
2 said it was the A generator.

3
4 YUHAS: I see...

5
6 HOUSER: So, that's what I'm saying. I think that it--

7
8 YUHAS: Okay, so--

9
10 HOUSER: --we tagged it wrong.

11
12 YUHA: --initially you called it the A steam generator.

13
14 HOUSER: Yeah, as soon as I saw the activity. I called the control
15 room and I said 'Hey, I took samples and the A generator showed an
16 activity'.

17
18 YUHAS: Okay. Did you do that, did you go ahead and take a gross
19 degassed activity off that or did you just tell them that based on the
20 frisker reading?

21
22 HOUSER: Just on the frisker reading. Because again the activities
23 were, you know, gaseous activities in the area.

1 YUHAS: Then what did you do with the sample?

2
3 HOUSER: They were left in the lab.

4
5 YUHAS: Okay. No further analysis was performed at that time?

6
7 HOUSER: No. No, just to find out if we did have us a primary to secondary
8 leak.

9
10 YUHAS: Okay. About what time was that that you pulled that first
11 sample?

12
13 HOUSER: That may have been 8:00. It happened pretty fast.

14
15 YUHAS: Okay. Then what did you do?

16
17 HOUSER: Well, I went back to Unit 2 and I started helping them at HP
18 because they were getting real busy.

19
20 YUHAS: Okay...

21
22 HOUSER: And I didn't have anybody from chemistry. Everybody was in HP
23 so I figured I'd try and help them out there.

24
25 893 018

1
2 YUHAS: Ed, up to this time Ed, did you get any word from your techs as
3 to what the boron was, or what the primary coolant activity was doing
4 in the Unit 2?

5 HOUSER: Uh...

6
7 YUHAS: Did they give you any ideas about what was going on?
8

9 HOUSER: They had drawn a sample. One technician that was on, Davis,
10 had told me that the activity had increased. Okay, the gross beta-gamma.
11 But it wasn't a big, a real big, increase. You know, it was like from
12 maybe 3 microcuries to 4 on that degassed activity.
13

14 YUHAS: Did he say what time that sample was taken?
15

16 HOUSER: I thought he said around 4:30.
17

18 YUHAS: Okay.
19

20 HOUSER: Now, that would have been after the trip.
21
22
23
24
25

893 019

1 YUHAS: After reactor trip, can you describe the normal procedure as
2 far as putting a sample, a letdown sample on recirc? Do you take one
3 and then secure recirc line up, or do you take one and leave it on
4 recirc knowing that you gonna have to take another one in the second
5 boron should it cool down?
6

7 HOUSER: After a trip?
8

9 YUHAS: Right.
10

11 HOUSER: Yeah Normally what we would do is take and put it on recirc
12 and let it on recirc.
13

14 YUHAS: You just leave it on recirc?
15

16 HOUSER: Yeah.
17

18 YUHAS: Okay. Is that the condition that the sample system was set up
19 in that morning?
20

21 HOUSER: ...I'm not sure. I think it was. I'm just not sure.
22

23 YUHAS: Okay. Did Davis give you a boron number on that first sample?
24
25

893 020

1 HOUSER: No, he had done a boron earlier in the evening. We do the
2 Unit 2 primary chemistry 11-7 shift and he had done them.
3

4 YUHAS: As part of the trip, then, right?
5

6 HOUSER: Yes, that was part of the trip.
7

8 YUHAS: Then he hadn't given you a boron number after the trip?
9

10 HOUSER: No.
11

12 YUHAS: Okay. Now you went back over to Unit 2 to help the HPs. Could
13 you elaborate on that?
14

15 HOUSER: Well, they were taking a lot of air samples and counting, you
16 know, trying to count them there, and people coming out of the building
17 and stuff. They were, you know, trying to take care of them. And just
18 that the activity got too high in the area, that we had to move out.
19

20 YUHAS: Okay.
21

22 893 021
23
24
25

1 YUHAS: Did...was there words passed to evacuate the Unit 2 Aux Building,
2 or why were people still coming out of the building? And who was
3 coming out?
4

5 HOUSER: There was some word passed. I remember hearing the other
6 alarm for the radiation emergency.
7

8 YUHAS: What does that alarm sound like?
9

10 HOUSER: It's a whining.
11

12 YUHAS: Oscillating siren?
13

14 HOUSER: Yeah.
15

16 YUHAS: Okay. About what time did you hear that?
17

18 HOUSER: I'm -- whew -- I'd be guessing. I don't wear a watch [LAUGHTER].
19 Uh, I don't know, that may have been around 8:00. I don't really know.
20

21 YUHAS: What action did you take when you heard the siren?
22

23 HOUSER: I went to Unit 1 to the emergency control center.
24
25

1 YUHAS: Okay. Was this before you went back over to help the guys in
2 Unit 2 or after you were over there helping--
3

4 HOUSER: That was after.
5

6 YUHAS: Okay, so you were over there helping them, what, survey people
7 out?
8

9 HOUSER: Yeah.
10

11 YUHAS: Was Ed Deman one of the guys that came down while you were over
12 there helping surv people out?
13

14 HOUSER: Joe DeMann...
15

16 YUHAS: Joe DeMann.
17

18 HOUSER: I don't remember seeing Joe...
19

20 YUHAS: Who do you remember seeing?
21

22 HOUSER: The guys that were at Unit 2 working were Karl Myers, Mike
23 Kuhn, and Dick Benner as far as I know. And Dave Zeiter.
24
25

893 023

1 YUHAS: I see. And you made some comment about the Unit 2 counting
2 equipment and you indicated by your body language that it wasn't func-
3 tioning properly. Could you elaborate on that?

5 HOUSER: Yeah. Well, the background was getting too high in that area
6 to use it to count anything.

8 YUHAS: Specifically, what equipment were you talking about?

10 HOUSER: The Ludlums, what they have there now.

12 YUHAS: Do you have a germanium in there?

14 HOUSER: Yes.

16 YUHAS: Okay. Was that operable at the time?

18 HOUSER: No. No, that wasn't.

20 YUHAS: Why wasn't that operable?

22 HOUSER: Uh, we were just in the process of running efficiency curves
23 and stuff on it.

24
25 893 024

1 YUHAS: Had that unit ever been operable?
2

3 HOUSER: A long time ago it was. A long time ago.
4

5 YUHAS: You mean its been down for a long period of time prior to this
6 incident?
7

8 HOUSER: Yes.
9

10 YUHAS: Is there an explanation of why its been down for a long time?
11

12 HOUSER: We were waiting for a shield to be built, you know. A cave.
13 The HP, I guess the HP foreman was in, you know, drawing up a thing to
14 build the shield for it. I don't know if it was money in the budget,
15 or I don't know really what the holdup was.
16

17 YUHAS: About how long had it been out of service?
18

19 HOUSER: A year and a half or so.
20

21 YUHAS: Year and a half?
22

23 HOUSER: Yeah.
24
25

893 025

1 YUHAS: Okay. So you moved out into the hallway between the control
2 building and the Auxiliary Building--
3

4 HOUSER: Yes...
5

6 YUHAS: --because of the background? And you established another
7 control point there.
8

9 HOUSER: Yes. In the first aid room.
10

11 YUHAS: In the first aid room. And now you hear the site emergency
12 radiation siren go off and you proceeded from there back to the Unit 1
13 ECS station.
14

15 HOUSER: Yes.
16

17 YUHAS: What was your course? Did you go back through the Auxiliary
18 Building to the Model Room or did you go around?
19

20 HOUSER: That's right! I saw Joe DeMann. He came through the Auxiliary
21 Building. Something happened and they closed the door on him and he
22 had to come out through the Auxiliary Building and he was really, you
23 know, really screaming when he got out.
24
25

893 026

1 YUHAS: Did you survey Joe DeMann when he came--

2
3 HOUSER: I was there when he came out, yes.

4
5 YUHAS: What did they survey him with?

6
7 HOUSER: We surveyed him out there in the first aid room with a, one of
8 those, I think it's an HP-210.

9
10 YUHAS: Uhuh.

11
12 HOUSER: A pancake grill, I don't know. It was just a gross count.

13
14 YUHAS: Did you take it?

15
16 HOUSER: Yes. It was very high at that. What we did, we didn't even
17 undress him. We just put the coveralls on him, boots and gloves and
18 stuff and sent him to Unit 1 for decon.

19
20 YUHAS: Okay, so now what, when the siren went off you headed from the
21 first aid room out around?

22
23 HOUSER: Yes.

24 893 027

25

1 YUHAS: Okay. Along the corridor there between the aerated water
2 storage tanks.

3
4 HOUSER: Uh-huh.

5
6 YUHAS: Through the roll-up door back to the Unit 1. Okay. So you got
7 over there, then what did you do?

8
9 HOUSER: I reported into ECS. Somebody took my badge or my name or
10 something. I think they collected my blue badge.

11
12 YUHAS: Okay. At the ECS, was there...you heard the siren go off. Did
13 you hear an announcement made? After the siren went off?

14
15 HOUSER: Vaguely remember.

16
17 YUHAS: Can you conjure up any words that were presented in that an-
18 nouncement?

19
20 HOUSER: I sort of remember-- you know, I know the alarm and I figured
21 that's what he was saying was, it was, you know, was the alarm.

22
23 YUHAS: And did, was that the declaration of a site emergency or a
24 general emergency?

25
893 028

1 HOUSER: I'm pretty sure it was a site emergency.

2
3 YUHAS: Okay. You arrived back at the Unit 1 ECS. Now, who's there
4 when you get there?

5
6 HOUSER: Lots of people were there.

7
8 YUHAS: We're trying to show here Unit 1 ECS.

9
10 HOUSER: Tom Mulleavy and Dick Dubiel.

11
12 YUHAS: They're both there present?

13
14 HOUSER: Yes.

15
16 YUHAS: Okay. Can you describe what they were trying to do at that
17 time?

18
19 HOUSER: Well, they had some people on phones and there were, there
20 were a repair party sitting there, a lot of our technicians were there...
21 It was just a lot of people all over the place.

22
23 YUHAS: Okay. And what responsibility in this organization did you
24 assume at that point?

25 893 029

1 HOUSER: I was just there for chemistry support if they needed anything,
2 you know, any support as far as chemistry was concerned.
3

4 YUHAS: Okay. At this time did anybody say whether they had secured the
5 recirc line on the Unit 2 letdown sample?
6

7 HOUSER: No.
8

9 YUHAS: So as far as you know it's still recirculating?
10

11 HOUSER: Yes.
12

13 YUHAS: Okay. Go ahead and pick up the--
14

15 HOUSER: But apparently someone up in the control room had shut the
16 valves.
17

18 YUHAS: Why?
19

20 HOUSER: Later on, not that day, the next day, we took a sample of it
21 and it was shut down.
22

23 YUHAS: That's how you knew the valves had been shut?
24
25

893 030

1 HOUSER: Well, the only valves that were shut, I guess, were the ones
2 from the control room--

3
4 YUHAS: Solenoid operated valves from the control--

5
6 HOUSER: Yes, motor control valve.

7
8 YUHAS: Was there any information presented to you at that time with
9 regard to the hot machine shop in Unit 1?

10
11 HOUSER: No.

12
13 YUHAS: Okay. Can you pick up the action? You've come in, Mulleavy
14 and Dubiel are trying to get the emergency squads organized, you're
15 hanging back waiting for directions, right?

16
17 HOUSER: Yes.

18
19 YUHAS: What happens?

20
21 HOUSER: The activity got too high in that area

22
23 YUHAS: Okay.

24
25 893 031

1 HOUSER: We had to leave.

2
3 YUHAS: What were the indications of high activity in that area?

4
5 HOUSER: It was, all the counters were going off. The hand and foot
6 monitors, you couldn't use them any more...

7
8 YUHAS: About how long were you there before you evacuated that area?

9
10 HOUSER: I don't think, not very long. Maybe a half an hour.

11
12 YUHAS: Okay. Where did they evacuate you to?

13
14 HOUSER: The Unit 2 control room.

15
16 YUHAS: The Unit 2 control room. Okay. About what time did you arrive
17 at the Unit 2 control room?

18
19 HOUSER: Well, we went directly from there to the Unit 2 control room.
20 Maybe...

21
22 YUHAS: So you're talking 8:00, 8:30?

23
24 HOUSER: Yeah, maybe 8:30.

25 893 032

1 JACKSON: Describe the environment in the Unit 2 control room upon
2 arrival.

3
4 YUHAS: What we're looking for is the number of people, that sort of
5 thing.

6
7 HOUSER: Well there was lots of people there. I guess, I don't know,
8 everybody in the plant seemed to have congregated there. And, you
9 know, you just, instrument people, electricians, everybody just had...
10 Oh, I would say maybe 40 people. Just, everybody just lining around
11 the walls and just--it just seemed like nobody really knew what was
12 going on or what to do, you know, right at the moment. Or they were
13 waiting for instructions, you know, to be sent out to do things.

14
15 YUHAS: Was there someone that was apparently in control of the situ-
16 ation? Was directing the activities?

17
18 HOUSER: Gary Miller took control. He said, in a few words, that he
19 was going to take charge of the situation and he wanted to talk to only
20 three people. And it was like Logan and Seelinger and maybe Zewe.
21 Three people, that's all he wanted to talk to. He was trying to get
22 something going.

23
24 893 033
25

1 YUHAS: Were there a lot of people in the Operations area of the control
2 room? By 'operations area' I mean the line that goes on the floor
3 there between the consoles where the operator normally stands when he's
4 controlling the plant parameters?

5
6 HOUSER: No, most of the people were right by the doors where you come
7 in, you know, and just sort off in their little groups.

8
9 YUHAS: Okay. So Mr. Miller has stated that he's only going to talk to
10 four direct subordinates? And then they are to organize the emergency
11 response, okay?

12
13 HOUSER: Yes.

14
15 YUHAS: Now, what were you guys doing in this period of time?

16
17 HOUSER: What, you mean me directly, or--

18
19 YUHAS: Right. You and the repair parties and everyone in this company--

20
21 HOUSER: Everybody was still just sitting there, I guess waiting.

22
23 YUHAS: Okay. How long did that go on?

24
25 893 034

1 HOUSER: It's hard to say because I don't remember what happened next.

2
3 YUHAS: While you were standing around there did you take the time to
4 look at any of the panel indications in the instrument control room?
5 Did you--

6
7 HOUSER: I don't think that--

8
9 YUHAS: --did you gain any information from what was going on just by
10 standing there?

11
12 HOUSER: Oh, I know what happened. I didn't really spend that much
13 time in the control room because they were still talking about the
14 primary-secondary leak. Now what we had done was, we went back down to
15 the Unit 2 lab and I put on a Scott Air-pack. And oh, the whole garb
16 up, everything, wet suit and all. And I went into the secondary lab
17 and I actually sampled the steam generators again and brought them out
18 and that's when we decided it was the B generator instead of the A.

19
20 YUHAS: When you sampled did you take again one liter poly bottles?

21
22 HOUSER: Yes.

23
24 YUHAS: From both the A and B?

25
893 035

1 HOUSER: Yes.

2
3 YUHAS: And what instrument did you measure these poly bottles with?

4
5 HOUSER: That we checked again with a frisker when we came back out.
6 And we just held them up to the, and it was the B generator had the
7 activity and set off on the 100 scale.

8
9 YUHAS: Okay. So they pegged it on the 100 scale?

10
11 HOUSER: Yes.

12
13 YUHAS: And the A did what?

14
15 HOUSER: Slight contamination.

16
17 YUHAS: Slight contamination? Did you do any further analysis with
18 those samples?

19
20 HOUSER: I think we did, yes. I would have to look in the book to see
21 exactly what we did do, but I'm... They were transported to Unit 1,
22 those samples were.

23
24 YUHAS: Okay, the Unit 1 had been evacuated, isn't that--
25

893 036

1 HOUSER: Yeah, well, later on. They were set, I set them right inside
2 the door there but later on--

3
4 YUHAS: Did anyone check the dose rate, off those say in E-120 or
5 E-520, or Pic-6 or anything like that to see how hot that B steam
6 generator sample actually was?

7
8 HOUSER: Someone did have an E-520 there. I'm not sure exactly-- I'm
9 not sure of why the HPs-- No, I was all garbed up yet and I think they
10 may have, I'm not sure. I'd have to talk to them.

11
12 SHACKLETON: Gentlemen, it's time to turn the tape. The time is now
13 12:04 a.m. and we're now April 25, 1979. We'll terminate at this time
14 and come back on the next side of the cassette.

15
16 SHACKLETON: The time is now 12:07 a.m., April 25, 1979, and this is a
17 continuation of the interview of Mr. Edward W. Houser. Please resume
18 questioning.

19
20 YUHAS: Ed, for the benefit of the listeners who are unfamiliar with
21 Babcock and Wilcox plants, could you basically describe the steam
22 generators. Very briefly.

23
24 893 037
25

1 HOUSER: Okay. They are about 45 feet long, they stand vertically,
2 primary coolant goes through the tubes here, your secondary coolant on
3 the outside of the tubes, which is where you're making your steam.
4 Whatever comes in the bottom is turned into steam and goes out the top.
5 It's why they're called a once-through unit. We have two of them in each
6 unit.

7
8 YUHAS: Okay, fine. Allright, so we're picking it up now where you
9 went ahead and you came out with a Scott Airpack, saw the guy check the
10 bottle, take it with a frisker and you're getting out of the Scott
11 Airpack. Now, did you communicate to Unit 2 control room that it was
12 in fact the B steam generator? Did you do that personally?

13
14 HOUSER: Yes, yes.

15
16 YUHAS: Who did you tell?

17
18 HOUSER: I told Gary Harner, which was the other chemistry foreman that
19 came along meanwhile. And then we both went to the control room and
20 told them.

21
22 YUHAS: Okay. Who did you tell?

23
24 HOUSER: Shift foreman.

25
893 038

1 YUHAS: Okay. This was Mr. Scheimann?
2

3 HOUSER: Yes.
4

5 YUHAS: Okay, fine. Next course of events. Where did you go from
6 there?
7

8 HOUSER: Okay. Something...for some reason or other, I'm not sure what
9 happened next. But I got-- for some, somehow or other we started
10 releasing cars off the island and Gary, Gary Reed, Kary Harner and
11 myself had gone out to the processing center and one of our technicians
12 was with us, and they needed someone to go out to the North gate and
13 survey cars. And, so I got shuffled off on that job. And I was standing
14 out at the North gate as cars were coming out. I was monitoring them
15 off the island.
16

17 YUHAS: About how long were you out there?
18

19 HOUSER: Oh, only about 10 minutes and then someone had given me the
20 word that they were going to take them, drive them all down to the 500
21 KV substation and monitor them there.
22

23 YUHAS: Okay...
24
25

893 039

1 HOUSER: And then that's when I left that area and I went up to the 500
2 KV substation.

3
4 YUHAS: Okay, and how long were you at the 500 KV?

5
6 HOUSER: Oh, I helped out there. We frisked everybody out, all the
7 cars, and gee, it was sometime in the afternoon and I was still there.

8
9 SHACKLETON: Mr. Houser, because of the use of the word 'frisk',
10 people may misunderstand what you mean. Would you just briefly say
11 what that means in your terminology.

12
13 HOUSER: Oh, we, you take the, an HP probe, with a very thin-window
14 Geiger Mueller tube, and you just pass it over the people's bodies or
15 over their cars, tires, and so on, to make sure there's no surface
16 contamination.

17
18 SHACKLETON: Thank you.

19
20 YUHAS: So you're out there until in the afternoon of March 28.

21
22 HOUSER: Yes.

23
24 YUHAS: Now where did you go from the 500 KV station?
25

1 HOUSER: I, sometime in the afternoon, I went back up to the observation
2 center to find out what was going on. And we had to have radio down
3 there. We went back up to the observation center, myself and Bob
4 McCann, the HP foreman. And, when I got back up there they needed some
5 people on survey teams. You know, our people had been working, well
6 that day I think we worked like 18 hours. And I got put on a survey
7 team.

8
9 YUHAS: Is this an environmental survey team?

10
11 HOUSER: Yes.

12
13 YUHAS: Okay. And you worked how long on that?

14
15 HOUSER: I worked the rest of the time I was here that day on that.

16
17 YUHAS: Okay...

18
19 HOUSER: I went, I don't even know what the number of the team was but
20 I went to, they wanted me to go up to the dike at Crawford Station and
21 take an air sample, which I did. And I also, when I brought that one
22 back up I went back up to Royalton and took an air sample.

23
24
25 893 041

1 YUHAS: When you took the air samples, did you collect a particulate
2 and charcoal or just a charcoal?
3

4 HOUSER: Both. Particulate and charcoal.
5

6 YUHAS: How did you count the samples?
7

8 HOUSER: I tried counting it on the SAM kits. I got a few counts over
9 background on it but, you know, I guess if I was figuring out the
10 deviation, it would have been well within that, just maybe two or three
11 counts over background.
12

13 YUHAS: Did you have a copy of the SAM procedure there?
14

15 HOUSER: Yes.
16

17 YUHAS: Okay. Does that procedure call for you to establish an MDA?
18 When you're trying to count a sample like that?
19

20 HOUSER: I think it does.
21

22 YUHAS: Did you follow the procedure?
23

24 HOUSER: I think so.
25

893 042

1 YUHAS: Okay. So you found essentially nothing, then, based on the SAM
2 readings.

3
4 HOUSER: Yes, that's right.

5
6 YUHAS: Okay. You continued to take this sort of sample throughout the
7 evening?

8
9 HOUSER: Well, I took, I only took two of those. And then I reported
10 back to the observation center. Then they...I was put on another team
11 that went to the HOST. They sent us up to the HOST to take readings
12 and while Ed Egenrider and I, another technician, and myself went on
13 that one, and we went out some road. I'm not sure what the name of it
14 was.

15
16 YUHAS: What sort of readings were you taking on that trip?

17
18 HOUSER: We were just taking-- we didn't take any air samples on that
19 trip. We took, well...we were supposed to when we got in the middle of
20 the plume.

21
22 YUHAS: Okay.

23
24 893 043
25

1 HOUSER: We found on Fulling Mill road, we found a reading of like 13
2 mR and you can see it gradually go up until it peaked out then it
3 started decreasing as we go along.

4
5 YUHAS: What type of dose rate instrument were you using for that?

6
7 HOUSER: We had two dose rate instruments. We had an ion chamber and a
8 GM.

9
10 YUHAS: What models, do you know?

11
12 HOUSER: I think the GM was an E-520 and the ion chamber was maybe an
13 R-02. It was, I don't think it was one our instruments.

14
15 YUHAS: Uh-huh.

16
17 HOUSER: Some sort of an R-02.

18
19 YUHAS: Can you give us a time frame where you are at now on these
20 surveys?

21
22 HOUSER: That was really late. That was maybe at, maybe right around
23 midnight.

24
25 893 044

1 YUHAS: Did you have radio with you to call the results in?
2

3 HOUSER: Yes, well. we tried to make contact for the one time and we
4 could hear people talking and stuff. And they acknowledge our readings
5 when we sent them in.
6

7 YUHAS: So they heard you?
8

9 HOUSER: Yeah.
10

11 YUHAS: Okay. What time did you go home that night?
12

13 HOUSER: Oh, I think it was around 1:30 in the morning, the next morning.
14

15 YUHAS: Okay. And when did you come back in the next day, on the 29th?
16

17 HOUSER: Around 12:00. Noon.
18

19 YUHAS: Okay, so on 3/29 you returned about noon.
20

21 HOUSER: Yes.
22

23 YUHAS: Okay, what did you do then?
24
25

893 045

1 HOUSER: I went to the chemistry lab in Unit 1.
2

3 YUHAS: Okay. What was happening--
4

5 HOUSER: I'm sorry. I eventually got there. I'm not sure where we did
6 meet that day. That's the day that we took the primary samples.
7 Everybody was carrying, well we were wearing the respirators on site
8 that day.
9

10 YUHAS: What type of respirators were you wearing?
11

12 HOUSER: The full-face, with the particulate charcoal cartridge.
13

14 YUHAS: With the magenta colored GMR type cartridges, or the green, the
15 two that say that they are capable of removing iodine in the air--
16

17 HOUSER: The one approved. The one that said it, yes.
18

19 YUHAS: Okay.
20

21 HOUSER: It's that oblong tank.
22

23 YUHAS: Yeah. The football looking deal.
24
25

893 046

1 HOUSER: Yeah.

2
3 YUHAS: Okay, fine, gotcha. Alright, so you're wearing those, you go
4 on to the process center and then you go up and then you meet with
5 somebody else that--
6

7 HOUSER: Yeah, I think they told us, I think we had to wear them in the
8 processing center... I think you had to put the masks on in the pro-
9 cessing center and wear them to the control room. I think the control
10 rooms were clear.
11

12 YUHAS: Which control room did you go to?
13

14 HOUSER: The Unit 1.
15

16 YUHAS: Unit 1 control room, okay. And who did you see up there?
17

18 HOUSER: I ran into Gary Reed and Pete Velez.
19

20 YUHAS: Okay.
21

22 HOUSER: And we were told that we needed more on the RCS.
23
24
25

893 047

1 YUHAS: Okay. So were told by whom that you needed a boron?

2
3 HOUSER: Well, Pete Velez told me that the NRC had requested a boron.

4
5 YUHAS: Pete Velez told you that the NRC had requested a boron?

6
7 HOUSER: Yes.

8
9 YUHAS: Okay.

10
11 HOUSER: So, we proceeded down to the lab to start taking it, Gary
12 Reed, Pete Velez and myself.

13
14 YUHAS: Okay.

15
16 HOUSER: So we went in with our masks on and started lining it up,
17 getting it, you know, recircling it, and levels were really high, quite
18 high. Gary Reed started preparing his last work to do the boron then I
19 was going to take the sample, prepare it and give it to him to run it.
20 Pete Velez was supposed to be helping get the sample lined up, you
21 know, so we would not have to spend that much time in the area. And,
22 apparently, though, something, I don't know if the lines-- we have a
23 drag valve there to regulate the flow of the letdown and I guess there
24 was a lot of gas in the line for some reason and plus the stuff looked
25

893 048

1 garbage, the sample itself. You had to keep adjusting the drag valve
2 to keep it from blocking up, everytime you'd let the drag valve go the
3 pressure would just drop off to nothing, so you wouldn't have any
4 recirc. So we had to spend a lot of time trying to get the recirc flow
5 going and when we opened the sample line. Just a big sputter of gas
6 came out and then Pete came out of the room, said there was something
7 wrong with. So I went back in and played with the valve and established
8 flow. Opened it up and actually took the sample.
9

10 YUHAS: What'd you do with the sample after you took it?
11

12 HOUSER: I put some in a beaker and brought it out from the lab to
13 adjust the pH on it.
14

15 YUHAS: And did you do that?
16

17 HOUSER: Yes.
18

19 YUHAS: And then what'd you do?
20

21 HOUSER: I gave it to Gary Reed to pipette for his sample.
22

23 YUHAS: Okay.
24
25

893 049

1 HOUSER: So far.

2
3 YUHAS: Okay. Then what?

4
5 HOUSER: Meanwhile, I had left the lab and right outside the...what is
6 now actually the ECS, right outside the HP lab area it was reading
7 about 10 mR in that whole area. There were assorted people there, I'm
8 not sure who. Well, Doug Weaver was one of the instrument persons.
9 Working in the area, I guess, I don't know exactly what they were
10 doing. But Doug Weaver was in that area. Pete Velez was, you know...it
11 just a shambles. Everything was just left the way when we evacuated
12 Unit 1. And it was, just everything was just laying there all over the
13 place.

14
15 YUHAS: Okay, Ed. I'm going to go back through this whole sequence of
16 events now very slowly and in great detail.

17
18 HOUSER: Okay.

19
20 YUHAS: You're back, I'm going to take you back to Unit 1 control.
21 You've come in. Velez is in there, right? As is Mr. Reed. Okay, so
22 the three of you are there. Velez tells you 'Ed, we've got to get a
23 primary coolant sample for boron because the NRC has requested it.'
24 Okay. Now you're both wearing, did you take your masks off when you
25 got out there?

893 050

1 HOUSER: In the control room...

2
3 YUHAS: Okay, so you come out. Did you guys sit down and decide how
4 you're going to take this sample?

5
6 HOUSER: Well, yes. Pete and I talked about it because, you know, he
7 was going to help me take the sample to cut down exposure.

8
9 YUHAS: What type of exposures did you fellows think you'd get, that
10 you were going to be faced with when you collected this sample?

11
12 HOUSER: I have no idea.

13
14 YUHAS: Did Pete have an idea?

15
16 HOUSER: High. That's all he said.

17
18 YUHAS: Did you all talk about the potential dose to yourselves?

19
20 HOUSER: No.

21
22 YUHAS: Did you, any of you, indicate that the collection of this
23 sample might result in a dose in excess of 5 rem?

1 HOUSER: Why, I figured, maybe, you know, that's why Pete was there.
2 He was going to, you know, mon-- well he was taking readings, okay,
3 with a--
4

5 YUHAS: Now wait a second. We haven't got down there, we haven't done
6 the job yet. You're still in the talking phase up in the control room.
7

8 HOUSER: Oh, oh. No.
9

10 YUHAS: Nobody broached the subject that the exposure may be in, may be
11 up to 5 rems?
12

13 HOUSER: No.
14

15 YUHAS: Okay. Did anybody asked you if you volunteered to take the
16 sample?
17

18 HOUSER: Yeah.
19

20 YUHAS: Were you told to take the sample?
21

22 HOUSER: Yes.
23
24
25

893 052

1
2 YUHAS: By whom?

3
4 HOUSER: Pete Velez.

5
6 YUHAS: By Velez. Okay, fine. Okay. Did you talk about special
7 precautions that you were going to take because you did expect it to be
8 high?

9
10 HOUSER: To a certain extent, yes. You know, we were going to use a
11 lot of people...

12 YUHAS: The three of you?

13
14 HOUSER: Yeah, plus, you know, one guy was going to be doing his thing
15 while I was getting the sample, so its not just sitting there, then
16 you'd start the next step.

17
18 YUHAS: Uh-huh. Did you expect that a release might occur when you
19 collected the sample down there?

20
21 HOUSER: Yes.

22
23 YUHAS: Okay. Did you discuss that in terms of that would be an inten-
24 tional release, that you should have a release permit for?
25

1 HOUSER: Hmh, no.

2
3 YUHAS: Okay. Did you ask if anyone in the control room monitored the
4 effluent monitors?

5
6 HOUSER: Joe Keisch, I think it was Joe Keisch I talked to, was watching
7 the monitors. He did call me when we were...I guess I was finished
8 taking the samples, he said that the monitors had gone up.

9
10 YUHAS: Okay. So you talked about it, you knew it was going to be hot
11 and that's why the three of you were going to do it, right? Okay, so
12 about how long did you discuss this before you went down to do the job?

13
14 HOUSER: Well, right before we went down.

15
16 YUHAS: On a time frame. Did you take 15 minutes to talk about it, did
17 you take an hour--

18
19 HOUSER: Oh. No, it was probably anywhere from a few minutes.

20
21 YUHAS: A few minutes. Did anyone state to you that this sample was
22 necessary for the protection of vital equipment?

23
24
25 893 054

1
2 HOUSER: Well, I, you know, I heard a lot of people saying 'We don't
3 have the slightest idea what the boron is in there'. Because the last
4 boron we had had was probably 36 hours prior to that.

5
6 YUHAS: Okay. You know, in accordance with the applicable guidance of
7 the NCRP, or the ICRP, there are situations where it is justifiable to
8 take exposures of up to 25 rem for the protection of vital equipment.
9 And what I'm trying to put in perspective is, was this considered to be
10 one of those instances? Did someone specifically tell you, 'Hey, this
11 dose is likely going to be, you know, several rem and the reason we're
12 going to do this is because it is for protection of the reactor or to
13 minimize the effluent release to the general public'.

14 HOUSER: They may have thought that, but no one stated that to me.

15
16 YUHAS: Okay, and no one asked you--

17
18 HOUSER: Maybe that's, maybe they had talked to Velez. I don't know.

19
20 YUHAS: But no one asked you if you were a volunteer to go out and do
21 this?

22
23 HOUSER: No.

24 893 055
25

1 YUHAS: Okay, fine. So you spent about 15 minutes talking with Reed,
2 Velez, and yourself. Okay, now you headed down. Did you fill out an
3 RWP before you went down there to take the sample?
4

5 HOUSER: No, we were going to do it...
6

7 YUHAS: Okay...
8

9 HOUSER: ...with Pete as our escort.
10

11 YUHAS: Okay.
12

13 SHACKLETON: Excuse me. Ed, would you explain to the listening audience
14 what an RWP is? Just define it.
15

16 HOUSER: Okay. An RWP is a radiation work permit. Anytime you work in
17 a contaminated area or an area that's greater than 5 mR readings then
18 you need a radiation work permit.
19

20 SHACKLETON: Thank you.
21

22 YUHAS: Okay. So you proceed down to the outer door of the Unit 1 chem
23 HP area, right?
24

25 893 056

1 HOUSER: Yes.

2
3 YUHAS: Okay. How did you dress yourselves up to take this sample?

4
5 HOUSER: I had just normal garb on. I had I guess three pair of cover-
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
alls, well not normal, but I mean I had more than normal. I had like
three pair of coveralls on and two pair of boots. This was over my
clothing. But, and I had about three pair of gloves on with a respirator.

10 YUHAS: What type of respirator?

12 HOUSER: Full-face particulate with a so-called iodine removable car-
13
14
15
16
17
18
tridge pit.

15 YUHAS: Okay. Was everyone dressed the same?

17 HOUSER: Yes.

19 YUHAS: None of you had Scott Airpacks on to take that sample?

21 HOUSER: No.

893 057

1 YUHAS: Okay, fine. Did, where did you wear your personnel dosimetry
2 and in what did you wear it?
3

4 HOUSER: We had high-range dosimeter...
5

6 YUHAS: What type range?
7

8 HOUSER: Zero to 5 R.
9

10 YUHAS: Okay.
11

12 HOUSER: And low-range dosimeter TLD...
13

14 YUHAS: Okay.
15

16 HOUSER: Regular badges.
17

18 YUHAS: Where did you wear it on your body?
19

20 HOUSER: Right where I have it.
21

22 YUHAS: Okay, describe it [LAUGHTER]
23

24 HOUSER: Well, I, in my, the middle of my chest.
25

1 YUHAS: Okay. Between your coveralls? Sets of coveralls?
2

3 HOUSER: Yeah, right over my clothing. My regular street clothing.
4

5 YUHAS: Okay. Was any of the pocket dosimeters accessible so that you
6 could read it as you worked in the area?
7

8 HOUSER: Hmm... Mine weren't. I'm not sure about the others.
9

10 YUHAS: Okay. Did you have any extremity monitoring, off finger rings...
11

12 HOUSER: No.
13

14 YUHAS: Wrist badges? Did anyone address the need for that type of
15 monitoring?
16

17 HOUSER: No.
18

19 YUHAS: Okay. So you got dressed up now, you got your cartridge mask
20 on, and you're all ready to go. The three of you enter the chem HP
21 area. Now, what actions were taken by whom?
22
23
24
25

893 059

1 HOUSER: Well, we...I went into the nuclear sampling room and started
2 valve line up.

3
4 YUHAS: Okay, inside the nuclear sampling room, was the continuous air
5 particulate, was the APD air particulate and iodine or was it air
6 particulate--

7
8 HOUSER: ALG particulate iodine gas.

9
10 YUHAS: Particulate iodine gas. Was that unit in operation?

11
12 HOUSER: No.

13
14 YUHAS: Okay. Is that unit required to be in operation when you take a
15 sample? Procedure wise?

16
17 HOUSER: I think it is, but it had been out of service for some time.

18
19 YUHAS: How long?

20
21 HOUSER: I don't really know.

22
23 YUHAS: Why was it out of service?

24
25
893 060

1 HOUSER: I think the, well the motor had burned up on it.
2

3 YUHAS: The motor had burned up on it. Can you give us a feel as had
4 it been out of service one day, one week, one year...?
5

6 HOUSER: I don't normally go in there. You know, I'm not normally
7 expected, you know, just to go in there. It would probably say on the
8 chart...I don't know, you know there's a strip chart on it.
9

10 YUHAS: Okay.
11

12 HOUSER: Maybe it was the technicians, they run their samples more
13 often than I do, maybe it was one of them.
14

15 YUHAS: Okay, so you went into the room, it was out of service. Did
16 you enter the room alone?
17

18 HOUSER: No, Pete Velez was with me.
19

20 YUHAS: Okay. And you opened the valves up to establish recirc capa-
21 bility, is that true? What was Mr. Velez doing?
22

23 HOUSER: He was taking readings.
24
25

893 061

1 YUHAS: Okay, and what kind of information was he telling you?
2

3 HOUSER: Just different readings at different spots in the room.
4

5 YUHAS: Can you give us a few numbers?
6

7 HOUSER: Several hundred mR...
8

9 YUHAS: Okay.
10

11 HOUSER: It wasn't really real high until we actually established
12 recirc.
13

14 YUHAS: Okay, now this is because the control valves are still shut.
15

16 HOUSER: Yes.
17

18 YUHAS: Okay. Now, that means that sometime between 8:00 on the 28th,
19 the valves apparently had been shut from the control room, is that
20 correct?
21

22 HOUSER: Yes.
23

24 YUHAS: What valves did you check or did you open down in there when
25 you went in?

1 HOUSER: I went through a complete line up.
2

3 YUHAS: Okay, did you actually have to open valves or had they already
4 been lined up with the exception of the solenoids that operate from the
5 control room?
6

7 HOUSER: I think I did realign it. I think I just went right through
8 the sample cooler instead. There's two paths you can take. You can
9 valve it so that you go through the bomb...
10

11 YUHAS: Okay.
12

13 HOUSER: ...and back through the cooler and then into the sample sink,
14 or you can just valve it through the cooler and right to the sample
15 sink and that's the route I took.
16

17 YUHAS: What were the valves as found? Were they indicative that the
18 sample had been on recirc the previous day and that only the valves
19 from the control room had been shut?
20

21 HOUSER: I would say that's true, yes.
22

23 YUHAS: Okay. So then you changed it, you bypassed the bomb and went
24 on letdown line through the cooler to the sink?
25

1 HOUSER: Yes, yes.

2
3 YUHAS: Okay. Which meant when you established recirc flow, where did
4 the water go?

5
6 HOUSER: To the Unit 2 makeup tank.

7
8 YUHAS: Okay, so you are recircing through the cooler, out the spigot,
9 into the drain tank, or--

10
11 HOUSER: No--

12
13 YUHAS: --closed loop?

14
15 HOUSER: Closed loop, yes.

16
17 YUHAS: Closed loop to--

18
19 HOUSER: The only valve that wasn't open then was the sink valve.

20
21 YUHAS: Was the sink valve, okay. Allright, so you made the valve
22 lineup. Then did you come out of the room?

23
24 HOUSER: Yes.

25
893 064

1 YUHAS: And you called...

2
3 HOUSER: Unit 2 control room to open the valves.

4
5 YUHAS: Okay, fine. So now you're standing outside the room. When
6 you'd gone in before the dose rate, whole body, was a couple hundred
7 millirem?

8
9 HOUSER: Yes.

10
11 YUHAS: Okay, fine. Now tell me what happened.

12
13 HOUSER: I called the control room, had them open the valves. And then
14 Pete Velez went in...

15
16 YUHAS: About what time was this, by the way?

17
18 HOUSER: I think it was around four in the afternoon.

19
20 YUHAS: Okay.

21
22 HOUSER: ...four or four-thirty... as far as I know. I think Pete-- we
23 waited for a while to see, you know, then we, you have to go in and
24 check the gauge. There's a system pressure gauge in the pressure after
25 the drag valve.

893 065

1 YUHAS: Okay, don't get cross-tracked.

2
3 HOUSER: Yeah, okay. So you check your system pressure gauge to make
4 sure you're getting proper flow and then you have to check your gauge
5 after your drag valve. It has pressure on it so that you know you're
6 letting some of your sample through, that you are recircing.

7
8 YUHAS: Okay. Now who went in and checked that?

9
10 HOUSER: Pete Velez went in the first time.

11
12 YUHAS: Okay. He came out and what did he tell you?

13
14 HOUSER: There was no flow.

15
16 YUHAS: No flow. Tell you anything about the dose rates?

17
18 HOUSER: No.

19
20 YUHAS: Okay, so then what happened?

21
22 HOUSER: I stuck my head in and looked at it. Then I jiggled the drag
23 valve.

24
25 893 066

1 YUHAS: Okay. The drag valve, is that short-stemmed? What size pipes
2 do you have when you're doing a sample unsterile?

3
4 HOUSER: I think they are 3/8 inch.

5
6 YUHAS: 3/8 stainless steel. Are they shielded or unshielded?

7
8 HOUSER: Unshielded.

9
10 YUHAS: Okay. Then you got Walworth type valves? Tee handles?

11
12 HOUSER: Not on the-- almost all of them except the drag valves.

13
14 YUHAS: Okay, and what's the drag valve handle look like?

15
16 HOUSER: It's just a round knurl...

17
18 YUHAS: Round knurled nut? How long is the stem for the pipe?

19
20 HOUSER: One inch.

21
22 YUHAS: One inch, okay. So when you went back in you put your hand up
23 on the knurl and you opened up to increase the flow across the drag
24 valve.

1 HOUSER: Yes.

2
3 YUHAS: Okay. Then did you come right back out of there?

4
5 HOUSER: Yes.

6
7 YUHAS: Okay. Next what happened?

8
9 HOUSER: I left the lab and went into the HP lab. We were just waiting
10 then for a 45-minute recirc, trying to get to the lowest area.

11
12 YUHAS: Okay. In that 45 minutes did you hear any words from the
13 control room about alarms going off? Did you hear any local alarms,
14 the remote air monitor that's located in the sample room there or
15 touched off? Did you hear those go off at all?

16
17 HOUSER: No. No one.

18
19 YUHAS: Nothing went off.

20
21 HOUSER: No. I didn't hear any.

22
23 YUHAS: Okay.

24
25 893 068

1 HOUSER: I don't think so. There's one in the room and there's one in
2 the radiochem lab but I don't remember hearing any of them go off. No,
3 I'm sure they didn't go off, I would have heard that.
4

5 YUHAS: Okay. So you're sitting there for 45 minutes. Now what'd you
6 do?
7

8 HOUSER: Well, we went back in and Pete Velez was going to take the
9 sample and I was going to do the preparation and Gary Reed was going to
10 run it. And Pete, he's HP, he's not familiar with the chemistry system.
11 And all he did was, I said 'All you should have to do now is just go in
12 and open the sink valve with your bottle and you should collect the
13 sample'.
14

15 YUHAS: Okay, what kind of bottle did you use?
16

17 HOUSER: Polyethylene.
18

19 YUHAS: What size?
20

21 HOUSER: One liter.
22

23 YUHAS: One liter. Okay, did Pete go in with a meter in his hand?
24
25

893 069

1 HOUSER: I'm not sure.
2

3 YUHAS: How did you know what the dose rates then were after you had
4 initiated recirc flow?
5

6 HOUSER: I surveyed it later on when I went in.
7

8 YUHAS: That was after Pete had come out?
9

10 HOUSER: Yeah.
11

12 YUHAS: Okay. What dose rates did you find?
13

14 HOUSER: Right in the hood area there was like 3 R.
15

16 YUHAS: Is that a whole body dose rate?
17

18 HOUSER: Yeah.
19

20 YUHAS: Okay. So Pete went in and he opened the sample valve...
21

22 HOUSER: Yeah.
23
24
25

893 070

1 YUHAS: And what had happened?

2
3 HOUSER: He just got a burst of gas out of the line. Very little
4 liquid. What happened is that as soon as he had opened the valve some
5 change in pressure messed up the innards on the uh...
6

7 YUHAS: Drag valve?

8
9 HOUSER: Drag valve. Then it had to be readjusted. And he didn't know
10 how to do that. Okay, so he closed the sink valve and let the bottle
11 sit there. He came out and told me. I went in...
12

13 YUHAS: Did you take a survey meter with you when you went in?

14
15 HOUSER: Yes.

16
17 YUHAS: Okay, and that's when you measured the 3 R/hr...
18

19 HOUSER: Yeah, and at the drag valve, I think it was something like 10
20 R.
21

22 YUHAS: Okay. Exact contact with the drag valve?
23

24 HOUSER: Yes.
25

893 071

1 YUHAS: Okay.

2
3 HOUSER: About 1 inch.

4
5 YUHAS: Okay.

6
7 HOUSER: And I just split the drag valve open and I saw the gauge come
8 up in pressure. I just grabbed the sample then.

9
10 YUHAS: How much sample did you take?

11
12 HOUSER: Maybe 150 ml.

13
14 YUHAS: Okay. So about a quarter of a liter bottle, then, or less?

15
16 HOUSER: Less than that, yeah.

17
18 YUHAS: Okay. Did you measure that with your meter?

19
20 HOUSER: Yes.

21
22 YUHAS: What meter did you have?

23
24 HOUSER: Teletector.

25 893 072

1 YUHAS: Okay, did you measure at contact with the bottom of the bottle?
2

3 HOUSER: Yes.
4

5 YUHAS: What did it read?
6

7 HOUSER: Greater than 1000 r/hr.
8

9 YUHAS: How fast did the meter peg?
10

11 HOUSER: Not very fast.
12

13 YUHAS: But it did peg?
14

15 HOUSER: It just barely went off scale.
16

17 YUHAS: Okay. Did you take any meter readings at a distance so it came
18 back on scale?
19

20 HOUSER: No.
21

22 YUHAS: Okay, so what did you do then?
23
24
25

893 073

1 HOUSER: I took a small amount of the sample, capped the bottle and set
2 it back in the sink and took the small aliquot out to the lab.
3

4 YUHAS: Okay. Now, you've got a one liter bottle sitting there with
5 about 150 cc in it. Okay, and you say you took a 'small amount' of the
6 sample. Can you be more specific?
7

8 HOUSER: Maybe 20 ml.
9

10 YUHAS: Well, did you pour it into another beaker--
11

12 HOUSER: Yes.
13

14 YUHAS: You poured it into a beaker, and you held the poly bottle in
15 your hand and you held the beaker in your hand?
16

17 HOUSER: The beaker was sitting down.
18

19 YUHAS: Okay, was that a glass beaker?
20

21 HOUSER: Poly.
22

23 YUHAS: Poly beaker? What size?
24
25

893 074

1 HOUSER: 100 cc.
2

3 YUHAS: 100 cc. About how much fluid did you pour into there?
4

5 HOUSER: About 20 cc.
6

7 YUHAS: Okay. You set the poly bottle back down inside the hood.
8

9 HOUSER: Yes.
10

11 YUHAS: Okay, then what did you do?
12

13 HOUSER: I took the sample out to the lab.
14

15 YUHAS: You carried the sample out to the lab. About how much handling
16 time was involved?
17

18 HOUSER: You mean from the time I started pouring it?
19

20 YUHAS: From the time that you started pouring the sample into the
21 bottle, you grabbed the bottle, started pouring it, set the bottle
22 down, took the beaker in your hand and carried it out to the chem lab.
23

24 HOUSER: Maybe 30 seconds.
25

893 075

1
2 YUHAS: Okay. So now you get out to the chem lab. What did you do?

3
4 HOUSER: Oh, I forget to tell you this but what we had done was, we
5 took some lead bricks and had made a little half-moon sort of shaped
6 thing to do our work behind. We did that at the boron titrating ap-
7 paratus and I did it where I was going to acidify the sample.

8
9 YUHAS: Okay, this was in the chem lab?

10
11 HOUSER: Yeah.

12
13 YUHAS: Okay, so you come holding this beaker-- [TAPE ENDS HERE]

14
15 SHACKLETON: This is a continuation of the interview of Mr. Edward W.
16 Houser. The last tape went off at 12:36 a.m. The time is now 12:38
17 a.m., April 25, 1979. Please continue.

18
19 YUHAS: Okay, we were just talking about transferring the 25 ml beaker
20 of fluid to the temporary shield. Ed, how much shielding had you
21 placed there in anticipation of the sample?

22
23 HOUSER: The row was two bricks wide and I think two bricks high, so
24 that would have been like maybe four inches of lead.
25

893 076

1 YUHAS: Okay, okay. Did somebody tell you what the whole body dose was
2 when-- now Gary's gonna, Reed's gonna take over the analysis from here,
3 is that right?
4

5 HOUSER: Yeah, as soon as I acidify it.
6

7 YUHAS: Okay. Did anybody measure the dose rates to your whole body
8 and to your hands as you go to the acidify mode?
9

10 HOUSER: What I did, I took the teletector and laid it on our DU spectro-
11 photometer over there and I had the probe in back of the shield.
12

13 YUHAS: Behind the shield?
14

15 HOUSER: Yeah, behind, where I was standing.
16

17 YUHAS: Uh-huh.
18

19 HOUSER: And it was something like... I think... I'm not sure... I
20 think it was, I thought it was 100 mR. I didn't take any samples
21 around, readings around the shield then.
22

23 YUHAS: Okay. Alright, so what did you do with the sample now?
24
25

1 HOUSER: I acidified it and gave it to Gary Reed and left.

2
3 YUHAS: Okay. To acidify you merely ran in what, nitric?

4
5 HOUSER: Hydrochloric acid.

6
7 YUHAS: Hydrochloric acid from a burette, right?

8
9 HOUSER: Yes.

10
11 YUHAS: Okay. Now you say you gave it to Gary. Did you say, 'Gary, go
12 ahead and continue the analysis' or did you pick it up and take it
13 somewhere?

14
15 HOUSER: No, I left it right there and said it was ready.

16
17 YUHAS: Okay. So Gary comes in and, is Gary dressed the same way you
18 are?

19
20 HOUSER: Yes. Well, he didn't have the same cartridge I did in his
21 respirator.

22
23 YUHAS: What kind did he have?

1 HOUSER: Just a regular particulate.

2
3 YUHAS: Regular particulate. Okay, fine. So what does Gary do?

4
5 HOUSER: He just took a pipette and pipetted 5 mls of it into the
6 beaker and went back over to the...

7
8 YUHAS: Okay, can you describe the pipette?

9
10 HOUSER: Oh, it's a glass volumetric pipette with a...

11
12 YUHAS: Rubber suction?

13
14 HOUSER: Yeah, rubber PRO pipette.

15
16 YUHAS: Okay. So when he withdraws the 5 ml it is then inside his
17 hand?

18
19 HOUSER: No, no.

20
21 YUHAS: Below his hand?

22
23 HOUSER: It's, yeah. He's up here and it probably stopped maybe four
24 inches below his hand.

25

893 079

1 YUHAS: Okay, four inches below his hand? Now he carried this where?

2
3 HOUSER: Oh, he would have put that right into a beaker.

4
5 YUHAS: Okay.

6
7 HOUSER: Discharged that from the volumetric flask into the, or volu-
8 metric pipette, into a beaker...

9
10 YUHAS: Okay, and then--

11
12 HOUSER: ...of 95 mls of water.

13
14 YUHAS: Okay, and now what's he do with that?

15
16 HOUSER: And he would put that on a pH meter under a titrater. Okay,
17 now he grabs that 5 ml dilution...

18
19 YUHAS: Yep.

20
21 HOUSER: ...into a beaker with his hand, he carries it over to the pH
22 meter. Okay.

23
24 893 080
25

1 YUHAS: Did he set it down and run the pH probes into the solution?
2

3 HOUSER: Yes.
4

5 YUHAS: Okay. Then what'd he do?
6

7 HOUSER: And then you titrate it with sodium hydroxide.
8

9 YUHAS: Okay, what was the pH, do you remember?
10

11 HOUSER: I would...I used litmus paper, because I didn't want us to...you
12 know...take the time with the pH meter, and I figured it was about
13 8-1/2.
14

15 YUHAS: 8-1/2?
16

17 HOUSER: Yeah.
18

19 YUHAS: Okay. That's based on litmus. Did you see what Gary read on
20 the meter?
21

22 HOUSER: Well, after he, he does a dilution on it, okay. He took 5
23 mls with 95 mls of water so you really couldn't tell the pH then
24 anymore.
25

893 081

1 YUHAS: Okay, so you just read 7?

2
3 HOUSER: Well, see I had adjusted it. I adjusted it to 6.

4
5 YUHAS: Oh, that's right, okay, you were acidifying it and...

6
7 HOUSER: Yeah, whatever. He would have probably read somewhere around
8 6 because the demin water runs 6-1/2.

9
10 YUHAS: Right. Gotcha.

11
12 HOUSER: Plus, he would put manitol into the solution to make it ti-
13 tratable.

14
15 YUHAS: Okay, so now he's gonna titrate it for boron, is that right?
16 How long did that take him, to titrate it for boron?

17
18 HOUSER: I'm not really sure because I left the area.

19
20 YUHAS: Okay. Did somebody take the dose rate on this to him as he was
21 standing there doing the titration?

22
23 HOUSER: Well, he had shielding also. We had built a lead shield
24 around, you know, to protect his torso.

1 YUHAS: Okay. So, now you said you left the area. Where did you go?
2

3 HOUSER: I went to the Unit 1 health physics lab and was with Pete
4 Velez.
5

6 YUHAS: Okay.
7

8 HOUSER: I'm not sure where we undressed to leave the area.
9

10 YUHAS: Okay, did someone call the control room to tell them to stop
11 the recirc?
12

13 HOUSER: I closed the valve in the room. We had --
14

15 YUHAS: Okay, so you manually isolated the recirc, right?
16

17 HOUSER: Yes.
18

19 YUHAS: Okay.
20

21 HOUSER: I closed down when we closed the sink valve and left.
22

23 YUHAS: Okay. And now you and Pete are coming out there undressed?
24
25

1 HOUSER: Yes.

2
3 YUHAS: Did you at any time go back and check the valve lineup, like
4 after Velez had first come out? Did he have alka seltzer water coming
5 out of the thing? Did you adjust any valves or open the drag valve?
6

7 HOUSER: No. That was the only one. We had to constantly adjust that
8 one too.
9

10 YUHAS: Did you at any time in the course from the time you got dressed
11 to the time that you were ready now to get undressed check the pocket
12 dosimeter?
13

14 HOUSER: No.
15

16 YUHAS: Did anybody?
17

18 HOUSER: I don't think so.
19

20 YUHAS: Okay. So you and Pete are now getting undressed, Mr. Reed's in
21 there running the boron. Allright, okay. What did you find when you
22 got undressed?
23
24
25

893 084

1 HOUSER: Oh, again I'm not sure where we got undressed. It must have
2 been right there at the door. I think. And we proceeded out to the
3 processing center and as we started getting near the monitors they
4 started going off.

5
6 YUHAS: Okay, on your way out there.

7
8 HOUSER: Yeah.

9
10 YUHAS: Okay, now you're in your street clothes, right?

11
12 HOUSER: Yes.

13
14 YUHAS: Okay.

15
16 HOUSER: Yeah, we just got near the monitors and they started...

17
18 YUHAS: You read your pencil yet?

19
20 HOUSER: Yes. We did that at the HP lab right after we got undressed
21 there.

22
23 YUHAS: What did your pencil read?

24
25 HOUSER: My small, my low range was off scale.

1 YUHAS: Okay.

2
3 HOUSER: And the high range, I had dropped it just before I read it. I
4 was reading that in the HP lab and it was up around, very close to 5.
5

6 YUHAS: And what did it start out at?
7

8 HOUSER: Zero.
9

10 YUHAS: Okay. So it was reading close to 5 rem.
11

12 HOUSER: Yeah. But like I say, right before I read it, when I was
13 taking it off I dropped it. And I went to read it, I didn't know if I
14 could believe this thing or not.
15

16 YUHAS: Okay. So then you headed out to the control room.
17

18 HOUSER: Processing--
19

20 YUHAS: Processing center. And you set off some alarms. Okay, now
21 what happens?
22

23 HOUSER: In the pocessing center.
24

25 YUHAS: Okay.

893 086

1 HOUSER: Yeah, uh. I think what, we wore a white suit out to the pro-
2 cessing center, I'm pretty sure we did. And boots. I think we were...yeah,
3 we were wearing boots in the area at that time. And, cause I was
4 worried about really contaminating the area out there. But we had one
5 of the technicians, Vince Heilman, start, you know...when I tried to
6 reach for the monitor it just started like crazy. And Vince Heilman
7 took his monitor then, and actually started to frisk me and it was
8 terrifically hot.

9
10 YUHAS: Can you give us some numbers? .

11
12 HOUSER: Offscale, in the hundreds, yeah.

13
14 YUHAS: Okay, did you go to another meter?

15
16 HOUSER: Uh, no.

17
18 YUHAS: Okay, so what did you do then?

19
20 HOUSER: We went back into the area to take showers.

21
22 YUHAS: Okay. He did not check you with an instrument other than the
23 HP-210 and the Rm-14?

24
25
893 087

1 HOUSER: Uh, he had a... yeah, somebody did, with an E-520.

2
3 YUHAS: And what did they find?

4
5 HOUSER: Uh, they just... my wrist and my hand, well my one finger read
6 50 mR. My wrists were hot.

7
8 YUHAS: How hot?

9
10 HOUSER: Couple of mRs.

11
12 YUHAS: Okay. How about Pete Velez?

13
14 HOUSER: Pete Velez's one wrist was, I thought they said 200 mR, 250 or
15 something like that.

16
17 YUHAS: Okay. Did anybody survey the rest of your body?

18
19 HOUSER: Well, it was very highly contaminated, we knew that.

20
21 YUHAS: But nobody checked you, for instance, took a direct reading on
22 your throat?

23
24 893 088
25

1 HOUSER: No. My hair was really contaminated, too, so...

2
3 YUHAS: 'Really' being how high? Pegging the frisker?

4
5 HOUSER: Yeah...

6
7 YUHAS: On a times-hundred scale?

8
9 HOUSER: Yeah.

10
11 YUHAS: Okay, so now you and Velez go back to the shower.

12
13 HOUSER: Yeah. Meanwhile we said, 'Somebody better get Reed out of
14 there'. But he had already come out.

15
16 YUHAS: Okay, and what was his condition?

17
18 HOUSER: Uh, well when we got in the shower, he was there.

19
20 YUHAS: In the shower?

21
22 HOUSER: Yeah. [LAUGHTER]

23
24 YUHAS: Okay, did anybody frisk him out or did you just assume--
25

1 HOUSER: Well, I think he knew he was contam-- I imagined somebody
2 frisked him somewhere.
3

4 YUHAS: Okay. Okay, so now the three of you stand in the shower blowing
5 bubbles, right? [LAUGHTER] How long did you shower?
6

7 HOUSER: About 15 minutes.
8

9 YUHAS: What type of decontamination agent did you have?
10

11 HOUSER: Just soap.
12

13 YUHAS: What kind of soap?
14

15 HOUSER: We found it there in the shower.
16

17 YUHAS: You found it in the shower...
18

19 HOUSER: I had used some of the green liquid soap...
20

21 YUHAS: Physohex? Or Physoderm?
22

23 HOUSER: No, its a hand cleaner we have in there.
24
25

1 YUHAS: Okay.

2
3 HOUSER: I used that on, you know, my hair.

4
5 YUHAS: Okay. Did you check yourself after you showered? What did you
6 find?

7
8 HOUSER: Still hot.

9
10 YUHAS: Still hot?

11
12 HOUSER: Well, most of my body contamination, it was on my clothing.
13 Okay, when we took our clothing off I think we removed...

14
15 YUHAS: Okay.

16
17 HOUSER: ...70% of it.

18
19 YUHAS: Okay. When did you give up on washing?

20
21 HOUSER: About 1:00 that morning.

22
23 YUHAS: 1:00 the following morning?

24
25 HOUSER: Yes.

893 091

1 YUHAS: So you were in the shower from like 6:00 that evening til 1:00
2 that morning?

3
4 HOUSER: i Couple times, yeah.

5
6 YUHAS: It's no wonder the plant had water problems. [LAUGHTER] Okay,
7 so these three pruneey guys... [LAUGHTER]

8
9 HOUSER: We did look like prunes, yeah. [LAUGHTER]

10
11 YUHAS: Head out for parts unknown to be frisked. Where did you go?

12
13 HOUSER: Well, we went to the 500 KV, I myself and Gary Reed went to
14 the 500 KV substation. I think Velez went there also.

15
16 YUHAS: Okay.

17
18 HOUSER: I don't remember seeing him later on that evening.

19
20 YUHAS: Okay. When you got out to the 500 kv, what did they find?

21
22 HOUSER: Still contaminated.

1 YUHAS: How bad?

2
3 HOUSER: My finger was still reading 50 mR.

4
5 YUHAS: How about your forearms?

6
7 HOUSER: Really high. Uh, offscale on the hundred scale. In certain
8 spots.

9
10 YUHAS: How about your neck, did anybody check your neck yet and your
11 thyroid?

12
13 HOUSER: Yeah.

14
15 YUHAS: What did they read?

16
17 HOUSER: I had a contaminated spot right here and I was washing, you
18 know, with paper towels yet and stuff. That was still removable. So
19 once I got rid of that I checked my thyroid. I didn't get very many
20 counts. You know, my neck was fairly clean.

21
22 YUHAS: How about Mr. Reed. what condition was he in?

23
24
25 893 093

1 HOUSER: He was not quite as contaminated as I was. He was, he had
2 some in his hair, and... he had got, he could get counts off his thyroid.
3

4 YUHAS: Okay. So now --
5

6 JACKSON: This is Jackson. Did he finish the boron sample?
7

8 HOUSER: Yes.
9

10 JACKSON: He did get a number, right?
11

12 HOUSER: Yeah.
13

14 JACKSON: You don't happen to recall what the number was, do you?
15

16 HOUSER: No, I...15 or 2100 monitored.
17

18 YUHAS: --Only a chemist could worry about boron at a time like this!
19

[LAUGHTER]
20

21 YUHAS: Here, I've got a couple of prunes out running around the 500 kv
22 station at 3:00 in the morning, and you're worried about boron! [LAUGHTER]
23
24
25

1 YUHAS: Okay. So you had a couple of shocked monitors out there sur-
2 veying you, right?

3
4 HOUSER: Uh-huh.

5
6 YUHAS: Now what did you do?

7
8 HOUSER: I stayed there for a while, you know, trying to get my finger
9 clean, working on my finger and stuff.

10
11 YUHAS: We're working on your finger. Now, was somebody scraping on it
12 with a file or what?

13
14 HOUSER: Very close. I had some sandpaper. [LAUGHTER]

15
16 YUHAS: Did anybody ask for medical attention at this time?

17
18 HOUSER: Yes, I was getting worried because nobody seemed to care.

19
20 YUHAS: Wait a second. Was there a foreman there?

21
22 HOUSER: No. I was a foreman.

23
24
25 893 095

1 YUHAS: I mean HP person?

2
3 HOUSER: No.

4
5 YUHAS: Had Dubiel been informed of your predicament?

6
7 HOUSER: I would hope so. Bob McCann knew because he took our TLD's
8 and read them.

9
10 YUHAS: Yeah.

11
12 HOUSER: No, he wasn't there at the time. I was just standing there
13 with no clothes on.

14
15 YUHAS: You and Reed.

16
17 HOUSER: Yeah. I don't know what happened to Velez. I don't know
18 where...

19
20 YUHAS: Okay, what happened to you two?

21
22 HOUSER: We just stood there.

23
24 893 096
25

1 YUHAS: [LAUGHTER] Well, you're here now!

2
3 HOUSER: Oh, yes. Eventually I just, what I did was I taped up my
4 wrist and everything and I put the gloves on, put a white coveralls on,
5 because I had no clothing.

6
7 YUHAS: Yeah.

8
9 HOUSER: And I went home.

10
11 YUHAS: You went home? Did you stop by the observation center and wave
12 an orange glove at them or anything?

13
14 HOUSER: Well, everybody knew, you know, they said 'You're still con-
15 taminated' and I said 'Yeah'.

16
17 YUHAS: Okay. You went home. About 1:00 in the morning? That would
18 have been on the 30th.

19
20 HOUSER: Yes, somewhere around there.

21
22
23
24 893 097
25

1 YUHAS: Somewhere in the morning of 3/30. What time did you come back
2 in? Well, wait a second. You got home. What did you say to your
3 family?

4
5 HOUSER: Just that I got contaminated.

6
7 YUHAS: Okay, was your wife and children concerned?

8
9 HOUSER: Very.

10
11 YUHAS: Dog bit you? [LAUGHTER]

12
13 HOUSER: He was sleeping.

14
15 YUHAS: Did you have, were you anxious as a result of this? You know,
16 you knew you had got more than 3 rem, right?

17
18 HOUSER: Yes.

19
20 YUHAS: Okay, you knew you were contaminated, you knew it wasn't coming
21 off. Were you anxious as a result of it? Anxiety?

22
23 HOUSER: For what?

24 893 398
25

1 YUHAS: Concern for your body?

2
3 HOUSER: Oh, yes.

4
5 YUHAS: Okay. And no one from management, no professional health
6 physicist had counseled you or made an effort to give you a proper
7 perspective as to the significance of this contamination of your body
8 or the dosage you had received? Would this also be true of Mr. Reed?

9
10 SHACKLETON: Just a moment. Shackleton. Mr. Houser, you're indicating
11 by body language 'no'. Is that what you mean...

12
13 HOUSER: Yes.

14
15 YUHAS: ...in response to Mr. Yuhas' question?

16
17 HOUSER: That's right, no. No one had talked to me or anything.

18
19 SHACKLETON: Thank you.

20
21 YUHAS: Okay. Allright, at the risk of being personal, what, how did
22 you explain this to your family?

23
24 893 099

25

1 HOUSER: You know, I had called my wife from in front of the 500 KV
2 substation. And I had talked to her there. I had told her, I said
3 'Hey, I'm here. I've taken showers and it doesn't seem to be removable.'
4 I wanted her to bring me some clothing, I was freezing. I was standing
5 down there on that concrete floor for a couple of hours with no shoes
6 on. And then I thought, well, that's probably a bad idea, that I
7 didn't want her in this area. Traffic, people driving like nuts and
8 everything else. So, I just said, 'Well, just don't worry about it
9 right now, just wait and I'll be home'. And then I talked to her and
10 explained everything. She, I had talked to her, I think, earlier in
11 the day or... I'm so screwed up on my days, but... she'd, you know, I
12 had talked to her quite a number of times about, you know, this and
13 what can happen and what does happen. I had been slightly contaminated
14 before and she understands. Not to this degree, but...

15
16 YUHAS: Well, did she accept what had happened to you, was she crying
17 or emotional, or...

18
19 HOUSER: Yeah, she was very emotional about it. She had been upset
20 through the whole thing.

21
22 YUHAS: Alright, so you went home, your hands are in gloves. Your
23 arms are taped up. You know you have residual contamination on your
24 body. Okay, you try to go to bed, I assume. Did you sleep?
25

1 HOUSER: Not very well.
2

3 YUHAS: Okay, what time did you get up?
4

5 HOUSER: I'm not sure what time I came in the next day.
6

7 YUHAS: This would be Friday the 30th, now, we're talking about.
8

9 HOUSER: I think I came in around 3:00 in the afternoon.
10

11 YUHAS: Three in the afternoon.
12

13 HOUSER: I'm not sure.
14

15 YUHAS: We'll just put approximate. We realize it's very difficult. I
16 mean, at this point I didn't know what the hell day it was either.
17 Okay, so about 3:00 on Friday, first, you came back to the observation
18 center?
19

20 HOUSER: Yes.
21

22 YUHAS: Okay, now who did you see there?
23
24
25

1 HOUSER: Dave Limroth.

2
3 YUHAS: Okay. Can you enlighten us as to your discussion with Mr. Limroth?
4 Are you still all bagged up and tagged up at this point?

5
6 HOUSER: Yeah, yeah.

7
8 YUHAS: Your gloves are full of water?

9
10 HOUSER: [LAUGHTER] Yeah.

11
12 YUHAS: Normal perspiration?

13
14 HOUSER: Yeah.

15
16 YUHAS: You're somewhat uncomfortable, the wife's burned the sheets?

17
18 HOUSER: Yeah. [LAUGHTER] Well, everywhere I was contaminated I taped
19 plastic to me and my leg, I had plastic taped on it and everything.

20
21 YUHAS: Okay, fine. So you see Limroth? What did you do? You mean
22 someone didn't take you and remove the gloves and dry your hands and
23 resurvey you at that point?

1 HOUSER: No.

2
3 YUHAS: So you spent the whole night--

4
5 HOUSER: Oh, I did that myself.

6
7 YUHAS: What time did you do that?

8
9 HOUSER: Right after I had gotten there.

10
11 YUHAS: Okay, you went out to the 500 kv?

12
13 HOUSER: Yeah.

14
15 YUHAS: You removed the plastic and resurveyed? Was there any notice-
16 able decrease in the radiation levels?

17
18 HOUSER: Yes, quite a bit.

19
20 YUHAS: Okay, about what did they read?

21
22 HOUSER: My finger was down to like 2 mR beta.

1 YUHAS: Okay. About what portions of your body?
2

3 HOUSER: My arms had come down somewhat. That's about it.
4

5 YUHAS: 'Somewhat' to what?
6

7 HOUSER: You could, you know, you could read them on scale.
8

9 YUHAS: On times hundred scale in the Rm-14 you were now readable? How
10 about your hair?
11

12 HOUSER: That was still fairly high.
13

14 YUHAS: How about your eyes and your nostrils?
15

16 HOUSER: I didn't have anything on my face.
17

18 YUHAS: Nothing on your face.
19

20 HOUSER: Okay. Any other areas of high contamination? That one spot on
21 my leg. That was the only thing below my waist. Mostly my wrist, I
22 don't know. That stuff just seemed to go right through your gloves and
23 everything.
24
25

1
2 YUHAS: Okay, it was probably iodine. It was exchanging with the fatty
3 tissues in your arm. Okay. It was probably absorbed in the skin.
4 Okay. So, did you rebag these areas that were hot?

5 HOUSER: Well, I had scrubbed til I was raw, and I figured it's not
6 gonna come off any more, so I just left them open. And my finger I
7 did, I had a glove, I kept cutting fingers off of it and putting them
8 on. Just my finger.

9
10 YUHAS: Now, did you provide a urine analysis, a sample of your urine?
11

12 HOUSER: I have one back there but no one's ever asked me for it.
13

14 YUHAS: No one has ever asked you for the sample of your urine? At
15 what time post accident did you provide the sample of urine?
16

17 HOUSER: Oh, I started taking it that day. But still I just saw it in
18 the chem lab tonight.
19

20 YUHAS: It's still sitting in the chem lab? Tonight.
21

22 [NO VERBAL ANSWER HERE]
23
24
25

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1 YUHAS: Okay. Uh, whole body count. Did someone give you a whole body
2 count that night?
3

4 HOUSER: Yes; that was down at the substation. But he said he really
5 couldn't tell me anything; cause I was 20% dead time on his meter.
6

7 YUHAS: You were giving him 20% dead time. Did he tell what isotopes
8 you had?
9

10 HOUSER: Iodine-131. I thought he had said cesium, but then later on I
11 think he told me no, he didn't say that.
12

13 YUHAS: Okay. Did he give you a moving bed whole body count?
14

15 HOUSER: Yes.
16

17 YUHAS: Did he shield the rest of your body and give you a thyroid
18 count?
19

20 HOUSER: No.
21

22 YUHAS: So he just gave you a, ran you through and said "I'm sorry,
23 you're pegging my meter, come back in a few days"?
24
25

1 HOUSER: He did, he shielded my thyroid the one time but, you know,
2 from my hair and stuff like that it was just too high.
3

4 YUHAS: Okay. So what time did you leave the night of the 30th?
5 ...Friday night?
6

7 HOUSER: ... that was Friday night?..
8

9 YUHAS: You told us you came in at--
10

11 HOUSER: Yeah, I think I worked until 7:00 the next morning.
12

13 YUHAS: Okay, you worked til 7:00 on the 31st, 7:00 a.m.?
14

15 HOUSER: Yes. I'm sure I did because that's my son's birthday.
16

17 YUHAS: Okay, 3/31. And then you went home.
18

19 HOUSER: Yeah, I went home.
20

21 YUHAS: You went home, your arm still crapped up, your fingers still
22 crapped up, hair still crapped up? What did your wife have to say when
23 you got home that day?
24
25

1 HOUSER: Well, she was at my mother-in-law's. We had my son's birthday
2 down there.

3
4 YUHAS: Okay, fine. Did you go down there to your mother-in-law's?
5

6 HOUSER: Yep.
7

8 YUHAS: What'd your mother-in-law have to say? [LAUGHTER]
9

10 HOUSER: Nobody wanted to seem to get near me. You know, it's just
11 that, you people don't... it didn't really seem... I mean it seemed odd
12 to me but I knew what I was doing, and just people don't understand
13 when you come in with a glove on or something like that. A taped wrist
14 or something.
15

16 YUHAS: Okay. When did you come back to work on the 31st? ...This
17 would be, the 31st would be Saturday.
18

19 HOUSER: I think 11, well... 7:00 that evening. I think we went on to
20 12-hour days and I had came back in at 7:00 that evening.
21

22 YUHAS: So at 1900 you came back in. Where did you go to work that
23 night?
24

1 HOUSER: At the observation center.

2
3 YUHAS: Okay, and what were you doing at the observation center?

4
5 HOUSER: I was in charge of health physics, the monitoring teams...
6 they were bringing trailers in...

7
8 YUHAS: Allright, did you survey yourself that night?

9
10 HOUSER: Yes.

11
12 YUHAS: How were you, how did you look that night?

13
14 HOUSER: Still contaminated.

15
16 YUHAS: Okay. Were any of these survey results logged? Did you write
17 them down anywhere?

18
19 HOUSER: I have them written down.

20
21 YUHAS: Mr. Houser, please consider this an official request for copies
22 of any survey results that you took on yourself throughout this whole
23 event. We would like two copies. Can you provide us those copies?

1 HOUSER: Sure, okay.
2

3 YUHAS: Okay. Now, so we're at the night of the 31st and you checked
4 yourself. What did you find?
5

6 HOUSER: Fingers stayed about the same. Everything else just about the
7 same.
8

9 YUHAS: Okay, so still no appreciable decrease?
10

11 HOUSER: No.
12

13 YUHAS: And you worked through the night at the observation center.
14 What time did you leave?
15

16 HOUSER: 7:00 the next morning.
17

18 YUHAS: So you left at 0700 and now we're at 4/1/79. Okay. Did you
19 express your concern over this residual contamination to anyone?
20

21 HOUSER: Yes. I had talked to the health physics foreman and never--
22

23 YUHAS: Who is he?
24
25

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1 HOUSER: Fred Huwe.

2
3 YUHAS: Okay. Who else?

4
5 HOUSER: Bob McCann, health physics foreman...

6
7 YUHAS: Did you speak with Limroth again?

8
9 HOUSER: I don't think so.

10
11 YUHAS: Did you speak to Dubiel?

12
13 HOUSER: No.

14
15 YUHAS: Did you speak to Mulleavy?

16
17 HOUSER: Yes, but that was a day or so later.

18
19 YUHAS: Okay, you're still reading on the times hundred scale, right?
20 On your forearms?

21
22 HOUSER: Yeah.

1 YUHAS: Okay. And you expressed your concern to--
2

3 HOUSER: Now, yeah. Maybe this day, it may have, it was still on the
4 times hundred scale, but it was readable.
5

6 YUHAS: Okay. It was still greater than the times ten scale?
7

8 HOUSER: Yes.
9

10 YUHAS: Okay. That was Sunday, 4/1. You came in at 7:00 and you
11 worked til 7:00 that night again?
12

13 HOUSER: Yeah.
14

15 YUHAS: Okay, and the next day you came in, 4/2, would have been Monday.
16 Right?
17

18 [NO AUDIBLE ANSWER]
19

20 YUHAS: And you came in at 0700 that day?
21

22 HOUSER: Yes sir.
23
24
25

1 YUHAS: Okay, did you survey yourself when you came in that day?

2
3 HOUSER: Yeah, I surveyed myself. I had an RM-14 with me. I took one
4 with me and had it with me...

5
6 YUHAS: Okay. What are you finding now?

7
8 HOUSER: Right now?

9
10 YUHAS: No, we're back at 4/2.

11
12 HOUSER: Generally the same thing. Some of the contamination on my
13 arms had gone down a little. Hair was still quite high. The spot on
14 my leg had gone down little. My finger had gone down to, you know...somewhat
15 not a whole lot.

16
17 YUHAS: Was your concern heightened at this point? Did you take some
18 positive action? Did you grab somebody and say 'Goddam, do something
19 about my arms', or--

20
21 HOUSER: Yeah, Gary Reed and Gary Chevalier and myself had mixed up a
22 concoction that was in the RAD HEALTH Handbook, you know. Potassium
23 permanganate and all that stuff. We tried that and it didn't do anything.
24
25

1 And meanwhile I got hold of Tom Mulleavy and he said, 'I just heard
2 about you', and he says 'Why didn't you get to me'. I said 'Well, I've
3 been telling your HP foreman'. Then he says, 'Don't tell them', he
4 says 'they're not experienced. Tell me.' So then when I talked to
5 him, then he said 'Tomorrow when you come in go directly over to the
6 whole body counter, get your whole body count and there's a doctor
7 there who's going to talk to you'.
8

9 YUHAS: Okay, so when you came in then on 4/3...

10
11 HOUSER: I don't know exactly what day it was.
12

13 YUHAS: Okay, that was Monday when you saw Mulleavy, right?
14

15 HOUSER: Yeah, I think.
16

17 YUHAS: Okay, that would make it, the next day would have been 4/3/79.
18 Okay, did you follow his instructions?
19

20 HOUSER: Yes, went right, when I came, soon as I, well as a matter of
21 fact I came in an hour early. I came in at 6:00.
22

23 YUHAS: Okay.
24
25

1 HOUSER: And... no I came in, well it was 1800 I came in. And I worked
2 until 7:00 in the morning.
3

4 YUHAS: So your shift changed, then, on Monday?
5

6 HOUSER: No, I was...
7

8 YUHAS: You had been coming in at 7:00 and going home at 1900.
9

10 HOUSER: Now I was going home at 7:00 in the morning.
11

12 YUHAS: Okay, that's right. I'm sorry. Okay, we're gonna break this
13 tape.
14

15 SHACKLETON: Allright, we'll break at this time and turn the cassette.
16 The time is now 1:06 a.m., April 25, 1979.
17

18 SHACKLETON: This is a continuation of the interview of Mr. Edward W.
19 Houser. The time is now 1:08 a.m., April 25, 1979. Please continue.
20

21 YUHAS: Okay, Ed, this is Greg Yuhas. We are now approximately Tuesday
22 morning. You've been told that the doctor is going to see you. Right?
23
24
25

1 HOUSER: Yes.
2

3 YUHAS: Okay. Would you pick it up from there, please?
4

5 HOUSER: Well, I went home and all this time, though, friends of mine
6 had been calling. Reporters. And you know, when I got home it was
7 really hard, you couldn't sleep or anything. And that was really
8 starting to bother me because, you know, this was work and then when I
9 tried, when it was my time to sleep, it was their time to be bugging
10 me. So I was getting like 15 phone calls a day from them. Anyway, at
11 night when I came in I was told to come in at 6:00 for a whole body
12 count. Which I did, and I would be met there by this Doctor Linneman.
13 Supposed to be the top notch man in this field and I came in at 6:00,
14 got my whole body count, and the doctor was there at that time to talk
15 to me.
16

17 YUHAS: Okay, this doctor you're referring to, I don't quite get the
18 name. Is he from RMC Corporation?
19

20 HOUSER: He is RMC plant type personnel.
21

22 YUHAS: Okay. He was there to talk--
23
24
25

1 HOUSER: Consultant support.
2

3 YUHAS: Did you get a whole body count before he talked to you?
4

5 HOUSER: Yes.
6

7 YUHAS: Okay.
8

9 HOUSER: And I think they were looking at the results of it.
10

11 YUHAS: Okay. Now what sort of things did he talk to you about?
12

13 HOUSER: He looked at my whole body count. Looked at my, the parts of
14 my body that were contaminated, and just went over some of the...you
15 know...the risks involved with my job and what to expect and then,
16 that's about all.
17

18 YUHAS: That's about all he told you? Did he tell you the number of
19 nanocuries of iodine in your thyroid or on your arms or on your hand,
20 or in your leg?
21
22
23

24 893 117
25

1
2
3
4
HOUSER: Well, there was a gross number there. He didn't tell me
exactly. I think it was a gross number of 365, or something like that,
nanocuries iodine.

5
6
7
YUHAS: Okay. Now, did he tell you that they were going to plan any
specific actions, remove the residual contamination?

8
9
HOUSER: No.

10
11
YUHAS: Okay. Was that the last time you saw him?

12
13
14
15
16
17
18
19
20
21
HOUSER: No. What happened is that he gave me his home phone number in
Philadelphia and his number at Hershey, and I told my wife I had talked
to him and she in turn wanted to talk to him. You know, I think she
felt she would feel better. And she tried to get in contact with him,
but she left a note with, I guess it was his wife or secretary who was
there with him. And when he tried to return the call, meanwhile I had
had my number changed and he couldn't get hold of me, so he came to my
house to talk to my wife and then he had a few minutes talking to me
and then he left. That was the last time I saw him.

22
23
24
25
YUHAS: Did he tell you any dose consequences of the contamination on
you skin?

1 HOUSER: No.

2
3 YUHAS: Okay. Right now, what's your arms reading?

4
5 HOUSER: Well, they're down to zero.

6
7 YUHAS: Okay, when did they get down to less than a couple hundred
8 counts as measured with an HP-210?

9
10 HOUSER: About Thursday, Friday of last week.

11
12 YUHAS: Of last week? Okay, so that would have been the 13th?

13
14 HOUSER: 19th.

15
16 YUHAS: You're right. Okay, so about April 19th you finally surveyed
17 yourself and you had no more residual contamination either on your
18 head, your arms, your hand, your finger...

19
20 HOUSER: Well, my hair still is.

21
22 YUHAS: Your hair is still hot? What is the reading?

1 HOUSER: 400 counts.
2

3 YUHAS: Approximately 400 counts?
4

5 YUHAS: Okay, fine. Allright, I'd like to go back to the day of the
6 incident, which was March 29. Okay? This is the day that you collected
7 the sample, you and Pete Velez are coming off the island. Did you
8 express your concern about, at that time, fairly high levels of con-
9 tamination on your arms and hands to anyone that you met when you came
10 off the island, before you got to the 500 KV station?
11

12 HOUSER: Yeah, we met, well, we were told to come out to the gate and
13 wait for our results from our TLD readings. And while we were waiting
14 for Bob McCann to arrive there...
15

16 YUHAS: Don Haverkamp?
17

18 HOUSER: Don Haverkamp met us at the gate, I guess he,-- we had,-- I
19 think I had seen him in the processing center, and I think he left and
20 went out to the gate and I think came out there to talk to us while we
21 were there. And, meanwhile Bob McCann came with our readings. And we
22 had expressed that...you know, hey, we were really still highly con-
23 taminated, maybe they could send us to the medical center. I'm not sure
24 that anyone responded to that, but we didn't get there.
25

1
2 YUHAS: Do you feel there's some reason why you weren't sent up to the
3 Hershey medical center to be decontaminated?

4
5 HOUSER: Well, it was a good possibility that, you know, they didn't
6 want to send anybody off-site if they could possibly treat them on-site.
7 They didn't want anybody to say that, you know, maybe there was somebody
8 who was really contaminated they had to go to the medical center. You
9 know, if the press got hold of that. I--

10 YUHAS: Allright, let me go back. Is there some reason why you took
11 more dose than Pete Velez? Can you offer an explanation?

12
13 HOUSER: Well, Pete, like I said, with the sampling system he was
14 fairly unfamiliar with it. He wasn't really...not to knock him or
15 anything...but he wasn't much help in taking the sample.

16
17 YUHAS: Okay.

18
19 YUHAS: Larry, do you have any specific questions you want to ask?

20
21 JACKSON: I'd like to. I'd like, to just for the sake of the record, go
22 over the boron sample and analysis. Ed, if you would, would you tell me
23 the sequence that you go through to do a boron analysis: take the
24 sample, dilution, and talk through the--
25

1 HOUSER: Allright, you want me to tell you from the time that I ad-
2 justed the pH? Okay. I have adjusted the pH in the sample setting
3 behind the lead curtains. Or do you want me to do just a normal boron?
4

5 JACKSON: Well, I want to know, what I want to do is differentiate
6 between normal boron and what you might have been doing here. You
7 might answer such questions as: "Was this normal boron, for one, there'd
8 been a safety injection. What type chemicals are injected into the RCS
9 for safety injection? And do you have to do any special chemistry
10 adjustments to run these samples?
11

12 HOUSER: Yeah, well, okay. Yeah, we had high pressure injection which
13 is the sodium hydroxide had shot into the system, and that's why we
14 measure the pH and if the pH is over 6, you have to bring it back to 6
15 with hydrochloric acid, diluted hydrochloric acid. And that's what I
16 did. I took the litmus paper and checked the pH of the sample and
17 adjusted it to 6 for Gary Reed to run the sample. Once the sample's
18 adjusted to 6, and you know approximately the concentration. You know,
19 I mean like, if it's greater than say a couple hundred ppm, we normally
20 use a 5 ml aliquot of sample. And then, from there on out it's a
21 normal boron titration. Just, you go a little faster because you know
22 you're getting a dose from it.
23
24
25

1 JACKSON: Do you recall any of the numbers you were getting for boron
2 at this time?

3
4 HOUSER: Like I said, I think the boron was either 1500 or 2100, 15 or
5 1600 or 2100, I'm not sure.

6
7 JACKSON: Do you have a feel for how much error is involved in this
8 type procedure? Would you be plus or minus 1%, or plus or minus so
9 many ppm?

10
11 HOUSER: Well, our normal procedure is supposed to be plus or minus 2
12 ppm, parts per million.

13
14 JACKSON: Do you have that same accuracy on one where you have to
15 adjust the pH for the sodium hydroxide injection?

16
17 HOUSER: I would say no, because you know, somebody may take it down to
18 exactly 6 and you may take it to 5.8. It's gonna make a little bit of
19 difference.

20
21 JACKSON: That's really about all I have.

22
23 YUHAS: Okay...

1 HOUSER: But normally I think, you know, from the time the pH is ad-
2 justed, it's about a normal boron, just adding the manitol and just
3 doing the titration. And Gary Reed had standardized the sodium hy-
4 droxide, he had ran a count.

5
6 JACKSON: One other thing. You take a 5 milliliter aliquot. How do
7 you add the manitol?

8
9 HOUSER: It's just, a scoop.

10
11 JACKSON: And you're sure you always have an excess?

12
13 HOUSER: Yes.

14
15 YUHAS: Okay. Okay, fine. One brief question. After your exposure of
16 greater than 3 rem were you, did you ever go back to the island?

17
18 HOUSER: Yes.

19
20 YUHAS: Before the 31st? Before you'd done a quarter?

21
22 HOUSER: No, no.

1 YUHAS: Okay, you waited 'til the beginning of the next quarter?
2

3 HOUSER: Yes.
4

5 YUHAS: Okay. I'd like to give you this opportunity to bring forth any
6 concerns or comments about your involvement either during the incident,
7 or previous to the incident, or after the incident relative to the way
8 your department conducts business. If they're complimentary, that's
9 fine; if they're not complimentary, that's fine. The same thing goes
10 true if you want to comment about the NRC's involvement, please feel
11 free to be completely candid.
12

13 HOUSER: I really don't know, you know, much to say at this time.
14 There's a few things, you know, things like, I don't know this is
15 really the time to say it or anything, but there's things that happened
16 in the plant, you know, like repairwise that need to be done. I told
17 Dick Dubiel, you know, just the other day we were trying to take that
18 gas sample in the make up tank, I don't if you were involved in it or
19 what.
20

21 YUHAS: Yes, I am aware of it, yeah.
22
23
24
25

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1 HOUSER: Okay. We were through that thing and I went home that night.
2 I had stayed overtime to try and get that sample. I went home that
3 night and I was thinking about that and I said, you know, there's a
4 motor control valve on that tank, MUV-134. I handed a work request in
5 to have that fixed about 4 weeks before this happened and it was never
6 fixed.

7
8 YUHAS: Is that an unusual delay?
9

10 HOUSER: Unless there's a work request that's put in that says it's
11 kind of violating tech specs, they don't do it. It's not unusual.
12 That's about all. Just, you know, there's things that you just... you
13 know, at the time when it's happening you don't, you know, say 'Well,
14 sure, four weeks, so what', you know. But if something happens meanwhile,
15 and you need it like now, you know, you can't go back and correct it.
16 It's been a big learning process for everyone.
17

18 SHACKLETON: Ed, this urine sample sitting up in your chem lab: to
19 your knowledge it has not been analyzed. When you had your interview
20 with the physician, did he ask whether or not any people or urine
21 samples had been taken or tested?
22

23 HOUSER: No.
24
25

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1 YUHAS: Did you mention this to him? That a urine sample had been
2 taken?
3

4 HOUSER: I had told Tom Mulleavy that I had collected one. No one had
5 ever asked me for it or where it was or...
6

7 YUHAS: At this time, I would like to ask you to safeguard that sample.
8 We will through our line of authority ask that the licensee have it
9 analyzed. If he does not commit to having it analyzed, we will have it
10 analyzed at our own expense. I expect to be getting back with you
11 within the next few days with copies of the surveys that you recorded
12 of your own body shield you've agreed to provide us. At that time if
13 the licensee has not taken the sample to have it analyzed, if you
14 provide us the sample we will have it analyzed. We'll have the National,
15 Bureau of Rad Health in Washington do it for us. I want to let you
16 know that we really appreciate your time in the middle of the night
17 here. Putting in a hard day, then coming to listen to us harrass you
18 for 2-1/2 hours. This certainly wasn't a very nice thing to do, but
19 we're doing it so that we can find out what happened, so that we can
20 try to take whatever action is necessary to prevent it from happening
21 in that fashion again.
22
23
24
25

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1 YUHAS: On behalf of the Commission and Larry Jackson and Owen Shackleton,
2 I really want to express our appreciation for coming in and speaking to
3 us the way you have.
4

5 HOUSER: I'm glad I can help out.
6

7 SHACKLETON: Thank you very much, Mr. Houser. We'll close the tape
8 then. The time is 1:23 a.m., April 25, 1979.
9

10 [END OF INTERVIEW]
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