

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

1 In the Matter of:

2 IE TMI INVESTIGATION INTERVIEW

3 of

4 Kerry L. Harner  
5 Chemistry Foreman, Unit 2

6  
7  
8  
9 Trailer #203  
NRC Investigation Site  
TMI Nuclear Power Plant  
10 Middletown, Pennsylvania

11  
12 May 22, 1979  
(Date of Interview)

13  
14 July 5, 1979  
(Date Transcript Typed)

15 248  
(Tape Number(s))

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21 NRC PERSONNEL:

22 Douglas M. Collins, Radiation Specialist

23 Larry J. Jackson, Radiation Specialist

24 William H. Foster, Senior Inspector and Auditor

25 896 154

1 FOSTER: The following interview is being conducted of Mr. Kerry L.  
2 Harner. Mr. Harner is a Chemistry Foreman, Unit 2, at the Three Mile  
3 Island Nuclear Power facility. The present time is 2:00 p.m. Today's  
4 date is May 22, 1979. The place of the interview is Trailer 203, located  
5 immediately outside the south gate of the Three Mile site. Individuals  
6 present for the interview, Douglas M. Collins and Larry J. Jackson.  
7 Mr. Collins and Mr. Jackson are Radiation Specialists with Region II.  
8 My name is William H. Foster. I'm a Senior Inspector and Auditor with  
9 the Office of Inspector and Audit, NRC. And I'll be monitoring the  
10 interview. Prior to the interview being recorded, Mr. Harner was provided  
11 with the document explaining his rights concerning information to be  
12 obtained regarding the incident at Three Mile Island. In addition,  
13 Mr. Harner was apprised of the purpose of the investigation, the scope  
14 and authority by which the Congress authorizes the NRC to conduct the  
15 investigation. On the second page of the advisement document Mr. Harner  
16 has answered three questions. The questions and Mr. Harner's answers  
17 will now be recorded as part of the interview. Mr. Harner, do you  
18 understand the document?

19  
20 HARNER: Yes.

21  
22 FOSTER: Will you give permission to tape the interview?  
23  
24  
25

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1 HARNER: Yes.

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

4  
5 HARNER: Yes, I would.

6  
7 FOSTER: O.K. Kerry, at this time if you would provide us with a brief  
8 summary of your academic background and your employment history as they  
9 relate to the nuclear field?

10  
11 HARNER: Alright. I have a degree with a major in chemistry from Lebanon  
12 Valley College, here in Pennsylvania. I started working here at Three  
13 Mile Island as a technician in 1974, which was near the completion of  
14 the Unit 1 startup. I worked as a technician for a year and a half, and  
15 then I was promoted to Chemistry ... Chemist, I guess first, is the  
16 title. I worked in there for a couple of months and then they ... and I  
17 was promoted to Chemistry Foreman. And assigned to Unit 2, and I've  
18 been down here for two ... two and a half years on the Unit 2 startup,  
19 in commercial operation.

20  
21 FOSTER: O.K. Thank you, Kerry. At this point I'm going to turn the  
22 interview over to Mr. Collins and Mr. Jackson.

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25

1 JACKSON: Kerry, do you have a position in the emergency organization?  
2

3 HARNER: Yes. We were assigned to the emergency starting as a ... I  
4 guess it's title, Plant Chemist, or something like that, that we're  
5 available for any type of sampling or advisement or anything like that,  
6 in case of emergency.  
7

8 JACKSON: Were you here on the morning of the 3/28?  
9

10 HARNER: When I came in, my normal starting time was 8 o'clock. Yes.  
11

12 JACKSON: O.K. Would you give us a rundown of what actions you took  
13 that morning, as best as you can recall?  
14

15 HARNER: Well, I got to the gate, I was met by one of the QC people.  
16 And he told me that there had been a problem in the plant, and that most  
17 of the people were being assigned to the Observation Center. But knowing  
18 that my position, and what had to be done, I decided to come on in,  
19 rather than go directly to the Observation Center, because I knew they  
20 needed people. So I came in, and ... oh, gee ... I think I went right  
21 back to the lab, after going to my office, or someplace, and dropping  
22 off my lunch box and things like that. I went back to the lab and met  
23 Gary Reed back there. And he had told me that there was an accident in  
24 Unit 2, and I got some information from him on what was going on. Over  
25

1 there I checked in with my technicians and that, and we were talking  
2 about getting samples and things. And then I think I went over to ...  
3 now let's see, where was the ECS at that time ... I think the ECS was  
4 set up right there in the HP lab at that particular time. And I checked  
5 in, a man taking names and numbers, as we normally do for the emergency  
6 procedures. I checked in with him and I think Tom Mulleavy was running  
7 things in the Emergency Center. I checked in with him and then went  
8 back to looking at more of the chemistry data. There had been a sample  
9 drawn. Gary Reed and I reviewed that. We looked at that, talked about  
10 it. And soon after that, I think I went over to the Unit 2 Control  
11 Room, where I met Dick Dubiel was over there. I talked to him a little  
12 bit. He's my supervisor. I tried to find out what was going on in the  
13 Control Room, what I could do, or anything where I could be some type of  
14 help of something. And then I think I went back to the Chemistry lab,  
15 the ECS. And somewhere in there, we decided to take a sample. I think  
16 it was approximately 9 o'clock. We took a coolant sample. And I think  
17 the activity ... the gaseous activity from that raised the levels, plus  
18 the gases that were coming from the Auxiliary Building, over into Unit 1,  
19 plus I think it was from taking that sample, also. That the background  
20 levels went up in the ECS and we had to leave there, and then we went  
21 over to the Unit 2 Control Room. In the meantime, one of the technicians  
22 was trying to run a boron number sample. I waited to make sure that he  
23 was out. And Bob McCann was there also. We waited to make sure all the  
24 technicians were out and everybody was out of the Aux Building. And we  
25

1 closed that area up and went over to the Unit 2 Control Room. After  
2 that I'm not really sure what happened. I can't remember ... it must  
3 have been ... by that time it must have been about eleven o'clock, or  
4 something like that.

5  
6 JACKSON: O.K. Now let me pursue the boron analyses, a little bit. Of  
7 course you weren't here when the first sample or two were taken. But  
8 those numbers were low, and I believe the boron that was taken at ...  
9 later in the morning was low.

10  
11 HARNER: Yes. And considerably low.

12  
13 JACKSON: And you stated that you and Reed reviewed some of the results.  
14 Was that boron results?

15  
16 HARNER: No, that was the isotopic.

17  
18 JACKSON: O.K. Did you all discuss these low borons and try to arrive  
19 at any conclusion as to why they were low?

20  
21 HARNER: Not at that particular time. Later on I found out that they  
22 had sodium hydroxide injection. Afterwards it made sense that the boron  
23 numbers were low. But that particular time, we didn't have any knowledge  
24 that they had sodium hydroxide injection. And I'm not really sure I  
25

1 even knew what the boron numbers were at that time. I'm not sure when  
2 they ran the samples or anything. I don't remember getting involved in  
3 any boron numbers at all that day.  
4

5 JACKSON: A system question ... is it normal to get sodium hydroxide  
6 injection on high pressure injection?  
7

8 HARNER: It's not normal. It's tied to ... I think it's tied to a  
9 building pressure signal right now. We had in the past where it was  
10 tied to coolant pressure, and we had a number of times ... we had sodium  
11 hydroxide injection. And it really wasn't needed for any particular  
12 reason at that time. So I think they tied the signal to a building  
13 pressure signal. I don't know, even when the sodium hydroxide injection  
14 was. I don't ... I don't myself know if it was manual or automatic that  
15 it came in. Whether they initiated it or if the signal that it's supposed  
16 to get initiated. I really don't know.  
17

18 JACKSON: Do you know if that signal also works off a low level in the  
19 borated water storage tank?  
20

21 HARNER: It shouldn't. I don't know for a fact that it doesn't, but  
22 I've never heard that it did.  
23  
24  
25

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1 JACKSON: How long has it been since that modification was made to take  
2 the actuation off of the reactor system pressure and put it on that tank  
3 pressure?  
4

5 HARNER: Approximately three or four months, from what I know.  
6

7 JACKSON: Have you had any problems with getting sodium hydroxide into  
8 the reactor coolant system since then?  
9

10 HARNER: Since then? No.  
11

12 JACKSON: One of the questions that comes to mind based on that, is that  
13 the containment, I believe isolation signal was late in the morning,  
14 like around 8 o'clock. So, what I was trying to pull out here was  
15 is ... could you have had a sodium hydroxide injection early in the  
16 incident, earlier than 8 o'clock in the incident or how did the sodium  
17 hydroxide get in there, for say those early samples ... five o'clock?  
18

19 HARNER: I really don't know. I can't answer that at all. I don't know  
20 enough about what happened in the Control Room those first five or six  
21 hours, to know when it even happened or how or anything else.  
22

23 JACKSON: But to your knowledge, you haven't had any problem with leaking  
24 valves ... with sodium hydroxide leaks in them?  
25



1 HARNER: No.

2  
3 JACKSON: In a line from the borated water storage tanks?

4  
5 HARNER: We've been, since our last instance, we've been pretty much  
6 sodium free in the coolant system, after the last time we cleaned it up.

7  
8 JACKSON: Were the technicians, when they started running these boron  
9 samples, would they not normally check the pH before they started the  
10 mannitol addition and subsequent titration?

11  
12 HARNER: Not normally. You pipette a sample in till you put 5 mls in a  
13 hundred of demin water. After you've done that, your pH, really you're  
14 only working with 5 mls out of a 100, and your pH isn't active. Your pH  
15 takes over mostly what your demin water is. So, after you've already  
16 done your titrations into there, pH doesn't mean much. And then after  
17 you add the mannitol, it suppresses the pH. It drops the pH down and  
18 you start titrating it back up. So unless somebody would suspect that  
19 there was sodium hydroxide in there, they wouldn't pay a whole lot of  
20 attention to it, unless they were doing a complete set of analyses, in  
21 which we do a pH. At that particular time, they were just looking for a  
22 boron number, and I imagine in the excitement, they just didn't think of  
23 it. It's not in the procedure to do a pH on the coolant before you do a  
24 boron. It's not a requirement.

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1        JACKSON: O.K. Did you call, or did you and Reed get together, and call  
2        Ken Frederick that morning?  
3

4        HARNER: I was trying to think about that the other day. I think we  
5        did. I think we talked to him out in New Jersey or something like that.  
6        He was at another plant with Bob Hopkins. I think we did talk to him.  
7

8        JACKSON: He made a statement that you all called him, and I don't  
9        recall off the top of my head if you said ... how quick it was when you  
10       called him ....  
11

12       HARNER: We called him frequently ... I don't know. I imagine it was in  
13       the afternoon before we ever got a chance to call him, and talk to him.  
14       I know that ....  
15

16       JACKSON: Do you recall the nature of the discussion, or what you all  
17       discussed?  
18

19       HARNER: Probably it as mostly what we found in the coolant system. We  
20       know GPU was ... you know, were trying to get to us with some information,  
21       so we were interested in getting back to either Ken or Bob Hopkins with  
22       the little bit of chemistry that we did know. And I think we called him  
23       up and we mostly discussed the isotopic analysis; the iodine concen-  
24       trations and cesiums and things like that. And discussed the fuel  
25

1 failure and that type of think, and that's about all we knew at that  
2 time, to begin with.

3  
4 JACKSON: What kind of a ... do you recall what kind of planning went  
5 into taking the sample at nine ... you said about 9 o'clock in the  
6 morning, I believe, when that boron sample ...?

7  
8 HARNER: When I came in, Gary showed the printout they had from the  
9 sample that they drew at 7 o'clock or 7:30, something in that order.  
10 And at that time it showed, I think it was something like a 140 micro-  
11 curies, total activity. And after being over in the Control Room, and  
12 seeing the state that we had over there and listening to some of the  
13 conversations that were going on, I knew that we were going to need more  
14 information about what was going on inside the core. So I went back  
15 over and tried to get the technicians going on drawing another sample to  
16 see what we had, and what was going on inside the core. And I assigned  
17 a couple of technicians to it, and with the aid of the Health Physics  
18 people, they suited up, got Scott Air Packs and all that type of thing,  
19 and they went in and did the sampling and prepared the sample for chem.

20  
21 JACKSON: You all don't have any of these samples sitting around there  
22 any more, do you?

23  
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25

1 HARNER: The one that was taken at 9 o'clock, I don't know if I did it  
2 or not. I can't remember. But we have ... we did a 1,000 to 1 dilution  
3 or something like that and that was too hot to count. So we had to do  
4 another dilution, and I think it ended up being something like 10,000 to  
5 1. And there was a plastic marinelli beaker of that 1,000 to 1 dilution,  
6 I think, sitting in the lab. Now since then, we've had a number of  
7 cleanup campaigns in the lab, and I don't know for a fact, that that  
8 container is still there. And that was of the 9 o'clock sample. The  
9 sample that was taken later on, there is still some of that there, the  
10 29th sample, I guess, it was.

11  
12 JACKSON: That would be the one that Houser took on.

13  
14 HARNER: Yes. We've been doing that out. People have wanted some of it  
15 for this, that and the other thing, and I'm not sure what quantity is  
16 left of that anymore.

17  
18 JACKSON: I'm more interested in anything that came on early in the  
19 work ....

20  
21 HARNER: The data that we got from the 7 o'clock sample and the 9 o'clock  
22 sample, the printouts were taken to the Control Room and given to Dick  
23 Dubiel and Jim Seelinger, who were up there at the time. I looked at  
24 the data and circumstances just kept me from keeping track of those  
25

1 sheets, and I just don't have them. I don't know where they are. Or if  
2 anybody has them. That would be the only record of those two samples.  
3 Other than, I remember the first one was a total of 140 microcuries per  
4 ml; and the other, the second one, was something like 1180, I think,  
5 microcuries per ml. So, in the two hours, you had ... going up to that  
6 point. And it showed ... they both showed the same thing ... the iodines,  
7 the cesium, the xenons ... all high levels.

8  
9 JACKSON: So you did have data sheets, and took those to the Unit 2  
10 Control Room.

11  
12 HARNER: Yes. Or we get a computer printout that's heat sensitive  
13 paper, and it prints out blue on a white background ... Hewlett-Packard  
14 paper.

15  
16 JACKSON: I'm interested in following up a little bit on the thought  
17 process, involving these boron samples and the actions that were taken  
18 when those samples came out low. Do you know ... you say that you all  
19 didn't discuss that very much ... do you know who would have been involved  
20 in the discussion there. Would that have been between Reed and Dubiel  
21 or ...?

22  
23 HARNER: Well, Gary ... I don't know what time Gary got there, but he  
24 was there when I got there. And Ed Houser usually comes in at 7 o'clock.  
25

1 So I would imagine those two and probably Dubiel, also. Because he was  
2 there early, I think. I don't know what time Gary and Ed got there.  
3 They were probably the ones that discussed them. Like I said, but I  
4 don't remember much about boron numbers. When I got there, we were more  
5 interested in the activities that we were running. I remember hearing  
6 them say later on, that the borons weren't any good. They were only  
7 showing like 200 ppm. By that time we couldn't get back in the lab to  
8 do anything.  
9

10 JACKSON: From a Health Physics standpoint, who's involved in planning  
11 to take these samples? For the 9 o'clock, what plans were made to go in  
12 there and take these samples? It was getting hot by this time.  
13

14 HARNER: The technicians. We just assigned a number of technicians to  
15 go in and get the sample, and they were taking care of their own HP.  
16 There are HP technicians also, besides Chemistry technicians and at the  
17 time people were spread pretty thin, and they were more or less left on  
18 their own to ... to take care of their Health Physics aspects of getting  
19 the sample, as they always do.  
20

21 JACKSON: Yes, but you don't always have those kind of dose rates in  
22 there ....  
23  
24  
25

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1 HARNER: Well, at the time everybody was just not really expecting what  
2 we found. I'm sure I'm not the only one that was surprised.  
3

4 JACKSON: Doug, do you have anything you want to ask him, while I'm  
5 thinking about some of this?  
6

7 COLLINS: You mentioned you brought us up to about eleven o'clock or  
8 thereabouts, the first day. Do you recall what else you did the rest of  
9 that day, and in the subsequent two days?  
10

11 HARNER: Not a whole lot. I tried to do some of the things, some of my  
12 duties as a Chemistry Foreman. I remember I made a tour of the secondary  
13 plant to see what was what. I checked the polishers. I tried to get in  
14 the chem lab. I don't remember if I got in the chem lab the first day  
15 or not. I can't remember what the levels were in that area. Whether we  
16 got in there the first day or not. We turned off the analyzers, things  
17 like that in the secondary chem lab. Try to check on feedwater chemistry.  
18 Just most of my normal duties that I try and do and then, I spent some  
19 time in the Control Room in any type of job that would come up that had  
20 anything to do with that, we'd try and help out, wherever we could then.  
21 Listened a little bit on the ... tried to pay attention to what was  
22 going on on the outside monitoring teams, to see what we were ... what  
23 was being put out and what was being done on the outside. Because we  
24 had a lot of our people out there, and then we started getting help. We  
25

1 start filtering Aux operators out on different teams and things like  
2 that. And I tried to aid HP a little bit. And after about that time, I  
3 think I started working ... aiding more HP than Chemistry after that.  
4 Because there wasn't a whole lot you could do. We couldn't sample  
5 primary and the secondary was basically shut down and on recirc. So  
6 there wasn't a whole lot to do.  
7

8 COLLINS: Did you make any entries into the Aux building?  
9

10 HARNER: I did not. No.  
11

12 COLLINS: Were you assigned to any, or did you interface or take results  
13 from any of the offsite or onsite survey teams?  
14

15 HARNER: No. I didn't operate any of the radios or phones or anything  
16 like that.  
17

18 COLLINS: Do you recall any secondary samples that were taken during the  
19 first few days?  
20

21 HARNER: I know what we did now. We tried to get generator samples,  
22 that's what we did. While we were still over in Unit 1, Ed Houser had  
23 the generators lined up. We had to open two valves in Unit 2, in order  
24 to line the generators up into Unit 1. And they suspected leakage,  
25



1 primary, secondary leakage. So he had those valves lined up, and I  
2 don't remember who got the samples. I think he may have gotten them  
3 himself, the samples off the A and B steam generator through the sample  
4 lines located in the Unit 1 primary lab. And at that time he grabbed  
5 them. I don't know how he counted them. I don't know if he put them  
6 under GeLi, or how he did it. But we decided that the A had activity  
7 and the B didn't. And when we called that information to the Control  
8 Room, they said that doesn't make any sense with what we have up here.  
9 So then I decided that there's only one place the sample lines may have  
10 been crossed. Because we have never used those lines before to take  
11 samples. So, I decided the sample lines may have been crossed, but I  
12 was sure of what the sample lines were in Unit 2, in the secondary lab.  
13 So that's when I went over to Unit 2. And I was working in the Sample  
14 Room, lining up samples off the A and B steam generator. When we got  
15 those samples, we checked them with a frisker, with an RM-14, this is  
16 our first preliminary check, and we found that the B just screamed it  
17 right off scale and the A didn't do anything. And then I took that  
18 information up to the Control Room and gave that information to them. I  
19 was sure of those two samples. I wasn't sure of the ones that came out  
20 of the primary lab.

21  
22 COLLINS: Were those two samples run on a GeLi?  
23  
24  
25

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1 HARNER: I don't know. I would have to ... well, the GeLi was ... by  
2 that time inoperable, because of being in a high background area.  
3

4 COLLINS: Do you know what happened to those two samples?  
5

6 HARNER: The last I saw them, they were in the Safety Room in Unit 2.  
7 That's where they had set up an HP area in the Safety Room. And they  
8 were in there. But they're no longer in there anymore, I'm sure of  
9 that. We went back in there and there was a lot of contaminated clothing  
10 and things in there, and that since has been cleaned up. And everything's  
11 been taken out of there, and it's now a storage area. I could go back  
12 through the scans that we have to see if any of that was run out. If it  
13 was run the first day, or possibly the second day, it would have been  
14 done by the NRC van. Because they were the only ones on site that could  
15 count, afternoon or something like that, the first day.  
16

17 COLLINS: You mentioned that you would go back through your scans, where  
18 are these results normally filed? Had they not been sent up to the  
19 Unit 2 Control Room? Where would they have been filed?  
20

21 HARNER: They would be file for ... we do all the counting in Unit 1,  
22 and it was the only GeLi that was operable. We then would take them and  
23 put them in a file basket in Unit 1. Unit 1's would be filed in their  
24 filing cabinets; Unit 2's would then be hand carried over to Unit 2, and  
25 filed in their file.

1 COLLINS: There were many Unit 2 samples taken during the period of time  
2 when Unit 2 HP area was not accessible. Do you know where those sample  
3 results were put for later filing?  
4

5 HARNER: Those that were run on our GeLi after we pulled it out of  
6 Unit 1 and took it down to the circ water pump house, I set up a filing  
7 system down there, where they were kept.  
8

9 COLLINS: This is at the circ water pump house?  
10

11 HARNER: Yes. That's where it was. It's no longer there. We've now  
12 moved it up to the sample coordinator's office.  
13

14 JACKSON: When was that \_\_\_\_\_ set up down there at the circ water  
15 house?  
16

17 HARNER: It was probably the second day. We had some people in here  
18 from ... gee, I don't know ... I think they were from Salem. An HP  
19 group plus their supervisor and they worked on ... that was when Ken  
20 Frederick was here, he helped move that thing. So, I don't know when he  
21 got here, but he helped move it, so it must have been as soon as he got  
22 on site, we got the thing moved down there. In the meantime, we were  
23 using the NRC van, and RMC and SAI came on site.  
24  
25

1 COLLINS: You mentioned that you remained in the Unit 1 HP and chem lab  
2 area while a technician ran a sample. And then when he was through  
3 doing his sample analyses, all three of you exited approximately the  
4 same time. Was there anyone left at the entrance to the Unit 1 Aux  
5 building area?  
6

7 HARNER: Yes. Bob McCann stayed there.  
8

9 COLLINS: Thank you. Were you involved in any way in the taking or the  
10 analyses of any condenser vacuum samples during these first three days?  
11

12 HARNER: No. That's not normally a chemistry function. It's usually HP  
13 and I didn't get involved in it at all for any reason.  
14

15 COLLINS: You mentioned you were involved in some HP functions, since  
16 the chemistry functions tailed off. What specifically did you do? Do  
17 you recall?  
18

19 HARNER: Mostly it was being a foreman ... and being a chemistry foreman ...  
20 I didn't have a whole lot of duties where all the HP people were extremely  
21 busy, so a lot of it I spent going around gathering materials, because I  
22 was more or less a free man or a body at that time. I can remember  
23 carrying clothing in, wet suits, looking for respirators, looking for  
24 Scott Air Packs, carrying Scott Air Packs, just any type of thing that I  
25

1 could do to help out when they needed something. I tried to either  
2 round up people to do it, or do it myself.  
3

4 COLLINS: In trying to locate Scott Air Packs, did you have any difficulty  
5 finding Scott Air Packs where they were supposed to be stationed?  
6

7 HARNER: The places I was familiar with Scott Air Packs being, I went  
8 there and found some. I don't know all the locations in the plant where  
9 they're located, but places such as near the HP labs, certain stations  
10 through the Turbine Building ... those types of places, I knew where  
11 they were and I went and got them.  
12

13 COLLINS: Did you get involved in any way in the taking of the primary  
14 sample on the 29th? The one that Houser took.  
15

16 HARNER: No. We split up. I forget what time that was taken, but  
17 somewhere in there I went home for a couple of hours, and then came back  
18 in. And maybe it was the third day or something like that, we decided  
19 that we couldn't continue that way a second day. And we started splitting  
20 up. And at the particular time that was taken, I must of either been  
21 ready to leave, and I left. I guess I was on day shift, from like 7 in  
22 the morning till 7 at night, or something like that. See that was the  
23 29th. I stayed ... the first day was the 28th, right? I stayed till  
24 something like 10 o'clock at night. I went home for a couple of hours;  
25

1 got a shower, changed clothes, ate something. Came back in about 4 in  
2 the morning. So then by 3 or 4 in the afternoon, I was getting pretty  
3 tired, and I left. And I think that's about the time Gary and Pete and  
4 Ed were getting around to taking the sample.  
5

6 COLLINS: Do you recall any of your activities on the 30th? Were they  
7 similar to those on the 29th?  
8

9 HARNER: After that sample was taken, in fact I think I worked with you,  
10 on getting that sample out. We packaged up a ml, brought it over in a  
11 powdex bucket, and we got a chopper in.  
12

13 COLLINS: I think that was Nimitz, wasn't it?  
14

15 HARNER: No. It was some Collins. You've got a couple of Collins, I  
16 think in the NRC. I'm not sure which one it was any more. But they're  
17 over in the trailer by the Observation Center. And there was some kind  
18 of mix up, I think on whether a particular portion of sample or something  
19 got out the night before. And then when I came back in, we got another  
20 portion ... I think Joe Deman actually took the sample. And I handled  
21 packaging it, and making sure it got over to the Observation Center.  
22 Again, since I had a little freer movement than anybody else, I handled  
23 that end of it. Taking it over ... over to the ... over to the Observa-  
24 tion Center to be taken out by chopper.  
25

1 FOSTER: We're going to break now and change the tapes. The time is  
2 2:29 p.m.  
3

4 FOSTER: We are going to continue with the interview with Mr. Harner.  
5 The time is 2:30 p.m.  
6

7 COLLINS: During this period of time did you keep any log or take any  
8 notes or write down any results of the sample analyses or keep any  
9 record of any kind?  
10

11 HARNER: I don't think so. Working with chemistry is also numbers,  
12 after five years now is kind of part of the job and you remember quite a  
13 few in your head and I didn't bother writing them down. I very seldom  
14 work with notes. Chemistry numbers just, they stick after you've been  
15 trained to do it. Such as the total activities, I remember them from  
16 that day. You just get a feel for it. You know what to remember and  
17 things like that and I don't remember writing anything down. As a  
18 matter of fact, after we evacuated the chemistry lab, the Unit 1 HP  
19 area, after that ECS was evacuated I changed clothing. I took my street  
20 clothing off and put on paper coveralls where there is no room to carry  
21 anything so I definitely didn't have any notes with me. And I did the  
22 same thing the second day when I came in. I changed as soon as I got in  
23 and wore nothing but paper coveralls.  
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1 JACKSON: I would, like a broken record, go back to that boron analysis  
2 for just a second. I believe on the morning of the 28th there was a  
3 sodium analysis run. Do you recall the results of that sodium analysis,  
4 or do you recall that analysis being run?  
5

6 HARNER: I vaguely recall it being run, but the results, no.  
7

8 COLLINS: There is a record in the chemistry log book showing ...  
9

10 HARNER: Before you say anything, maybe 3 ppm, something like that, that  
11 number, I don't know why.  
12

13 JACKSON: It's much lower than 3 ppm, I believe its six-tenths, nine-tenths,  
14 I don't recall the number exactly myself, but what I was getting at is  
15 do you know if anybody has looked at this level of sodium and tried to  
16 compare that with the potential of sodium borate oxide injection?  
17

18 HARNER: I can tell you, we run anywhere from two-tenths to six-tenths  
19 to eight-tenths normally in the core, and when you add a large amount of  
20 boric acid, your specs on boric acid call for less than 1% sodium chloride  
21 as contaminants. When you add large quantities like that such as we did  
22 from the BWST, you get a lot of sodium contamination and the last numbers  
23 I remember seeing on sodium when the BWST was something like 2 ppm so if  
24 you got a lot of boron influx you would have a little bit of addition of  
25



1 sodium into that. But six-tenths of a ppm is the normal operating level  
2 or slightly above, not a great deal. You always have some sodium coming  
3 from your bleed tanks, from your boric acid.  
4

5 JACKSON: But at this level of concentration for sodium in there, a few  
6 tenths of a ppm, wouldn't that not only be equivalent to a few ppm at  
7 most, of boric acid, in other words, if the man were factoring boric  
8 acid without backtitrating to a PH of 6 as the procedure says, the error  
9 induced by the few tenths of a ppm of sodium would not be the difference  
10 between a thousand ppm boric acid and 700?  
11

12 HARNER: As I said before, when you introduce mannitol to the solution,  
13 it lowers the PH of the solution, so your mannitol would chew up any  
14 type of caustic that was in there in very low levels. Now, the procedure  
15 that we follow calls for any PH, gee, I can't remember if its greater  
16 than six or greater than six and one-half, something on that order,  
17 somewhere in that bracket, to titrate it back down with acid. Now if  
18 you had six-tenths of a ppm sodium with 11 that boric acid in there it  
19 would not give you anywhere overall like a PH of 5 or something like  
20 that on a straight sample, so in a diluted sample of 5 to 100 you defin-  
21 itely wouldn't see any difference in PH or any difference in the titration.  
22 Because your mannitol will neutralize caustic that is in there.  
23  
24  
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1 JACKSON: Is it feasible that the technician ran the sodium or the  
2 diluted sample and that actually you should have multiplied the results  
3 by 20?  
4

5 HARNER: No, not likely. No, when we do sodiums your first shot is  
6 always run a straight sample. If it's over your calibrated range then  
7 you dilute down. To dilute a sample and run it is more or less a waste  
8 of time. Regular lab procedure calls for you to run it on a straight  
9 sample.  
10

11 JACKSON: I'm talking about an inadvertent type of action.  
12

13 HARNER: No.  
14

15 JACKSON: Maybe the guy wasn't thinking or something.  
16

17 HARNER: We'll run it right from a bottle or something when we run it.  
18 We don't bother putting into beakers to run sodiums or anything.  
19

20 JACKSON: Okay. I guess what the point I'm trying to make is, those  
21 boron samples are low and it seems there is a possibility that there was  
22 a sodium hydroxide injection which the technician wasn't aware of so he  
23 did not make an initial PH correction. However, a sodium analysis  
24 doesn't confirm that there was a sodium hydroxide injection.  
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HARNER: It depends on what times your talking now. I don't know when the sodium hydroxide injection occurred, I don't know when the sodium was run that you're talking about.

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JACKSON: Well, you got high pressure injection right off the bat when the incident occurred, and it was secured after I think only a couple of minutes of injection and this was shortly after 4:00 in the morning and then the next, the first boron sample I believe was around 5:00, so if sodium hydroxide had gone in with high pressure injection for leaking valves or whatever, then that sample should have reflected some sodium hydroxide influx.

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HARNER: Well, you also have a problem with travel time on the sample lines. You have a good 30 to 45 minutes travel time before you get a fresh sample over into Unit 2. So if you talking 4:30 and 5:00 that may or may not have been enough time to clear out the line to get a fresh sample over into the sample sink in Unit 2.

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JACKSON: But the sample at 4:00 or at 5:00 was like 700 ppm. Then the next sample which was what, an hour later, approximately, was like 400 ppm. Assuming that that was just sample time, travel time and coming to the sample system or perhaps mixing time in the reactor coolant system since we don't know kind of flow conditions we had in the reactor coolant system at that time, even considering all that for the sodium to

1 influence the boron numbers, it had to be in the same sample. Do you  
2 see what I'm saying?  
3

4 HARNER: Yes.  
5

6 JACKSON: And there's a sodium analysis that shows the sodium to be very  
7 low so ....  
8

9 HARNER: But the sodium analysis ... do you know the time of the sodium  
10 analysis?  
11

12 COLLINS: The sodium analysis was done on a 6:02 sample, according to  
13 the log book.  
14

15 HARNER: Well then, there's no ... there would have to be some type of  
16 dilution of some sort if indeed it was there, I don't know, I can't  
17 answer that for you.  
18

19 COLLINS: Okay.  
20

21 JACKSON: That was the point. We're trying to determine if the sodium  
22 hydroxide was in there. If you just take the boron results, it seems to  
23 indicate that the sodium hydroxide was there, however, the sodium sample  
24 at 6:00 seems to refute that. Because that sample just indicates that  
25

1 there is not enough sodium hydroxide there to cause those types of  
2 errors in the sodium and the boron analysis.  
3

4 HARNER: I really don't know. I don't remember anything that would ...  
5 I didn't discuss anything on borons either with the control room other  
6 than later on we finally realized that the low numbers that they were  
7 getting were due to the sodium hydroxide and we just more or less wrote  
8 it off as that we didn't titrate back down to get a good boron number  
9 and that's when people started requesting the sample for boron analysis.  
10

11 COLLINS: Have you had any previous interviews with any other organiza-  
12 tions concerning this incident?  
13

14 HARNER: No.  
15

16 COLLINS: Have you been coached or have you had any individual or any  
17 people discuss with you what should be said at this interview?  
18

19 HARNER: No. Other than just, you know, we sit down after somebody  
20 comes back they'll say well they were talking about this or talking  
21 about that, that's the only thing, but nobody has ever said anything.  
22

23 COLLINS: Do you have any reason to believe that anyone might have  
24 purposely taken any action to damage the plant?  
25

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HARNER: No, definitely not. Not in my mind anyway. I've worked the people in Unit 2. I've worked with just about everyone of them here and there isn't a one that I would say, you know, would think of doing that.

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COLLINS: Is there anything else you'd like to discuss concerning the incident or anything else in the Health Physics Program?

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HARNER: Not that I can think of at this time, no.

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JACKSON: I have one question that may not be real appropriate to ask right on such short notice because it might involve a very complex answer but I'll go ahead and ask it. There has been some discussion lately that the activity levels in the steam generators have not increased and I've actually heard people discussing whether or not there was a leak, what type of leak you would have had to been to get the activity into the steam generator and then close up and not show any further evidence of leaking under the conditions they have in the reactor coolant system. To your knowledge is there anyway to backfeed that secondary or that steam generator from say a contaminated system, perhaps an interconnection of sample lines or anything of that nature where activity might get in that secondary side without having to come through the tube leak?

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1 HARNER: Not that I can think of. We've had in Unit 1...we've had  
2 gaseous activity pulled into the steam generator through, and I'm not  
3 exactly sure the pathway, but it was from somehow from the RC drain  
4 tank. With the generator having a vacuum on it there was some method we  
5 could pull also pull that vacuum that same vacuum on the heater drain  
6 tank. But in Unit 2 I've never come across that problem at all, that we  
7 ever had activity due to that reason come into the generators. It's not  
8 all that unusual if you consider a hole, a pinhole leak or something in  
9 a tube that as the thing cooled it sealed itself. We've had problems  
10 with condensers that do that all the time. You have a condenser leak  
11 when you're getting circ water into the system, you shut down the plant  
12 to try and find it or you cool, go down and drop power all your tempera-  
13 tures come down your tubes will then shrink and close off a little hole  
14 and it's very difficult to find. It's my feeling that this is what  
15 happened in the steam generators. If it was some type of weld crack or  
16 something it would either get larger or stay the same, but if it was a  
17 hole in a tube, as the tube cooled it would very conceivably seal itself  
18 off.

19  
20 JACKSON: Okay. I have no further questions.

21  
22 FOSTER: Thank you very much. We wish to conclude this interview at  
23 2:44 p.m.

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