

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

1 In the Matter of:

2 IE TMI INVESTIGATION INTERVIEW

3 of Thomas L. Mulleavy
4 Radiation Protection Supervisor

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

13 May 21, 1979
14 (Date of Interview)

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22 NRC PERSONNEL:

23 Dale E. Donaldson
24 Thomas H. Essig
25 Gregory P. Yuhas
William H. Foster
Mark Resner

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1 FOSTER: The following interview is being conducted of Mr. Thomas L. Mulleavy.
2 Mulleavy is Superintendent...

3
4 MULLEAVY: Radiation Protection Supervisor.

5
6 FOSTER: Okay. Three Mile Nuclear Power Facility. The present time is
7 5:01 p.m. Today's date is May 21, 1979. The place of the interview is
8 Trailer 203 located immediately outside the south gate of the TMI site.
9 Individuals present for the interview are Interviewers Dale E. Donaldson,
10 Radiation Specialist from Region I, Thomas H. Essig, Chief, Environmental
11 and Special Projects Section, Region III, Gregory P. Yuhas, Radiation
12 Specialist, Region I. My name is William H. Foster. I'm a Senior Inspector
13 Auditor with the Office of Inspector and Auditor, NRC, and I'll be monitoring
14 the interview. Also present is Mark Resner, Investigator with the Office
15 of Inspector and Auditor. Mr. Mulleavy was previously interviewed as part
16 of this investigation on April 24, 1979. At this point I'm going to turn
17 the interview over to IE personnel.

18
19 ESSIG: Tom, I want to go over a couple of things with you which are...sort
20 of arised from either the testimony that you'd given us previously which
21 has now been several weeks ago, and also relates to testimony that was
22 taken from others which, they may have given us a slightly different story
23 regarding a particular thing than you did. So I have a few followup
24 questions. With respect to the previous interview of you back on the, I
25 think it was the 24th of April, one of the points that I had questions that

1 I've asked of you was how was it determined when you should be taking an
2 air sample and you responded, and I'll pretty much quote your response, you
3 said, "by the wind speed, if they're going to arrive before the plume they
4 would take a background reading and stay there until they saw an indicated
5 upscale reading then they would be directed at that time to take an air
6 sample." And that's about what you said. It's almost an exact quote of
7 your words. The question I have is either you had stated or someone else
8 had stated that the goal was to get, was to collect air samples on an
9 approximately hourly basis in the plume and based on the words that I had
10 just quoted it seems to me that you'd have to be depending on the plume
11 changing direction quite often so that you'd be, you'd have a team out, the
12 plume would sort of mover over to where the team was, you'd see an indicated
13 upscale reading on your instrument and you'd take the sample from the
14 plume. The question is during the first three days there were a number of
15 occasions when the plume was pretty much in the same direction for an
16 extended period of time. For those particular situations do you know what
17 instructions might have been given to the teams with respect to the collection
18 of an air sample?

19 MULLEA/Y: I'm not sure where this hourly basis came from, if you had a
20 continuai stream. I don't believe I said that, and in our particular
21 procedure it doesn't state every hour one would be taken.
22

23 ESSIG: Okay, now I don't, I would agree. I don't think that it was you
24 that said that. It may have been somebody else because I had asked one of
25

1 the other people we interviewed approximately how long or how often were
2 air samples collected and several people had told me well we tried to get
3 them on roughly an hourly basis. We didn't always make it.

4
5 MULLEAVY: That true. No, we didn't always make it on an hourly basis.

6
7 ESSIG: With respect to the, going back to the words that you used again,
8 you said how is it, I asked you how is it determined when we should be
9 taking an air sample and you said "by the wind speed." ...

10
11 MULLEAVY: I think what we were talking about there, if I sent a team to a
12 specific point and they arrived, again the wind speed being a criteria, if
13 they arrived before the plume was there, depending on how quickly they got
14 there and where they had to go, the time that they arrived at that point
15 would determine whether they were there ahead of time, before the plume
16 arrived. So therefore, I said that they would wait if they arrived ahead
17 of time and we would determine that from the ECS, we would ask them then to
18 wait until they saw an increase in their beta gamma level reading, and then
19 to begin their air sample. We had calculated ahead of time that the plume
20 would be at this spot at that particular time and if they arrived ahead of
21 time, their instructions are to wait until they see an increase and then
22 begin their air sample. Now, we have also stated that they take their air
23 sample, then they remove themselves from the plume and therefore, this
24 hourly basis might not, they may not get back in an hour inside the plume
25 or if the plume should shift. So, it would be very hard to say that the
frequency would be an hourly basis.

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1 ESSIG: Okay. I think I see what you're saying when you are talking about
2 the situation where you do have the plumes shifting, but for those instances
3 where you had reasons to believe that the plume was in roughly the same
4 sector for a number of hours and...

5
6 MULLEAVY: The frequency basis would be, an hour would be a fine basis on
7 which to take them. But we are not and have not stated in the plan that it
8 would done on an hourly basis in a steady plume.

9
10 DONALDSON: Tom, can I interject a question real quick? We were talking
11 this over someone the other day and the question that came to mind is how
12 did you know that in fact they were in the plume?

13
14 MULLEAVY: By an increase in their reading and also by calculations from
15 the ECC that they should be there and the plume should be there at the same
16 time.

17
18 DONALDSON: Tom, did you determine then from that calculation or from the
19 readings that they phoned in that they were in fact immersed in the plume
20 or whether or not the readings that they got were from shine, say of cloud
21 that might have been overhead.

22
23 MULLEAVY: Just by the wind speed that we had determined that they should
24 be there, it should be there over them.

25
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1 DONALDSON: Was there any attempt to correlate you to false by positive or
2 any results from counting of the charcoals with those particular beta-gamma
3 readings to say, in fact, yes, they were in the plume and they were pulling
4 an air sample in the plume, and the plume was not in fact overhead.

5
6 MULLEAVY: No, we didn't have that quick result to determine that right
7 away.

8
9 DONALDSON: Would it be possible then, that although they would have had
10 elevated readings, beta-gamma readings, and they did, in fact, pull an air
11 sample that they in fact were not pulling an air sample since they were not
12 immersed in the cloud, but they were, in fact, experiencing shine from a
13 cloud that may have been overhead.

14
15 MULLEAVY: It could very well have been that case, yes.

16
17 DONALDSON: Was there any attempt to, say, follow that plume path out
18 further to see if there was a touchdown point or verify, in fact, if there
19 were any iodine in the cloud.

20
21 MULLEAVY: No.

22
23 ESSIG: One of the other areas that we have discussed the previous time, we
24 talked about the apparent iodine measurements. And I say apparent because
25 it wasn't, at least for the first day, it wasn't until later on in the

1 afternoon that it was confirmed that what you were measuring on the SAM-2
2 was not, in fact, iodine. So, I think as we had discussed previously you
3 really had no choice but to assume it was iodine offsite in those initial
4 measurements that you had made and with regard to a question that I had
5 asked you, I had asked you about there were some offsite measurements of
6 apparent iodine again on the order of 10^8 to 10^{-7} microcuries per cc and
7 you had said we did discuss it and we looked at the dose rates of those
8 particular areas. We did see that we had some lengthy stay time in those
9 particular areas and looking it up on the chart. I was not worried at the
10 time, I didn't think the levels were that bad. Now when you said looking
11 it up on the chart, what specific really were you referring to there?

12
13 MULLEAVY: There's a correlation chart in the plan which gives you a thyroid
14 dose to the child in that particular environment and we did not see on that
15 chart, I believe that Bev Good was the one that was looking at it at the
16 time, and we did not see us reaching that limit or that level for any
17 particular immediate period of time.

18
19 DONALDSON: Tom, I think that chart, is that not the one that is extracted
20 from the Environmental Protection Agency as a guide to protective action?

21
22 MULLEAVY: Yes.

23
24 DONALDSON: And I think there's also a whole body chart, whole body dose
25 rate chart and projected dose extrapolation also, is there not?

1 MULLEAVY: Yes.

2
3 DONALDSON: Okay. Just as a quick follow on that, when you're using this
4 chart did you use it with the radioiodine noble gas ratio strictly as it
5 was printed or did you make any adjustments to that ratio?

6
7 MULLEAVY: Strictly as it was printed...

8
9 DONALDSON: Then you didn't determine that you would go with whole body
10 action guides based on the fact that air samples or the like had shown that
11 the ratio was less than .2 as shown in the chart. You did or you didn't?

12
13 MULLEAVY: We did not.

14
15 DONALDSON: Did not.

16
17 ESSIG: There's one point that I'd like to clear up with respect to the
18 direction of the offsite teams. In your previous interview you had stated
19 that at some point later on, and that point may have been after the three
20 day period of interest that we're talking about here, the direction of the
21 teams was essentially coming from the observation center.

22
23 MULLEAVY: Yes, it was.

24
25
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1 ESSIG: Again, discussing this with Mr. Dubiel, he indicated that he thought
2 it was after the first day, that is after the 28th, late in the evening on
3 the 28th, and I also pursued this with Sid Porter your consultant. And a
4 number of individuals were asked the same question and it appears as if the
5 direction of the offsite survey teams never left the ECS.

6
7 MULLEAVY: No. That's not true.

8
9 ESSIG: According, well Mr. Porter was pretty emphatic about that because
10 he indicated that he had spent essentially the entire, off and on essen-
11 tially the first two and a half weeks or three weeks or so in and around
12 the ECS, and when I spoke with Mr. Tsaggaris and Potts, who I think on the
13 second or third day began to act as what they call the ECS coordinator and
14 I think at that time you were somewhat relieved to or freed up to perform
15 other duties assisting Dubiel and a few other things, is that correct?

16
17 MULLEAVY: That's correct, yes. I moved from the ECS over to Unit 2's
18 control room.

19
20 ESSIG: Okay. Mr. Potts indicated when I asked him that question, he said
21 there was one time he recalls the survey teams being directed from the
22 observation center and he got on the radio right away and explained to them
23 in very clear terms that they, that the directions for the survey teams
24 were coming from the ECS and not from the observation center. Now there
25 are several people that feel, I apparently as strongly as you do only in

1 the opposite direction that the direction for the survey teams was coming
2 from the ECS. You feel that it was eventually turned over to the observation
3 center.

4
5 MULLEAVY: It was turned over to the observation center, yes.

6
7 ESSIG: And again, in your opinion, do you recall about when that was? Was
8 that...

9
10 MULLEAVY: I said the third day. I could be wrong. It could have been
11 shorter than that, but I know I was relieved of duties there and then moved
12 back and taken out of the ECS.

13
14 ESSIG: But I had impression that Mr. Tsaggaris and Potts were continuing
15 to direct the ECS nuclear engineers...

16
17 MULLEAVY: The ECS was still...

18
19 ESSIG: To direct the survey effort.

20
21 MULLEAVY: Right. The ECS was still manned and is still somewhat of an ECS
22 up there now. But in the way that I know the ECS I was relieved of duties
23 and I was supposed to have been that duty officer there and that was taken
24 away. Now, then I assumed duties over in Unit 2 and left the ECS. So if
25 they continued during the time that I was there, we did very little direction

1 of the offsite teams and that direction did come from the observation
2 center.

3
4 ESSIG: Okay. Well the people that were actually there in the ECS after
5 you were relieved felt very strongly that indeed they were directing the
6 survey teams from there and in fact were, according to them.

7
8 MULLEAVY: Alright. So, I wasn't there, I can't dispute that.

9
10 ESSIG: Okay. There's one point that I was hoping maybe you might be able
11 to shed some light on in reviewing some of the survey records. These would
12 be the records maintained in the ECS, particularly early in the day on the
13 28th, these sheets right here, and I believe these were from compiled off
14 smaller sheets which were filled out as the readings were radioed in...

15
16 MULLEAVY: Yes, there is a small sheet that...the data came in.

17
18 ESSIG: That sheet was completed and I believe Bev Good told me that she
19 more or less designed this format of compiling the data because the smaller
20 sheets was getting to the point where they were getting...

21
22 MULLEAVY: Piled up. Yes.

23
24 ESSIG: It was too hard to see trends and that type of thing. Now there is
25 one point I wanted to ask you about here is that these actually start here

1 on Page 2 of this log here, we'll call it, at 0842. I know from having
2 reviewed other sources of data and other interviews that there were actually
3 surveys on the Island probably about an hour before that, around 0750 or
4 so, 0745 or 0750.

5
6 MULLEAVY: Yes.

7
8 ESSIG: The results of those don't appear anywhere on this ECS summary. Do
9 you know where the...

10
11 MULLEAVY: Its probably because the ECS was r : collecting data at that
12 particular time. I think people were just out doing survey work and whether
13 it is recorded somewhere, I don't know. I can't tell you what those recordings
14 are.

15
16 ESSIG: They were directing the surveys....

17
18 MULLEAVY: That's right. Until somebody said hey let's start writing these
19 down meticulously and getting the forms out of the locker, we were still in
20 a situation where the corelation wasn't there and then we begin to get some
21 semblance of order, that's when Bev started doing this.

22
23 ESSIG: Okay.

24
25
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1 MULLEAVY: Now those could have been put on little pieces of paper. Those
2 little pieces of paper could be somewhere if indeed they were made up. I
3 can't be sure they were.

4
5 ESSIG: I'm aware that they are on a little piece of paper and if I under-
6 stood...

7
8 MULLEAVY: It could have been misplaced when we grabbed everything and ran
9 out of the ECS, when we left the ECS and went to the Unit 2's control room.

10
11 ESSIG: Okay. There were a couple of instances where there were measureable
12 dose rates offsite or I guess properly would call them exposure rates, on
13 the order of 10's of mr/hr on a couple of situations in the northwest
14 sector, north to northwest sector, and I believe the levels there, and this
15 would be late in the day on Wednesday the 28th, were on the order of 12 or
16 13 mr/hr. There was a level measured at the north gate which was about, as
17 I recall, about 27 mr/hr or so. The question is was an attempt made by the
18 ECS, yourself, or others that were there under your direction, to, once one
19 of these higher measurements were made, were they instructed to stay in
20 that sector and to continue making measurements as long as the plume appeared
21 to be going in that direction, in other words, to continue...

22
23 MULLEAVY: Continue to monitor that...?
24
25

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1 ESSIG: To follow the plume in order to get some kind of, to establish some
2 kind of dose chronology, if you will, for a given sector?

3
4 MULLEAVY: They were asked to move up and down that particular area going
5 from point to point giving a swing around there. Now passing in and out of
6 that particular plume area they were not asked to stand in that plume
7 giving dose chronology, no.

8
9 ESSIG: So it really wasn't known then if the, say, for example, if the
10 releases at the plant had, the noble gas release rates had increased signi-
11 ficantly.

12
13 MULLEAVY: No, they did not stay meticulously in the middle of that plume.
14 We asked them to move in and out because we were looking for their exposure
15 also, to keep it down and we were asking them to move in and out of that
16 particular area.

17
18 ESSIG: Okay. I have some other notes here that I had made that I wanted,
19 points I wanted to ask you about. In response to a question, I wanted to
20 ask you about the records kept by the individuals performing the surveys.
21 I believe I asked you if the individuals were keeping some kind of record,
22 if one of the team members was assigned to record the dose rates, dose rate
23 time, location, date, and that type of thing, and I think you responded
24 that the measurements are recorded on a map.

25
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1 MULLEAVY: Yes.

2
3 ESSIG: And they also have tablets on which the data can be recorded. I'd
4 just like to clarify, do you know for a fact that either the maps or the
5 tablets were used, because none of those records have shown up yet...

6
7 MULLEAVY: I was unaware that you didn't have them. I had not seen the
8 maps. I haven't seen the books because I believe those kits are still in
9 use. They should be operating out of the observation center and if you
10 haven't seen them, I don't know why you can't.

11
12 ESSIG: Okay. so these would be in books...

13
14 MULLEAVY: Yes, their in a 3 ring note book.

15
16 ESSIG: Loose leaf note books?

17
18 MULLEAVY: Along with their procedures and so forth. And all of the envelopes
19 and collection criteria that they had gone through, particulates should be
20 in an envelope along with the time and the dose rates and so forth there.
21 It should be being kept.

22
23 ESSIG: Okay. There still should be in the kits at the Obseration Center.

24
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1 MULLEAVY: Could very well be. People who are operating those kits. As a
2 matter of fact I know those kits aren't back because we're looking to get
3 new ones or more kit material to fulfill our obligation of having kits
4 onsite which we're working on right now. So that material is still out in
5 the field. As I say, I have not seen it since I left the control room.

6
7 ESSIG: I haven't seen it either and I've requested the records of the
8 surveys and all that I have seen are what I have shown you here which are
9 the sheets which were maintained in the ECS itself and in particular I'd
10 like to see some of the surveys that were made in the early morning of the
11 28th which there to be a number of gaps in the ECS log.

12
13 MULLEAVY: Before this 842 or whenever that started.

14
15 ESSIG: Okay, so I...

16
17 MULLEAVY: I'm sure that exists somewhere, it should be.

18
19 ESSIG: If one of you gentlemen would care to pick up with any questions
20 you might have now, I'll come back to a couple of these later.

21
22 DONALDSON: I'd like to go back to the time in which you received the
23 results from the State of Pennsylvania on the first positive iodine sample,
24 suspected positive iodine sample in Goldsboro. I believe that the results
25 were flown back to the site.

1 MULLEAVY: I think the first one that I had heard that there was no detect-
2 able iodine in the sample.

3
4 DONALDSON: You're saying the first one for which it was believed there was
5 positive. That particular sample was flown so the State of Pennsylvania
6 could provide a count of the cartridge for you. The results were available
7 sometime around 2 in the afternoon on the 28th. Do you recall ever having
8 received the results of that sample?

9
10 MULLEAVY: I don't specifically remember when that came in. I do recall,
11 I recall the first one that came back and that there was not iodine detect-
12 able in it and we were all relieved.

13
14 DONALDSON: And that was the one that came from the State.

15
16 MULLEAVY: Yes.

17
18 DONALDSON: Okay. At that time, now when you knew that, you had a sample,
19 I think we can safely say that the sample was pulled in the plume since you
20 did have some material on the cartridge which, in this case, proved to be
21 Xenon therefore, we can say you were in the plume. Since there was no
22 iodine on the cartridge, that I believe, you can correct me if I'm wrong,
23 you could have made a determination that the components of the release were
24 limited to Xenon.

1 MULLEAVY: That particular sample, yes.

2
3 DONALDSON: Alright. For that particular sample. Now based on, there were
4 other, I believe on the first day, the 28th, approximately 8 air samples
5 which indicated some form of positive, okay. Now as near as I can tell,
6 none of these subsequent samples were in turn analyzed to determine what
7 actually was on the cartridge, is that correct?

8
9 MULLEAVY: I can't say whether they were or not...

10
11 DONALDSON: Do you recall ever having been privy to any subsequent analyses
12 of the cartridges where you could ah we still don't have any iodine?

13
14 MULLEAVY: No.

15
16 DONALDSON: Okay. Then based on that single sample, would you say that it
17 was that sample analyzed by the State that caused you to conclude that the
18 components of the release were, in fact, Xenons and that whole body protec-
19 tive actions guides would apply as opposed to the thyroid guides?

20
21 MULLEAVY: No, I don't think that we made that evaluation on that one. I
22 do recall being relieved that we didn't see any iodine, but it was not
23 conclusive at that time. I think we still went along with the iodine.

1 DONALDSON: Okay, and based on that, were you making continual dose assess-
2 ments using the charts.

3
4 MULLEAVY: Yes.

5
6 DONALDSON: Was anyone maintaining a, what would be a, running list of dose
7 commitment in particular areas offsite where particular readings were
8 taken?

9
10 MULLEAVY: A running list of them? No, I don't believe so. The corelation
11 of the extended times and exposures of individuals there?

12
13 DONALDSON: Yes.

14
15 MULLEAVY: No, I don't. We weren't at the ECS.

16
17 DONALDSON: When these projections were made, do you know what duration of
18 release the individuals were applying to those charts to determine what the
19 dose commitment would have been?

20
21 MULLEAVY: We were using the actual times where we saw that the winds
22 shifted and changed quite often. It was very very erratic, we weren't
23 getting that much time in any area.

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25

1 DONALDSON: So then for a given point you might apply an hour one time...

2
3 MULLEAVY: An hour at the most.

4
5 DONALDSON: And the next time if it appeared there again you might apply
6 another hour. So that for any given sector on your map, that is the sixteen
7 wind-rose sectors, there was no attempt to keep a compilation of those
8 commitment as the event progress.

9
10 MULLEAVY: That's correct. We did not.

11
12 DONALDSON: When did you switch over from using the iodine charts and begin
13 using the whole body guides?

14
15 MULLEAVY: We didn't at the ECS while I was there. We used the other
16 guidelines,
17 the iodines.

18
19 DONALDSON: Did you continue to assess?

20
21 MULLEAVY: Yes, we did.

22
23 DONALDSON: And the most restrictive, of course, would have been, what, the
24 iodine would have been the most restrictive.

25
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1 MULLEAVY: Yes.

2
3 DONALDSON: For that particular thing.

4
5 MULLEAVY: Yes.

6
7 DONALDSON: Now knowing what you know now the ratio that in fact did exist
8 in that release put you to a point where I believe you should have used the
9 whole body guide, is that correct?

10
11 MULLEAVY: Um um.

12
13 DONALDSON: Okay. So am I correct in assuming that even though you had
14 empirical data that there was no iodine in the release, you continued to
15 monitor to make sure that the components of the release did not change but
16 you did not also begin to compute dose commitments on the whole body basis.
17 You stayed with the thyroid.

18
19 MULLEAVY: I stayed with the thyroid.

20
21 DONALDSON: Okay. One of my many tasks here that I'm trying to do is
22 trying to piece together the organization, the emergency organization that
23 mustered on the morning of the 28th and, because this was a fairly prolonged
24 situation, I'm trying to determine initially what organization existed and
25 then what kind of changes may have come about and what the characterist or

1 configuration might have been at various points. And, again, from various
2 other interviews I put together something that looks like the way the
3 organization developed on the morning of the 28th and the way it appeared
4 to be through most of the day on the 28th and I'd just like to ask a few
5 questions in relation to this to see if your memory is in line with this.
6 Okay, the first thing I'd like to do is go back to the morning and the
7 formation of the ECS. I believe in your earlier testimony you had mentioned
8 that you felt that a repair party team had formed in the ECS, and you
9 recall having seen that team.

10
11 MULLEAVY: Um um.

12
13 DONALDSON: Subsequently, do you recall that team having been called from
14 the ECS and told to report to another location or did that team remain?

15
16 MULLEAVY: We took the team with us when we left.

17
18 DONALDSON: You took the team with you.

19
20 MULLEAVY: All individuals left with me. And that means we left the ECS at
21 the Unit 1 HP control point. Now, I left behind outside the doorway to the
22 ECS a foreman and I believe a couple of techs, HP techs. All the other
23 group left and went to the Unit 2's HP, or Unit 2's control room.
24
25

1 DONALDSON: Okay. Now, under the normal organization, the sheet that
2 appears in the procedures and the way things are set up, according to the
3 wiring diagram of the organization, under whom does the repair party operate?
4

5 MULLEAVY: It operates under the Director of the ECS.
6

7 DONALDSON: Who in this case would it have been? Yourself, right?
8

9 MULLEAVY: Yes.
10

11 DONALDSON: Now the next individual, the next command type individual down
12 the chain, who would be involved in repair party functions would be who?
13 In other words who would you normally interact with?
14

15 MULLEAVY: The head of the of repair party which is usually a mechanical
16 maintenance person, a foreman, or a supervisor.
17

18 DONALDSON: Okay, now correct me if I'm wrong. The normal head of the
19 overall repair party team is normally the supervisor or the superintendent
20 of maintenance, is that correct?
21

22 MULLEAVY: Who is Dan Shovlin.
23

24 DONALDSON: I believe the plan calls the supervisor of maintenance and now
25 you have, you know, Unit 1 supervisor and Unit 2 and now he's the superin-
tendent.

1 MULLEAVY: Right.

2
3 DONALDSON: Now normally in past drills, had you interacted with Mr. Shovlin?

4
5 MULLEAVY: Yes. He usually reported directly there.

6
7 DONALDSON: Let's wait for that car to back out.

8
9 FOSTER: Could you repeat that last statement, please?

10
11 MULLEAVY: You want me to...

12
13 FOSTER: Repeat the prior statement.

14
15 MULLEAVY: I believe the question was that did I interact with the supervisor
16 of maintenance? Yes. And that was usually Dan Shovlin.

17
18 DONALDSON: Now the morning of the 28th, do you recall Mr. Shovlin being in
19 ECS?

20
21 MULLEAVY: I think he was. I really think he was.

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22
23 DONALDSON: He wasn't.

24

25

1 MULLEAVY: He wasn't?

2
3 DONALDSON: He says he wasn't.

4
5 MULLEAVY: I don't know.

6
7 DONALDSON: I didn't know whether you had seen him or not.

8
9 MULLEAVY: I thought he was.

10
11 DONALDSON: Okay, he says he wasn't. But normally you would expect to see
12 him there, is that right?

13
14 MULLEAVY: I would normally expect to see Dan there, yes. There was a
15 supervisor there or a foreman. I think it was a supervisor.

16
17 DONALDSON: Okay. Now we have indications there were, there was a maintenance
18 foreman, a Wilson.

19
20 MULLEAVY: There was one individual we did communicate with and he was
21 supposed to set the team up.

22
23 DONALDSON: Okay. So, it was unusual that Mr. Shovlin was not there working
24 closely with you or that you, you would normally, the thing that had to be
25 done contact Mr. Shovlin or have discussions with him?

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1 MULLEAVY: He was usually there to head off that particular team and direct
2 them.

3
4 DONALDSON: In the drills and through the normal procedures, if there were
5 a request from the emergency control center for a repair action to be
6 accomplished or corrective action such as turning of a valve, something of
7 that nature, would that request normally come to you directly from the ECC?

8
9 MULLEAVY: Yes.

10
11 DONALDSON: You in turn then would pass that request to Mr. Shovlin, correct?

12
13 MULLEAVY: That's true.

14
15 DONALDSON: Alright. And what else would you do at that time? What is the
16 procedure designed to do? What else would you possibly attempt...

17
18 MULLEAVY: I would have an HP man, tell him who his HP man is, they should
19 already have known that, and discuss what clothing was needed and send them
20 on their way. Tell them what they'd be up against and that's what the HP
21 man is for, and give the direction that was given to me, tell them why if I
22 knew why they had to go do this and what their situation was.

23
24 DONALDSON: Okay. Then, I guess I'm correct in assuming that you essen-
25 tially do, by virtue of your position on the organizational chart, essentially
direct the operations of the repair party teams.

1 MULLEAVY: That's correct.

2
3 DONALDSON: Now, let's go back to the morning, let's continue on the morning
4 of the 28th. During the time that you were located in the ECS were any
5 repair party functions conducted?

6
7 MULLEAVY: No.

8
9 DONALDSON: No requests came to you at all?

10
11 MULLEAVY: No.

12
13 DONALDSON: Now let's relocate you and move you up to the Unit 2 control
14 room, which is the alternate ECS, you said the repair party you took them
15 with you?

16
17 MULLEAVY: Yes, yes. Everybody evacuated the normal ECS.

18
19 DONALDSON: Now, do you recall Mr. Shovlin in the Unit 2 control room?
20 I've already given you the answer, I guess. Do you recall seeing him?

21
22 MULLEAVY: I thought I saw Dan somewhere but I'm not sure now.

23
24 DONALDSON: Did Mr. Shovlin touch base with you at any time during the
25 morning of the 28th either to inform you that there were repair functions

1 or corrective actions being initiated either at his direction or at the
2 direction of anyone else?

3
4 MULLEAVY: I don't recall that interface, no. Specifically with Dan, no.

5
6 DONALDSON: Then at any time during the 28th, do you recall ever having
7 this normal procedure of a request for a repair or corrective action function
8 coming to you and you in turn contacting the repair party team, passing on
9 the request, briefing them on the radiological conditions, and assigning a
10 repair party monitor?

11
12 MULLEAVY: Not as we had done in drills, no.

13
14 DONALDSON: Were you aware or had you, did you, were you able to observe
15 that any repair functions did take place? Did you see any of his indi-
16 viduals huddling or dressed in protective clothing or gathering meters as
17 if they were preparing to perform some kind of activity?

18
19 MULLEAVY: I don't recall that particular function happening. I, gosh, I
20 do remember getting auxiliary operators out to do specific things.

21
22 DONALDSON: Okay, you say auxiliary operators, what...

23
24 MULLEAVY: Auxiliary operators acting in the HP capacity, going out to
25 different doors, getting surveys, going up on the roof...

1 DONALDSON: This would be auxiliary operator A's? You were using them as?

2
3 MULLEAVY: Yes. We were using them as HP people.

4
5 DONALDSON: As a monitoring team individuals?

6
7 MULLEAVY: That's correct.

8
9 DONALDSON: Correct, okay.

10
11 MULLEAVY: A specific duty for a repair party, I cannot recall.

12
13 DONALDSON: Okay. Then what I'm hearing you say is that essentially the
14 repair party came the way it had been drilled and the way plan had it
15 organized, but essentially did not coordinate with you in the manner in
16 which you'd been used to.

17
18 MULLEAVY: I think that's correct.

19
20 DONALDSON: Okay. Let's move from the repair party team to the various
21 monitoring teams. I believe in your early testimony you stated that you
22 were primarily involved with the survey teams and in specifically the
23 offsite monitoring.

1 MULLEAVY: That's correct. Offsite and onsite.

2
3 DONALDSON: Alright. And onsite meaning outside of the confines of the
4 facility, not inside the plant?

5
6 MULLEAVY: That's correct.

7
8 DONALDSON: And I believe you said that you and Dick Dubiel pretty much
9 split up the work. He took the inplant health physics aspects and you took
10 the offsite and onsite survey teams.

11
12 MULLEAVY: Well, yes. We're talking about the onsite or inside the buildings,
13 yes, he did take care of that.

14
15 DONALDSON: Now normally we would expect that the supervisor of Radiation
16 Protection or as the term is evolved in the last couple of months, the ECS
17 director, would be in charge of, well what, the onsite monitoring teams, is
18 that correct?

19
20 MULLEAVY: Yes.

21
22 DONALDSON: The offsite monitoring teams?

23
24 MULLEAVY: Um um.

1 DONALDSON: The assembly area monitors?

2
3 MULLEAVY: That's correct.

4
5 DONALDSON: The washdown area monitors?

6
7 MULLEAVY: Um um.

8
9 DONALDSON: The gate monitors?

10
11 MULLEAVY: Yes.

12
13 DONALDSON: The chemistry personnel?

14
15 MULLEAVY: Yes.

16
17 DONALDSON: And, let's see. I believe, and the repair party team?

18
19 MULLEAVY: Right.

20
21 DONALDSON: And I think that comprises most of the people. Now, again,
22 what I'm hearing you say is that the evolution of events were such that you
23 were limited to onsite survey teams and offsite survey teams. Did you
24 maintain control of the assembly area monitors?
25

1 MULLEAVY: Yes.

2

3 DONALDSON: You did?

4

5 MULLEAVY: Um um.

6

7 DONALDSON: Okay. Was there a monitor at the north auditorium?

8

9 MULLEAVY: Yes.

10

11 DONALDSON: You believe there was. And the warehouse area?

12

13 MULLEAVY: Yes. The warehouse area was taken care of by the onsite survey
14 team.

15

16 DONALDSON: Onsite survey team?

17

18 MULLEAVY: Yes.

19

20 DONALDSON: Okay. And of course, in the turbine building?

21

22 MULLEAVY: The turbine hall was taken care of by an auxiliary operator.

23

24 DONALDSON: Alright. Now gate monitors. Were both gates functional on
25 that morning? In other words South Gate and North Gate?

1 MULLEAVY: Yes, they were.

2
3 DONALDSON: Did you, in fact, dispatch or verify that you had a gate monitor
4 at each...?

5
6 MULLEAVY: Not until we actually felt it was necessary to have one.

7
8 DONALDSON: Then you in fact did dispatch monitors?

9
10 MULLEAVY: Um um.

11
12 DONALDSON: And they were in contact with the ECS?

13
14 MULLEAVY: Yes, they were in contact with us.

15
16 DONALDSON: Now, later, of course, after we had evacuation of the Island,
17 washdown area monitors who I essentially if I'm correct in reading the
18 procedures, essentially not only monitor for contamination of vehicles, but
19 also monitor for contamination on personnel, is that correct.

20
21 MULLEAVY: Personnel in the event we have to evacuate, yes.

22
23 DONALDSON: And these individuals also have the responsibility for supervising
24 or conducting decontamination of the individuals and followup if necessary,
25 is that correct?

1 MULLEAVY: That's correct.

2
3 DONALDSON: Now the washdown area monitors that were set up and eventually
4 dispatched to the 500 KV substation. Did you assign those individuals?

5
6 MULLEAVY: Yes, we did.

7
8 DONALDSON: Do you recall who you assigned?

9
10 MULLEAVY: I do not recall by name, no.

11
12 DONALDSON: Do you recall if maybe it happened to be Mr. Velez? Do you
13 know? A Mr. McCann? Did you put a foreman in charge?

14
15 MULLEAVY: No, it was not Mr. McCann I know because Mr. McCann was back at
16 the HP control point in Unit 1 and he stayed there. The, no, I believe it
17 was auxiliary operators.

18
19 DONALDSON: Okay. Now would it be a normal thing for the washdown area
20 monitors to maintain communication with you and inform you of survey results
21 and the ongoing situation in terms of decontamination?

22
23 MULLEAVY: Yes.

24
25 895 286

1 DONALDSON: Contamination, so on and so forth? And would you, or normally,
2 in drills or in the organization, do you provide the guidance and direction
3 for release of individuals?
4

5 MULLEAVY: Yes.
6

7 DONALDSON: Okay. Now I believe your procedures specify the release limit
8 for contamination of persons or equipment, do you recall what that level
9 is?
10

11 MULLEAVY: Greater than 1000, we retain them, if it's greater than 0.4 we
12 must keep them here.
13

14 DONALDSON: Okay. .5 I believe is in the current procedures.
15

16 MULLEAVY: Alright, that's the DOT regulations.
17

18 DONALDSON: Now, for these washdown area monitors who are part of the
19 emergency organization, what procedures are they instructed in their training
20 to follow for decontamination or following individuals in the event they
21 have positive readings? Do they use the normal procedures for handling
22 contaminated individuals?
23

24 MULLEAVY: In their particular classroom studies we talk about that. In a
25 equal position for auxiliary operators, we do cover that...

1 DONALDSON: So you would expect that these individuals would be following
2 the normal procedure. I don't recall the number offhand. Anyway, to the
3 extend where it would say that nose swipes would be taken and that whole
4 body counts and so on and so forth?

5 MULLEAVY: Yes.

6
7 DONALDSON: And then you would expect that you would be receiving reports,
8 opinions...

9
10 MULLEAVY: Any reports that they had that were abnormal they should have
11 given to us.

12
13 DONALDSON: Do you recall any time on the 28th through the 30th when you
14 were acting as the ECS director, having received any such reports?

15
16 MULLEAVY: I did not.

17
18 DONALDSON: Did you ever initiate any action to find out why these people
19 were not reporting to you?

20
21 MULLEAVY: Well, the gate monitors didn't have any problems going out the
22 north gate, so I didn't anticipate any problems out at the other areas.

1 DONALDSON: The other area was kept in operation, I believe, quite a period
2 of time.

3
4 MULLEAVY: Yes, it was.

5
6 DONALDSON: Did you periodically check with these individuals either when
7 you went over to grab a sandwich or...

8
9 MULLEAVY: We were in communication with them, yes.

10
11 DONALDSON: And did they experience any problems or difficulties?

12
13 MULLEAVY: Not that they told me of no.

14
15 DONALDSON: Did you happen to go over and at least supervise and see who
16 was doing the function to find out if they were in fact part of the emergency
17 organization that you would expect to see over there?

18
19 MULLEAVY: No, I did not.

20
21 DONALDSON: So, again, what I'm hearing you say is that the communication
22 from the washdown area, which in this case was set up to be the substation,
23 appeared to be spotty or infrequent.

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25

1 MULLEAVY: Yes.

2
3 DONALDSON: Alright. Now again we have I believe that under the ECS super-
4 visor that normally any chemistry functions that were to be performed also
5 would fall under the command and control of the ECS supervisor...

6
7 MULLEAVY: Yes, the way in drills, it would be that it would be disseminated
8 down from the ECC to the ECS via Dick Dubiel to me to have a certain sample
9 taken and so forth and on.

10
11 FOSTER: Let's take a break and change the tape. Time is 5:45 p.m.

12
13 FOSTER: We're continuing with the interview of Mr. Mulleavy. The time is
14 still 5:45 p.m.

15
16 DONALDSON: Okay, Tom, we're talking about chemistry functions now under
17 the organization and the little block on the chart shows chemistry to be
18 the chemistry supervisor. Is there a chemistry supervisor presently?

19
20 MULLEAVY: No.

21
22 DONALDSON: Is that not a...

23
24 MULLEAVY: Not such a title, no.

1 DONALDSON: Is that not a requirement that you have a chemistry supervisor?

2
3 MULLEAVY: A requirement? Its on the chart...

4
5 DONALDSON: Its part of your technical specifications that you're required
6 to have a supervisor of chemistry.

7
8 MULLEAVY: Yes, I believe it is.

9
10 DONALDSON: How long has this position been vacant?

11
12 MULLEAVY: As long as I have been here. I don't believe we've ever had a
13 chemical supervisor as such.

14
15 DONALDSON: So the chemistry foreman did in fact on the period of the 28th
16 through the 30th, act in this general capacity, is that correct?

17
18 MULLEAVY: That's correct, and he has always during the drills.

19
20 DONALDSON: Okay. Now during the drills did they in fact work the way you
21 just described that, is the ECC would request that a certain sample be
22 taken, and then you would in fact brief the team and they would take the
23 sample and return the results to you.

24
25 895 291

1 MULLEAVY: No.

2
3 DONALDSON: Not that way.

4
5 MULLEAVY: It did not work that way.

6
7 DONALDSON: Why didn't it work that way?

8
9 MULLEAVY: Why, I can't tell you. All I can say is it did not. We're
10 talking about the securing of a primary coolant sample. I was unaware of
11 that.

12
13 DONALDSON: Your answer to that question is in the context of the emer-
14 gency, correct?

15
16 MULLEAVY: Yes.

17
18 DONALDSON: Okay. But normally did it work that way?

19
20 MULLEAVY: Normally, yes. During drills and so forth, yes it did.

21
22 DONALDSON: Were there other chemists, I know there were a number of primary
23 samples and there were a number of attempts to pull makeup tank samples and
24 HPR219 samples. Were any of these coordinated through yourself?

1 MULLEAVY: Specifically directed through me, no.

2
3 DONALDSON: Now from going back to your discussions I would assume that
4 part of the reason these didn't come through you is because of some time on
5 the morning of the 28th between yourself and Dick Dubiel you decided that
6 you'd take over some functions and he would take charge of some, is that
7 correct?

8
9 MULLEAVY: Well, it was the mere fact that we all moved together into one
10 big room which was the Unit 2's control room and we were functioning out of
11 Unit 1 to begin with which is a little hard to service going over to Unit 2
12 and perhaps individuals up there were asked to change certain monitors from
13 that side and it could have been done. I'm not saying all of them were, we
14 were asked to take different air samples and so forth outside and change
15 specific monitors, I don't recall which exact ones they were, but not all
16 of them, no, were directed through us as we normally would have seen on the
17 preparation drills that we had before.

18
19 DONALDSON: You saying some were directed through you?

20
21 MULLEAVY: Yes.

22
23 DONALDSON: But not all?

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25

1 MULLEAVY: No.

2
3 DONALDSON: Who were the other ones directed through?

4
5 MULLEAVY: It may have been done directly by Dick or through the operations
6 of the Unit 2 control room.

7
8 DONALDSON: So we would have had the normal configuration where all requests
9 would come through you and but in fact we had the situation where some went
10 through Dick and some may have come direct from operations.

11
12 MULLEAVY: Yes.

13
14 DONALDSON: Alright. Now again looking at this I would think that the
15 little block, supervisor of Radiation Protection and Chemistry is filled by
16 Mr. Dubiel that when you divided up the areas to be covered that the chemistry
17 functions would have gone with him primarily...

18
19 MULLEAVY: Yes.

20
21 DONALDSON: That all the functions for inplant radiation surveys and coverage
22 for various entries into the plant, repair party team monitors, would have
23 fallen under Mr Dubiel, is that correct?

1 MULLEAVY: The original repair party, when we set it up at the ECS, I did
2 assign a monitor there. When we moved back up to the Unit 2 control room,
3 I did lose track of that particular group and spent the time on the offsite
4 and onsite teams because I then moved from the Unit 2 control room sometime
5 during that day, I don't recall the actual time of leaving the Unit 2's
6 control room and going over to Unit 1 to continue the offsite and onsite
7 teams.

8
9 DONALDSON: Since you began to operate under an organization that was
10 significantly different from that which had been normally set out, people
11 trained against and what you drilled against, did you discuss the need to
12 assign any of your Radiation Protection foremen to be in charge of any of
13 these particular functional areas that maybe Mr. Dubiel had taken or that
14 yourself had taken to ensure that continuity of command and control of the
15 operations existed?

16
17 MULLEAVY: Not specifically did we talk about that aspect, no.

18
19 DONALDSON: Then looking at the way I've managed to chart out what did
20 occur, I'll let you take a look at this and its really a reiteration of
21 what we've talked about. I'd like to have your general comments on whether
22 or not this appears to be your understanding of the organization say approxi-
23 mately by 9:00 in the morning until whenever, if you can give me a time
24 when this organization began to change again.

1 MULLEAVY: At what time is this? What time are we talking about?

2
3 DONALDSON: This would be approximately by 9:00, 8:30, 9:00 in the morning
4 til I don't know when. But it seems when things got in full swing that
5 that's sort of the way things fell out. Now, were there any situations you
6 can describe that would make that different?

7
8 MULLEAVY: No, I'm just questioning the washdown area monitors. Now these
9 people may have migrated out there but specifically sent, I'm not sure.

10
11 DONALDSON: Okay, yeah. Let me say at some time during the day the washdown
12 monitors reported out there. I don't mean to imply that they were there at
13 9 in the morning. Essentially when the organization was fully activated
14 and the need for the washdown monitors arose they essentially fell under
15 your control. The dotted line, of course, there means that there was sort
16 of spotty communication control.

17
18 MULLEAVY: Now I can't be sure when these actually did change.

19
20 DONALDSON: Does that appear to be the normal, well, I wouldn't say normal,
21 does that appear to be the configuration that the organization took?

22
23 MULLEAVY: Yeah.

24
25
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1 DONALDSON: The direction that it went.

2
3 MULLEAVY: Yes.

4
5 DONALDSON: Now this dotted box indicates that that was not a function that
6 was specifically called out in the previous emergency plan or procedures
7 but sort of evolved, is that...

8
9 MULLEAVY: No, the inplant radiation monitors, that is a new, kind of a new
10 term because the inplant radiation monitors would be actually by the repair
11 party who has a monitor with them when they go back inside the plant.

12
13 DONALDSON: Now there were also inplant surveys being conducted, I believe.

14
15 MULLEAVY: That was prior to actually mustering at the ECS, I understand.

16
17 DONALDSON: I believe some of this continued, for example monitoring of the
18 personnel hatch in other words there was some form of monitoring continued
19 in the facility.

20
21 MULLEAVY: After we evacuated that particular, now this was the next day.
22 Yes, there was some in Unit 1 that continued on, yes, indeed.

23
24 DONALDSON: And they were under Mr. Dubiel, essentially?
25

1 MULLEAVY: That's correct.

2
3 DONALDSON: And that was again to distinguish the sort of a group that had
4 been formed...

5
6 MULLEAVY: That was in addition to, don't forget we had never been in a two
7 day drill. We were on our second day.

8
9 DONALDSON: Normally your inplant radiation monitors who performed the
10 initial surveys in the plant come from the so called onsite survey teams,
11 is that correct?

12
13 MULLEAVY: The onsite survey team could migrate into the building, coming
14 in different doors, also your repair party would be the ones to go in and
15 get somebody out and they have a monitor assigned to them.

16
17 DONALDSON: Okay, then in general this organization...

18
19 MULLEAVY: But this extra group, such as the inplant radiation monitors,
20 during a drill you don't do that type of thing, but later on you do.

21
22 DONALDSON: So then by need you had to form that group?

23
24 MULLEAVY: Yes. Because there was a need for people to go back in and take
25 a look.

1 DONALDSON: Okay. Now I believe that you do have a job board down in the
2 ECS...

3
4 MULLEAVY: Yes.

5
6 DONALDSON: And you had said in your earlier testimony that the job board
7 was filled out, or you thought that the board was filled out.

8
9 MULLEAVY: We asked to have it done and I believe it was. I don't think
10 its still written on there. I think it was either erased or something.
11 But it was. We tried to get that going.

12
13 DONALDSON: Someone took the time to erase it shortly after, do you think?

14
15 MULLEAVY: I don't know if it was erased shortly after. I don't know, we
16 left that area.

17
18 DONALDSON: Did you have a job board up in the alternate center so that you
19 could make sure that the proper organizations were being formed and that...

20
21 MULLEAVY: There is one up there, yes. Whether we used it or not, I'm not
22 sure whether we transmitted that data there.

23
24 DONALDSON: Where is that job board located?
25

1 MULLEAVY: That's located inside the shift supervisor's office.

2
3 DONALDSON: Okay. Now I believe that the shift supervisor's office is the
4 specified designation, specified location for the alternate ECS.

5
6 MULLEAVY: That's correct.

7
8 DONALDSON: Now you in fact located not in the shift supervisor's office.
9 Can you tell me why you didn't locate there?

10
11 MULLEAVY: Because it was too crowded. There were an awful lot of people
12 up there. You asked me how many in the last testimony and I don't remember
13 what I said.

14
15 DONALDSON: And you didn't contact Miller or Dubiel or throw everybody out
16 of there and...

17
18 MULLEAVY: No, they were all there and we did mention the fact that it was
19 very crowded up here but it was rather confusing too.

20
21 DONALDSON: How important is this job board when you fill these things in?
22 Does it help you determine that all the functions are being covered and to
23 know what's going on in the various areas?

1 MULLEAVY: No, I suppose it is very meticulously to write it down, that
2 would have been very handy I suppose. But in the confusion and where it
3 was located it was not practical to do it.

4
5 DONALDSON: What I'm hearing come out of this is that when we ran the
6 drills and when we trained we're all going to do our little thing here
7 that's assigned by the plan that when the real emergency came because it
8 was an emergency we did what we felt we had to rather than...

9
10 MULLEAVY: We did what we had to do, not what we felt had to be done. It
11 just evolved. I'm sure that any plan that is written that's put into full
12 effect, such as ours was, you would find the same thing happen. I'm sure
13 the NRC found in their plans they had to alter those plans.

14
15 DONALDSON: Do you feel that in starting to implement the organization that
16 you gave the organization time to fully develop before you made the decision
17 to go away from it? In other words did you say...

18
19 MULLEAVY: I don't think there was a decision made to go away from the
20 organization. It was something that happened and seemed to be a good way
21 to do it.

22
23 DONALDSON: Did anyone say let's try to follow our plan and lets organize
24 this way and...

1 MULLEAVY: We started out that way. We started forming our teams. When we
2 found that we needed more teams than we had developed in the plan, such as
3 sending auxiliary operators to the roof areas, sending them down here
4 south...

5
6 DONALDSON: Now, I believe that's only one team we're talking about. But
7 again what I'm talking about here is...

8
9 MULLEAVY: I'm talking about different individuals we sent different places.

10
11 DONALDSON: By your plan aux operator A's and rad chem technicians can be
12 survey people, so I have no problem with that. What I'm saying is that,
13 and I think the fact that you formed this group out of necessity, this
14 inplant radiation group, but as far as configuring the organization where
15 Mr. Dubiel then assumed control over these three functions, okay, and the
16 fact that the repair party did not in fact assemble under Mr. Shovlin in
17 the ECS but in fact did assemble in the Unit 2 control room. Was there any
18 discussion or did anyone say hey, you know, let's look at the organization.
19 Are we implemented properly, are we talking to the right people?

20
21 MULLEAVY: No.

22
23 DONALDSON: Or did things just really allowed to take their natural course?
24
25

1 MULLEAVY: They, I believe were allowed to take their course until finally
2 somebody brought their bootstraps back together again...

3
4 DONALDSON: And what happened at that time?

5
6 MULLEAVY: I think that's when we split and we went to the Unit 1 control
7 room and began only that monitoring offsite and the onsite team which
8 seemed to be a good idea to be a specific entity.

9
10 DONALDSON: Okay. Then this became even clearer when you moved locations
11 to the Unit 1 control room.

12
13 MULLEAVY: Yes. Because you could isolate yourself to that particular job
14 and pay attention to that job without the other confusion of the material.

15
16 DONALDSON: Was Gary Miller the emergency director in on any discussions to
17 realign the emergency organization in a way different than the plan had it
18 configured?

19
20 MULLEAVY: He may have been but we didn't sit down and talk about it. They
21 may have discussed that. He may have decided this with another group. We
22 were then directed to go to our separate places and conduct those functions.
23 Whether he did or not, I don't know.

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25

1 DONALDSON: How long would you say that you either attempted or did operate
2 under the defined emergency organization as it is in the plan?

3
4 MULLEAVY: Until we moved our separate ways, I went over to Unit 1. We
5 were still following that what I knew to be the plan.

6
7 DONALDSON: Then you moved to the Unit 1 control room when?

8
9 MULLEAVY: I moved to the Unit 1 control room I believe sometime in the
10 afternoon on day 1, the 28th.

11
12 DONALDSON: On day 1.

13
14 MULLEAVY: Right.

15
16 DONALDSON: So then I would expect then that if there were in fact repair
17 party team functions that you would have been apprised of it, you would
18 have briefed the team, and would have controlled those entries, is that
19 correct?

20
21 MULLEAVY: Yes.

22
23 DONALDSON: And that if there were inplant radiation monitoring functions
24 going on that all those results would have been reported to you?

1 MULLEAVY: Those results would have come through the ECS, yes.

2
3 DONALDSON: Okay. And in terms of monitoring individuals for contamination,
4 all of the other functions still would have continued to be...

5
6 MULLEAVY: That should have come through us.

7
8 DONALDSON: Till you shifted.

9
10 MULLEAVY: That's right.

11
12 DONALDSON: Okay. Okay I think, let's see if I have anything else here.
13 Okay. I wonder if we could just touch very briefly on the emergency plan
14 training program. I believe that the, yourself and Mr. Dubiel, as his
15 designate, have the responsibility for conducting various portions of the
16 emergency plan training program for the organization.

17
18 MULLEAVY: That's correct.

19
20 DONALDSON: One area I'd like to touch on is in the repair party team. Did
21 you conduct a portion or all of the training session for the repair party
22 team in 1978?

23
24 MULLEAVY: I conducted a session to train the foremen of the maintenance
25 department to conduct then that training and pass it on to their men.

1 DONALDSON: Did you require any kind of a test to ensure that the degree of
2 knowledge that these individuals had acquired were sufficient?

3
4 MULLEAVY: No.

5
6 DONALDSON: In particular, in your training, did you address such things as
7 emergency risk doses for repair functions?

8
9 MULLEAVY: Yes.

10
11 DONALDSON: Did you discuss the authorities for exceeding administrative
12 limits of exposure?

13
14 MULLEAVY: Those men are aware of that, yes. As they've all been through
15 it.

16
17 DONALDSON: And did you also discuss the individuals who could authorize
18 individuals to perhaps take exposures higher than the administrative limits?

19
20 MULLEAVY: No, I don't believe so, no. I don't recall that.

21
22 DONALDSON: Did you discuss the command and control of that repair party
23 team, that they were to function in the ECS and that they were to get HP
24 coverage and that they were to go through that ECS director before they...

1 MULLEAVY: They should have been aware of that, yes, indeed. They knew
2 where to muster, they knew how it was formed, they knew where the clothing
3 was, they knew what the emergency exposures could be, what the hazards
4 involved were.

5
6 DONALDSON: So at the time that training was conducted and you wrote your
7 evaluation on the administrative training form, did you feel that the
8 training had been adequate to impress upon the individuals who you were
9 training who were in turn going to train others of these important aspects
10 to control, exposure aspects, health physics consideration?

11
12 MULLEAVY: There were two individuals that I taught who took it rather
13 seriously, yes. I think so.

14
15 DONALDSON: You say two. How many did you teach?

16
17 MULLEAVY: Three.

18
19 DONALDSON: What about the third one? Did he not take it seriously?

20
21 MULLEAVY: I'm not too sure whether he did or not. I've had a couple of
22 sessions with him.

23
24 DONALDSON: How did you evaluate the performance of these people? Did you
25 give them tests, did you...

1 MULLEAVY: We did not. We evaluated it on the questions that they asked
2 and whether they were interested in the subject matter.

3
4 DONALDSON: Okay. So that their proficiency or their ability to function
5 was determined by their eagerness or their interest in the class.

6
7 MULLEAVY: That's correct.

8
9 DONALDSON: There was no written test or exam.

10
11 MULLEAVY: No.

12
13 DONALDSON: Let's talk about monitoring team training for a while. I
14 believe that the way the training is set up presently that either, well any
15 rad chem technician or any auxiliary operator A could perform the monitoring
16 functions, the various monitoring functions...

17
18 MULLEAVY: They can monitor individuals, yes.

19
20 DONALDSON: And you conducted that training I assume?

21
22 MULLEAVY: Yes

23
24 DONALDSON: Let's talk about individuals who might be called upon to use
25 the SAM 2 instrument first of all and the training that revolves around

1 that. Is the SAM 2 an instrument that the technicians might normally use
2 in their day to day activities?

3
4 MULLEAVY: No, it was not before the accident. It was not one that they
5 used normally.

6
7 DONALDSON: Okay. In the training program, could you briefly describe how
8 the teams are familiarized with the operation of the SAM 2 and how their
9 knowledge of the operation is checked?

10
11 MULLEAVY: There is a procedure which we use for calibration of the SAM 2.
12 Len Landry was instrumental in getting that procedure. He did the
13 calibration, background, and so forth, and worked with the instruments and
14 then Len is the one that gave that particular training.

15
16 DONALDSON: I believe you attended that training.

17
18 MULLEAVY: Yes, I did.

19
20 DONALDSON: Okay. Did you, have you ever in fact operated a SAM 2?

21
22 MULLEAVY: Yes, I have.

23
24 DONALDSON: Here?

1 MULLEAVY: Yes.

2
3 DONALDSON: The class that you attended, did every individual who attended
4 that class have the opportunity to have hands on training and operate it or
5 was it a demonstration?

6
7 MULLEAVY: They had the opportunity, no, they had the opportunity to come
8 up to the table, try it out, run it, they could have an opportunity to take
9 an air sample because we showed them the whole business, look at it, turn
10 it on, take a background, take an efficiency, run it, if they wanted to,
11 and they had that ability.

12
13 DONALDSON: It was sort of a voluntary thing.

14
15 MULLEAVY: Yes.

16
17 DONALDSON: In other words we're gonna use the next period of time for all
18 those who want to come and operate the SAM 2.

19
20 MULLEAVY: That' right. And generally we had in the classes that I did
21 attend and I believe I attended 5 of those that were given because I gave
22 the preliminary to it and we had pretty good response.

23
24 DONALDSON: Okay. Did you make any note or did any attempt to single out
25 or retrain any individuals who may not have desired or may not have had the
opportunity in the time allotted to operate the equipment?

1 MULLEAVY: No. No.

2
3 DONALDSON: You didn't keep any kind of a list to see who would...

4
5 MULLEAVY: Who was interested and who was not, no, I didn't.

6
7 DONALDSON: Okay. Was there any followup evaluations to determine whether
8 or not the students had in fact grasped the operating principals of the
9 instant?

10
11 MULLEAVY: No.

12
13 DONALDSON: Had you ever discussed this approach with Len Landry or anyone
14 considering the importance that this instrument played in the evaluation of
15 offsite consequences?

16
17 MULLEAVY: No, I don't believe I did.

18
19 DONALDSON: Had you ever had any comments from any of the rad chem techni-
20 cians or aux operators who would be assigned to these teams who felt that
21 they needed more time on the instrument or they didn't know how to operate
22 it or felt uncomfortable?

23
24 MULLEAVY: They were, yes, I have heard comments from them. Some were
25 unsure that once a year going through this particular training that they

1 would feel free to look at it. They were invited any time, at any free
2 time that they had to go in and take a look at them.

3
4 DONALDSON: They were not scheduled for...

5
6 MULLEAVY: They were not scheduled specifically, no.

7
8 DONALDSON: The training program was not corrected to provide a more reenfor-
9 cing training?

10
11 MULLEAVY: More frequent? No. Just on an annual basis.

12
13 DONALDSON: Now you know that the, I guess, the training procedures states
14 that identification of weak areas in the training and correction of those
15 weak areas are the responsibility of the person who conducts the training.
16 Did you propose any changes to the training program or did you propose that
17 additional time be allotted to insure that these individuals and every
18 individual who is on these teams could in fact operate the equipment effec-
19 tively?

20
21 MULLEAVY: No.

22
23 DONALDSON: Alright. Now in terms of those individuals, and again it would
24 be the rad chem techs, I believe, and the aux operator A's who might function
25 in the washdown areas, did this training also include discussion of decon-

1 tamination methodology in the procedures to be followed in the event of an
2 emergency in which an individual was contaminated?

3
4 MULLEAVY: As far as iodine contamination or this...

5
6 DONALDSON: Any kind of contamination.

7
8 MULLEAVY: We have talked of decontamination of individuals. They do
9 decontaminate individuals in a normal aspect of their every day work.

10
11 DONALDSON: Did you discuss in the training program...

12
13 MULLEAVY: Specifically with that aspect, no.

14
15 DONALDSON: Okay. Did you discuss it in a context of how this decontamina-
16 tion would be accomplished at the washdown areas? Now the washdown areas
17 have been established for some period of time.

18
19 MULLEAVY: We spoke of it but we have never done a full scale run through.

20
21 DONALDSON: Now you say you spoke of it. I assume...

22
23 MULLEAVY: In their training sessions, we have spoke of, we would maintain
24 the washdown areas. This is what we would do but we never went through and
25 did it.

1 DONALDSON: Have you at any time in the past said to yourself or formed any
2 evaluation of the adequacy of these washdown areas and whether or not your
3 decontamination procedures could be implemented at those locations?
4

5 MULLEAVY: We had talked about the adequacy of that particular area but
6 felt that, I think as anyone we'd never have to use it. Very seriously.
7

8 DONALDSON: So, in fact, it was discussed...
9

10 MULLEAVY: What we had was good enough, we felt.
11

12 DONALDSON: Even though these areas had been designated in their work
13 procedures with specific equipment and specific types of samples to be
14 taken in the area of the, the decision was made that there would be no need
15 to equip these areas or set aside equipment that could be taken to these
16 areas to allow these procedures to be implemented.
17

18 MULLEAVY: I don't believe that we made a decision to not make this an
19 adequate area. We felt that what we had was adequate.
20

21 DONALDSON: You felt in fact then that you could take no swipes, excreta
22 samples?
23

24 MULLEAVY: We thought that if we had to we could get that material there
25 rather than have everything. We do have it inside the plant and we could
transport that out there if we had to.

1 DONALDSON: With whom were these discussions held?
2

3 MULLEAVY: Probably in the department. I don't know whether they were
4 specifically documented as authorized things. We have talked about it in
5 the department many times.
6

7 DONALDSON: In discussing the adequacy of these decontamination facilities
8 offsite, was a recommendation ever made. Let's drill it and see if it
9 works?
10

11 MULLEAVY: No.
12

13 DONALDSON: Was there in your mind any question as to whether or not the
14 facilities you had were adequate if in fact you did have to use them?
15

16 MULLEAVY: I felt we could make them adequate if we had to use them. We
17 certainly have enough help outside to do that.
18

19 DONALDSON: And I would guess that by adequate you mean that...
20

21 MULLEAVY: Capability of taking care of an individual should he have become
22 contaminated and we had to wash him out there.
23

24 DONALDSON: Now you say wash him. What about sampling materials, materials
25 for taking the dose...

1 MULLEAVY: Oh yeah. I'm sure we could have done that.

2
3 DONALDSON: Or you felt that by adequate that means that in order for it to
4 be adequate you would be able to rapidly provide an area...

5
6 MULLEAVY: Provide the material, yes...

7
8 DONALDSON: To allow those procedures to be followed.

9
10 MULLEAVY: Oh sure.

11
12 DONALDSON: So you would see no reason why...

13
14 MULLEAVY: Why should I keep it in a kit? I had it in the plant.

15
16 DONALDSON: Then you would see no reason why at any washdown area that were
17 selected why these procedures could not be followed.

18
19 MULLEAVY: I think they could. I think they were.

20
21 DONALDSON: Okay. Let's see... Okay, I think that generally ends my
22 questioning in that area. I'll let Tom finish up his two or three finals.

23
24 ESSIG: In looking at the transcript of our previous interview with you,
25 Tom, there's one area which apparently we didn't get down terribly clearly.

1 And it concerns a question that Mr. Donaldson had asked you regarding your
2 background and the point that does appear on here, you indicated by stating
3 that you began in the early 1960's on the NS Savanna project and so on and
4 proceeded to relate your work experience and we didn't get if you had any
5 formal college education or if you do you didn't say so.

6
7 MULLEAVY: Right. No, I don't have it in the health physics field. I do
8 not have a degree.

9
10 ESSIG: Okay. Do you have a degree in another related field?

11
12 MULLEAVY: No. No, I don't.

13
14 ESSIG: The ECS log, survey log, that we were referring to a few minutes
15 ago, the one I showed to you. The times that are required on there are
16 they times that the result was actually radioed in to the ECS?

17
18 MULLEAVY: Yes. That would have been the time taken from the...

19
20 ESSIG: As opposed to a time that the measurement was actually made?

21
22 MULLEAVY: Well, I would hope they'd be the same. I don't know that as a
23 fact. No, but that would be the time that they phoned us and said air
24 sample at such and such a time.

1 ESSIG: Okay. Or,...

2
3 MULLEAVY: And that's how its radioed in.

4
5 ESSIG: The dose rate at such and such a time.

6
7 MULLEAVY: Yes. Right. Now that would be taken from the radio from the
8 incoming call, that would not be his receipt time of that data.

9
10 ESSIG: Wait a minute. I thought that's what you just said...

11
12 MULLEAVY: No, not the receipt time of the data, the time we received it at
13 the ECS. The time mentioned there would be the time that the technician
14 would say air sample taken at 8:02. I could have received it at 9:00. I
15 wouldn't log that time that I received it. I would be logging...

16
17 ESSIG: Okay. I understand. The reasons for asking questions that there
18 were a couple of measurements where in order to be able to ascertain which
19 came first there was a couple of measurements over which there was confusion,
20 I think it would help knowing what that time actually was. Okay. The next
21 area I'd like to ask you about very quickly is the air samples which are
22 recorded in that log. These would be SAM 2 counts of the charcoal filters.

23
24 MULLEAVY: Yes. On the first day, the 28th, there appeared to be about 22
25 air samples that are recorded as having been measured on the SAM, collected

1 and then measured on the SAM 2. On the 29th or 30th, there are only 2 each
2 day recorded. Now, I know from other records that are, that were maintained
3 that there were other samples, in fact, collected.

4
5 ESSIG: Was the fact that they weren't recorded in the ECS log, did that
6 mean that the samples were not counted with the SAM 2? Could you shed any
7 light on that?

8
9 MULLEAVY: I can't. No. I am not sure right now where. Unless we had
10 begun to establish a counting system offsite and I'm not sure when a radia-
11 tion management corporation began.

12
13 ESSIG: They were here on the 29th.

14
15 MULLEAVY: Then that's probably where they went and we eliminated the SAM
16 2. I know that we...

17
18 ESSIG: The NRC also...

19
20 MULLEAVY: If that's the case then that's why we went to those and we
21 didn't count them so we would have sent them directly over to the NRC. I
22 know they were dropping them at the north gate and then taking them over to
23 the counting area. So that's probably why...

1 ESSIG: The NRC was also counting some samples.

2
3 MULLEAVY: Oh yeah. I guess they were here also. But I know that we did
4 not use the SAM 2 because of this Xenon.

5
6 ESSIG: Had there been an instruction given to the teams to discontinue the
7 use of the SAM 2.

8
9 MULLEAVY: Yes. There had been.

10
11 ESSIG: After a certain point.

12
13 MULLEAVY: After a certain point, but I can't remember when that was.

14
15 ESSIG: Do you think that point might have been after you had had the
16 counting
17 capability?

18
19 MULLEAVY: As soon as those counting capabilities came in we utilized those
20 because we realized that the SAM 2 was not giving us the result we wanted
21 to see.

22
23 ESSIG: Okay. Two more questions. There was a sample or, I guess, a
24 measurement made, a dose rate measurement, made at an area called access
25 control. Is that a new plant? Location, or would that be at the entrance
to the...

1 MULLEAVY: Access control?
2

3 ESSIG: That was the only location given. The reason I was asking was that
4 there was a positive iodine measurement made there on the 30th and I was
5 trying to determine whether or not it was inplant sample or an out of plant
6 sample.
7

8 MULLEAVY: Well, the access control, the only place that I can think of
9 were that access control would be, it would be at the HP control point.
10 Some people use that term "access control," meaning access control point.
11 We only had two at that particular time and that was Unit 1 and Unit 2's HP
12 control points.
13

14 ESSIG: You said that it was probably inplant sample.
15

16 MULLEAVY: It was probably an inplant reading.
17

18 ESSIG: Okay.
19

20 MULLEAVY: What date was that?
21

22 ESSIG: It was on the 30th. It was on Friday.
23

24 MULLEAVY: I would assume that's either Unit 1 or Unit 2's HP control
25 point.

1 ESSIG: There was a sample collected beginning at 0515.

2
3 MULLEAVY: It could have been at one of the control points.

4
5 ESSIG: Okay. One last question. The FSAR refers to, in Section 12.1.4.1,
6 refers to, and I'll quote the sentence, "Site monitors in the Unit 1 control
7 room have sufficient range to record an alarm activity at the site boundary."
8 That leads me to believe that there were or still are radiation measuring
9 devices of some sort on, at or near the site boundary which are recorded in
10 the control room and I'll show you the specific reference here that I was
11 reading from. It's that statement that I'm pointing to right there. Does
12 that ring a bell with you? Are you...

13
14 MULLEAVY: No, it doesn't. The only monitor that we would have out there
15 at any, would be RML 7 which is our effluent monitor and...

16
17 ESSIG: That would be a liquid effluent.

18
19 MULLEAVY: That's a liquid effluent monitor. No, we don't have installed
20 site monitors that alarm in the control room if that's on the site boundary.
21 We do not have them.

22
23 ESSIG: Had you ever had it...

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1 MULLEAVY: No.

2
3 ESSIG: Any time to your knowledge?

4
5 MULLEAVY: No. Not since I've been here.

6
7 ESSIG: Okay.

8
9 YUHAS: Tom, could you describe your facility organization in the sense of
10 who you report to and who that individual reports to?

11
12 MULLEAVY: I report to Dick Dubiel, who is the Supervisor of Health Physics
13 and Chemistry, and he in turn reports to a Dave Limroth.

14
15 YUHAS: What is Mr. Limroth's title?

16
17 MULLEAVY: I was afraid you'd ask me that. He's an Admin, Supervisor of
18 Administrative I'd forgotten exactly what that actual title is, but he is
19 an Administrative Supervisor.

20
21 YUHAS: And to whom does Mr. Limroth report?

22
23 MULLEAVY: I believe he reports directly to the Station Superintendent, who
24 is Mr. Miller.

1 YUHAS: When did that change go into effect

2
3 MULLEAVY: Oh, about six months ago.

4
5 YUHAS: Are you familiar with the Technical Specification description of
6 your facility operation?

7
8 MULLEAVY: Am I familiar with it? Somewhat, not in detail, no.

9
10 YUHAS: Are you aware that that description does not include Mr. Limroth's
11 position as a subordinate to Mr. Miller, including Dubiel and Miller?

12
13 MULLEAVY: I am not aware of that, no.

14
15 YUHAS: I'd like to go over now, some basic Health Physics issues that
16 would have been in effect prior to the incidents that occurred on March 28.
17 First, would you please describe the retraining program for Health Physics
18 technicians?

19
20 MULLEAVY: We have right now, so many hours, and I believe its 40 hours per
21 year devoted to training of an individual tech. There is no specific
22 format other than HPR, I believe, 1690 which gives us somewhat of a guideline
23 for training of an HP tech. Outside of that, there is no formal requirement
24 or formal program set up for an annual requalification of an HP rad chem
25 tech.

1 YUHAS: How is the effectiveness of this training program assessed?

2
3 MULLEAVY: There is no mechanism for a formal assessment of that training
4 program.

5
6 YUHAS: Who inputs to the training group documentation of training provided?

7
8 MULLEAVY: Pete Velez, an HP foreman.

9
10 YUHAS: Are you familiar with 24 hours of HP startup training that was
11 provided to all health physics technicians for Unit 2 startup during December
12 of 1978?

13
14 MULLEAVY: That was provided as a guideline to the techs. They were toured
15 through the unit, they were shown the radiation monitoring system, they
16 were shown chemistry sample points. That was not done in a 24 hour period
17 of time, however. That was an accumulation of time.

18
19 YUHAS: How was that time accounted for?

20
21 MULLEAVY: How is it accounted for? Pete Velez was keeping that particular
22 time. And that should be documented on a training record, I believe, I
23 hope.

1 YUHAS: The 24 hours is documented. However, he interviews with nearly all
2 technicians. They're at a loss to explain how more than 2 to 3 hours of
3 that 24 hours was actually spent in training.

4
5 MULLEAVY: Well, I can't answer what Pete did on that particular one but I
6 know that they were taken on tours, they were put in chemistry situations
7 for sampling points, and so forth, and they went into the Unit 2 to make
8 drawings for me and many of them went into the areas, looked over those,
9 made the drawings in preparation for the HP survey work.

10
11 YUHAS: What training is provided in the form of retraining for both your-
12 self, Mr. Dubiel, and Mr. Limroth?

13
14 MULLEAVY: None.

15
16 YUHAS: You have not received any formal training in the last two years?

17
18 MULLEAVY: Oh various things that I have attended such as respiratory
19 protection. I spent a 3 day program in Florida going through a Los Alamos
20 training session for respiratory protection. I have also spent one week on
21 the Hewlett Packard, that's within the 5 years that I've been here. Hewlett
22 Packard programming on the 9830.

23
24 YUHAS: But there is no formal program that involves, for instance, health
25 physics aspects of startup for the reactor, unscheduled shutdown of the

1 reactor, or various emergency procedures that might involve health physic
2 action, health physics section?

3
4 MULLEAVY: That's correct. There is none. Nothing formal.

5
6 YUHAS: Do you participate in the training of licensed operators in the
7 area of the health physics?

8
9 MULLEAVY: I do, yes.

10
11 YUHAS: Do you participate in the training of unlicensed operators, primarily
12 auxiliary operators or upgrade from B aux operator to A aux operator?

13
14 MULLEAVY: That's a requalification and we also give a advanced HP course,
15 which I have participated in, yes.

16
17 YUHAS: In the last class, the last 6 week class for auxiliary operator
18 upgrade, can you describe how the two weeks or 80 hours of health physics
19 training was accomplished? This would have been the classes that completed
20 about September of this year, of last year.

21
22 MULLEAVY: We did a modified course on that particular group as an experi-
23 mental to see if it could be accomplished and that they passed the very
24 similar exam as the 80 hour course did. That was a modified HP advanced
25 course.

1 YUHAS: How was that modified from the program described in the procedures?
2

3 MULLEAVY: We took study time from them and gave all classroom work, we did
4 spend time out in the field conducting surveys, which we did not do this
5 time, I took a lot of the time that we felt was wasted and condensed it
6 down. We took shielding calculations off the agenda because we didn't feel
7 that that was pertinent to the course, being an HP technician that they
8 would have to know shielding calculation other than inverse square and so
9 forth, utilized to reduce exposure. So this cut another day off of that
10 particular one, so we did modify it just to see whether it could be done.
11

12 YUHAS: In the test to that course, did you cover the requirements for
13 individuals entering the high radiation area?
14

15 MULLEAVY: Yes.
16

17 YUHAS: Basically, could you describe those requirements for us?
18

19 MULLEAVY: For a high radiation area greater than 100 millirem per hour,
20 whole body exposure. Those requirements are that an individual must first
21 of all have an RWP, he must by Tech Spec have, your Unit 1, have a high
22 range instrument with him, and would be wearing his personnel monitoring
23 devices.
24
25

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1 YUHAS: Can you describe what training information you provided this group
2 of auxiliary operators relative to the appropriate action to take in the
3 event that their pocket dosimeter is offscale?

4
5 MULLEAVY: They report to Health Physics. As simple as that.

6
7 YUHAS: Were these auxiliary operators instructed to do just that?

8
9 MULLEAVY: Yes, indeed. They were. We do that in all training sessions.

10
11 YUHAS: So it is your opinion that any Metropolitan Edison employee who has
12 been around here for a few years and was for instance say an A operator
13 would know for instance that if his pocket dosimeter went offscale that he
14 should come out of the area and inform Health Physics?

15
16 MULLEAVY: Yes, indeed.

17
18 YUHAS: Would feel comfortable saying that every A operator and every
19 engineer that's been through the Health Physics general education training
20 program and every Health Physics technician would know that if he's in a
21 high radiation area and his meter failed to come out?

22
23 MULLEAVY: He should, indeed, because we show them how to read meters and
24 what to do in the event they do fail.

1 YUHAS: So you feel comfortable in saying that everyone has been instructed,
2 if they enter a high radiation area or if they have given permission to
3 enter a high radiation area and that meter goes offscale or fails downscale,
4 to come out of the area?

5
6 MULLEAVY: Yes, sir.

7
8 FOSTER: This is a good point to break. We're gonna change the tape. The
9 time is 6:28 p.m.

10
11 FOSTER: This is Foster. We're continuing with the interview of Mr. Mulleavy.
12 The time is 6:30 p.m.

13
14 YUHAS: Have the Health Physics technician been instructed in limitations
15 of for instance the teletector instrument?

16
17 MULLEAVY: Yes, they should be more than familiar with it because everyone
18 of them has performed calibration on them and they use them daily.

19
20 YUHAS: Do you feel that your health physics technicians are aware of the
21 energy response characteristics of the teletector GM tubes to low energy
22 gamma radiation?

23
24 MULLEAVY: They may not know that aspect.
25

1 YUHAS: Why would you feel that they may not know that?

2
3 MULLEAVY: To specifically go under the energy response of them I don't
4 believe that that has been covered with I say I don't believe it has been
5 covered with the older technicians. The newer ones in the newer training
6 programs, yes.

7
8 YUHAS: While we're speaking of instruments, can you basically describe the
9 availability or the adequacy of your portable radiation monitoring instru-
10 ments prior to the incident?

11
12 MULLEAVY: Very, yes, I can describe it. We had come out of an outage in
13 Unit 1, we had quite a lot of instruments down. I believe that the availa-
14 bility of all types of instruments was there but our numbers were limited.
15 I can't give you numbers. But we were down in our availability of instru-
16 ments, in number.

17
18 YUHAS: I've reviewed the calibration and instrument inventory sheets and
19 as a result of my review as of the date of the instrument...date of the
20 incident I indicate that you have about four teletectors operable, twelve
21 that were either inoperable or out of calibration. My review indicates
22 that you have two...excuse me, you have five R02s operable, eight not
23 operable. E520s you had six operable and nine either inoperable or out of
24 calibration. PNR4s you had none operable, you had two either inoperable or
25 out of calibration. PIC-6s my review indicates you had four operable, 11

1 inoperable. Do you feel that its basically representative of the conditions
2 on the 28th?

3
4 MULLEAVY: Very much so, yes.

5
6 YUHAS: Is there some particular reason why more than half of your instru-
7 ments were either inoperable or not calibrated?

8
9 MULLEAVY: Well, the reason that a lot of them were inoperable was that
10 we..as I stated before...we had just come out of a refueling in Unit 1.
11 There was a heavy usage of instruments and technicians were busy and so
12 forth. Those in not in calibration could have been I suppose, had we put
13 them down in the facility to go ahead and do that but I'm not sure exactly
14 what the relationship was of calibrated as inoperable and not able to be
15 used because they were not functionally properly. But the instruments
16 department we had contacted them repeatedly to repair them for us and they
17 were going to get to it as soon as they had the manpower available but it
18 just never seemed to take place.

19
20 YUHAS: How many....

21
22 MULLEAVY: We were thinking very seriously of going to an outside vendor if
23 we got any lower in instruments and have it done outside.

1 DONALDSON: Tom, I wonder if just real briefly back to the emergency kits
2 that are stored in the north search facility. According to the inventories
3 that were conducted one just prior to the emergency and I believe it was
4 conducted on the 11th of the month indicated that one SAM 2 kit and one
5 PIC-6 were out of service.

6
7 MULLEAVY: That's correct.

8
9 DONALDSON: Was the PIC-6 rotated out and replaced as another instrument or
10 was it still out of service on the morning of the 28th?

11
12 MULLEAVY: I can't answer that. All I know is the SAM 2 was not operable
13 that morning and I knew it wasn't because we were waiting for a board to
14 come in for that and Len had that in his office awaiting that board.

15
16 DONALDSON: You don't have spares...you did not have instruments that you
17 could rotate in?

18
19 MULLEAVY: No, we did not at the time. We have, no.

20
21 YUHAS: To reiterate that whole kit was in Mr. Landry's office in the
22 morning?

23
24 MULLEAVY: Yes, it was.

25
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1 YUHAS: How many zero to one R pencils were available approximately on the
2 morning of the 28th, and where were they?

3
4 MULLEAVY: The dosimetry again as instruments we were down in their numbers
5 I can't answer how many there were that morning, I really don't know. I
6 would assume we had a hundred, a hundred fifty available between the two
7 units.

8
9 YUHAS: That morning, what sort of respiratory protective devices were
10 available on site. I'm thinking primarily in terms of the number of self-
11 contained breathing apparatus, the number of full-face masks and type of
12 cartridges that were available for use with those masks.

13
14 MULLEAVY: We primarily stocked the Scott. We had those instruments or
15 those Scott airpacks that were on the wall for emergency use. Each unit
16 has them specified HP1616. I can't remember whether its 22 or 24 per unit,
17 but approximately those particular numbers. The...each control point had
18 approximately fifty face pieces that were available with the particulate
19 canister. And that was the Scott particulate canister. There were some
20 half-face respirators in Unit 1's Control Room and Unit...plus two Scott
21 airpacks up there in Unit 2, there were four Scott airpacks in that Control
22 Room and we had two more in the HP Lab of Unit 1 Scott airpacks. I believe
23 that's about the extent of it.

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25

1 YUHAS: So you did not have any of the unapproved iodine removing canisters
2 available onsite on the morning of the 28th?

3
4 MULLEAVY: That's correct.

5
6 YUHAS: Did you have any respiratory protective devices which had been
7 outfitted with devices to aid in communication?

8
9 MULLEAVY: No.

10
11 YUHAS: Had that been discussed as a result of previous use of respiratory
12 protective devices?

13
14 MULLEAVY: Not really, we had spoken at one time I just more or less discussed
15 at one time that communications could be helpful sometime, some people
16 don't believe in them because they squeal back and forth and get in the way
17 rather than are an aid. We had not formally looked into possibly obtaining
18 that type of equipment.

19
20 YUHAS: When were these considerative questions brought about improving
21 communication with people in respirators?

22
23 MULLEAVY: Oh, there was one time when we had a fire in the...gosh, I can't
24 remember where that was...in the reactor building I believe there was some
25 point where individuals had to run into the reactor building...Unit 1...and

1 somebody said, yeah, would have been a good idea to have communications at
2 that time. And then another person, no, I've used those and you couldn't
3 talk anyway because they squeal back when you got close to somebody else.
4 And this type of thing. But as far as formally ever discussing it, looking
5 into the possibility, no, we hadn't discussed that. At least in our depart-
6 ment now I don't know about the safety department. If they had we were
7 never aware of that.

8
9 YUHAS: How do you disseminate information to the rad chem techs relative
10 to the changes in the procedures or to procedure revisions or to issuances
11 of new procedures?

12
13 MULLEAVY: Through the foreman in the lab, we do have that procedure changed
14 by Dolores, our secretary, who goes back to the lab and makes the changes
15 to the manuals and if there is a change, she will put a note up on the
16 bulletin board back there and that's how we communicate.

17
18 YUHAS: So you have no official mechanism for the individual to acknowledge
19 that they have been informed of procedural change?

20
21 MULLEAVY: No, we don't because individuals at sometimes will refuse to
22 sign a piece of paper stating that and I don't have a way of forcing them
23 to do that.
24
25

1 YUHAS: How do you appraise individuals of changes in the regulations
2 particular part 19 and part 20?

3
4 MULLEAVY: If a change does come we will do that change the same way. We
5 will put out a memo from Dick Dubiel.

6
7 YUHAS: Do you apprise technicians of changes in the technical specifi-
8 cations?

9
10 MULLEAVY: No, that we have not done.

11
12 YUHAS: Can you basically describe the procedure that deals with handling
13 or how to handle violations of health physics procedures?

14
15 MULLEAVY: We have a HP violation notice that goes...an individual a rad
16 chem tech has a capability of filling that particular one out and there is
17 a distribution list. The individual is spoken to and investigation is
18 made.

19
20 YUHAS: Can you describe about how many of those you processed this year?

21
22 MULLEAVY: Up to just recently probably two or three. Been very few.

23
24 YUHAS: Is that because there's a concerted effort for everyone to follow
25 health physics procedures or is there another reason that you've processed
so few.

1 MULLEAVY: I would assume that a rad chem tech who is in a brotherhood finds
2 it difficult to turn in "a brother" and this has been a hardship.

3
4 YUHAS: Have there been any instances where individuals have turned in
5 health physics violations sheets on representatives of management?

6
7 MULLEAVY: Yes.

8
9 YUHAS: Would you characterize the number of violations that deal with
10 management representatives versus the number of health physics violations
11 that deal with fellow members of the technician's union.

12
13 MULLEAVY: I'm not quite sure you're saying do they put in the management
14 ones more than they would their...yes indeed.

15
16 YUHAS: Do yourself, your foreman, or Mr. Dubiel also write HP violation
17 sheets?

18
19 MULLEAVY: I can. I have not this year, no. I leave that to the technicians
20 and generally if they come up and they will make...say something to me
21 about another individual I will speak to him privately. That's of the
22 bargaining unit.

23
24 YUHAS: Do your foreman, yourself, or Mr. Dubiel conduct audits of compli-
25 ance with health physics procedures and regulations?

1 MULLEAVY: We do look at it. We formally had a procedure that asked us to
2 do that. We did not...We do not have that procedure right now. We do take
3 a look at the procedures. We do not probably do it as formally as we
4 should. But there is not a formal audit made. We do that..excuse me...we
5 do have that through GPU and they come and audit us. The QC department
6 audits us so we felt that our own internal audit would be just a reiteration
7 of these. So we do have audits, yes.

8
9 YUHAS: Has there been any indication to you of reprisals by management
10 representatives as a result of being written up by representatives of the
11 health physics department?

12
13 MULLEAVY: To me a reprisal upon myself?

14
15 YUHAS: No, upon the individuals.

16
17 MULLEAVY: There has been scuttlebutt to that effect, yes.

18
19 YUHAS: Did you investigate those allegations?

20
21 MULLEAVY: Yes.

22
23 YUHAS: What were your findings?

1 MULLEAVY: They were denied.

2
3 YUHAS: They were denied meaning that the allegations then substantiated?

4
5 MULLEAVY: Yes.

6
7 YUHAS: Several individuals apparently received doses in excess of the NRC
8 quarterly limit for whole body exposure during this incident, did you
9 participate in a review of those exposures?

10
11 MULLEAVY: I am aware of them, a formal review, no.

12
13 YUHAS: Are you aware that a formal review was conducted of those exposures?

14
15 MULLEAVY: Yes.

16
17 YUHAS: Do you know who conducted that?

18
19 MULLEAVY: I believe Mr. Dubeil did.

20
21 YUHAS: On the morning of the incident, when you were in the ECS, did you
22 dispatch any individuals to conduct surveys of either the Unit 1 or of the
23 Unit 2 auxilliary buildings?

24
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1 MULLEAVY: No, I did not. I believe that was done before I arrived.

2
3 YUHAS: Did you tell any individual to go through the Unit 1 auxiliary
4 building and make sure people had come out?

5
6 MULLEAVY: No.

7
8 YUHAS: Were you aware cognizant or directed individuals to prepare to take
9 a Unit 2 letdown sample that morning?

10
11 MULLEAVY: No. . . not, the morning of the twenty-eighth?

12
13 YUHAS: That's right.

14
15 MULLEAVY: No.

16
17 YUHAS: Were you aware that a letdown sample was being recircled and being
18 taken while you were setting up the EC. . . .

19
20 MULLEAVY: I was not.

21
22 YUHAS: ECS center here that morning?

23
24 MULLEAVY: No sir.

1 YUHAS: When the dose rates began to go up in the ECS and the hand and foot
2 monitors start going off and the RM14 started going off, did someone give
3 you an indication why all those alarms were going off?
4

5 MULLEAVY: No, no. I found that out afterwards.
6

7 YUHAS: Did you make the decision to evacuate the ECS?
8

9 MULLEAVY: Yes I did.
10

11 YUHAS: What was the basis of that decision?
12

13 MULLEAVY: A radiation level going up that I did not know where it came
14 from, so we evacuated that particular area.
15

16 YUHAS: Now we're talking about the same symptoms, in other words your
17 decision to leave was based on the fact that the hand
18

19 MULLEAVY: Was based on the radiation monitor. . . .
20

21 YUHAS: Right, hand and foot counters going off. . .
22

23 MULLEAVY: That's correct.
24
25

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1 YUHAS: The RM14 there was going off. . .

2
3 MULLEAVY: Yes.

4
5 YUHAS: Did you hear remote area monitors, for instance the RM3G or RM4G
6 alarm?

7
8 MULLEAVY: Yes.

9
10 YUHAS: So you made your decision based on all these other indications...

11
12 MULLEAVY: That's correct.

13
14 YUHAS: No one told you hey, that somebody next door is recircling a sample
15 within twelve feet. . .

16
17 MULLEAVY: No.

18
19 YUHAS: Of your area.

20
21 MULLEAVY: No.

22
23 YUHAS: Were you aware that the FSAR states that the sample lines from Unit
24 2 will be shielded or in shielded pipe chases?

25
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1 MULLEAVY: Yes.

2
3 YUHAS: Is that the way the plant's built?

4
5 MULLEAVY: In Unit 2 side, yes indeed. As they come through the model room
6 they are shielded, when they approach over in Unit 2 side, they are not, . .
7 . or Unit 1 side, excuse me, they are not.

8
9 YUHAS: So then you understand the FSR to mean only the point of which the
10 sample lines are in Unit 2?

11
12 MULLEAVY: That's the way it was designed.

13
14 YUHAS: At what point did you release, or were you released responsibilities
15 in ECS?

16
17 MULLEAVY: At what point?

18
19 YUHAS: What point in time did you no longer consider your duties primarily
20 directing offsite and out of plant onsite survey teams, what day, what
21 time?

22
23 MULLEAVY: Oh, . . . that's a toughy. . . we went on shift, I believe that
24 was on the thirtith. . . sometime.

1 YUHAS: So you were ECS for the full day which was probably more than
2 fourteen hours . . .

3
4 MULLEAVY: Yes, I was ECS. . .

5
6 YUHAS: On Wednesday.

7
8 MULLEAVY: Wednesday, I finally probably left there early in the morning
9 the next day, the twenty-ninth.

10
11 YUHAS: You slept a few hours, you come back in and you still assumed ECS
12 duties?

13
14 MULLEAVY: Yes, I, I went right to Unit 1.

15
16 YUHAS: Ok.

17
18 MULLEAVY: In the control room.

19
20 YUHAS: And what time did you leave Thursday night, or was it Friday morning
21 when you left?

22
23 MULLEAVY: I can't remember. I was a long time, but I can't remember. I
24 know that we stayed a good deal of time, I came in that afternoon I guess
25 or later on that morning and stayed until that evening. . . and I believe

1 I went home and came back again at . . . I know somewhere around there we
2 went into the twelve hour shifts, seven to seven, and I think that was on
3 the thirtieth, I was on the evening shift, I was on at seven at night till
4 seven in the morning.

5
6 YUHAS: That would mean you came on Friday the thirtieth at seven at night...

7
8 MULLEAVY: I think that was it.

9
10 YUHAS: And worked till seven in the morning.

11
12 YUHAS: I think that's probably consistent with what I

13
14 MULLEAVY: Yes something like...

15
16 YUHAS: The night of the twenty-ninth, you're the ECS director in Unit 1,
17 did George Kunder call you and tell you that Houser had received an exposure
18 in excess of three rem and that Houser was highly contaminated?

19
20 MULLEAVY: No. I don't recall that, the only time I knew about Houser was
21 later on when Ed Houser came to me and told me about his contamination
22 problem and that he was concerned and I then went to see him, I can't
23 remember what day this was, but I know I was then working the seven to
24 seven in Unit 2 control room or lab after that. I didn't know of his parti-
25 cular condition until that particular time, I got upset because the guy

1 seemed to be worried and I didn't like that because he was a good guy and,
2 so then I went and I got a hold of Dr. Brenamin and wanted Dr. Brenamin to
3 talk to him to explain the situation to him?
4

5 DONALDSON: Who is Dr. Brenamin?
6

7 MULLEAVY: Dr. Brenamin is a doctor with Radiation Management Corporation.
8

9 YUHAS: Are you sure that's not Dr. Linamin, spelled with an "L"?
10

11 MULLEAVY: Linamin, you're right, excuse me. You're correct, I'm sorry,
12 and it is Dr. Linamin, and . . . talked with him, I talked with Syd Porter
13 first and Syd did call him and then we made arrangements for him to meet
14 with the doctor and which seemed to help.
15

16 YUHAS: Are your health physics foremen instructed to report to you abnormal
17 levels of contamination or excessive exposures?
18

19 MULLEAVY: Are they instructed to do that, no I wouldn't say they have
20 specific instructions in which to do that but we have always communicated
21 that way.
22

23 YUHAS: Did Valez inform you of Houser's contamination or of his own?
24
25

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1 MULLEAVY: No, no I'm sorry he didn't, nor did anyone of the foremen of
2 which I understand afterwards that they all knew. See I was over in Unit 1
3 now, unrelated to the rest of the group.

4
5 YUHAS: Did a Mr. Pat Shannon come up to the Unit 1 ECS on the night of the
6 twenty-eighth after receiving excessive exposures and getting contaminated
7 and decontaminated himself and came up to the ECS center for a while until somebody
8 read his dosimeter out, called or dosimetry out and called back in, do you
9 remember that?

10
11 MULLEAVY: Pat Shannon. . . the name sounds familiar. . .

12
13 YUHAS: He's an auxiliary operator.

14
15 MULLEAVY: It seems to me I recall some incident like that, I'm not sure if
16 it was Pat Shannon or not but I do recall that, yes.

17
18 YUHAS: Did he speak to you of his contamination?

19
20 MULLEAVY: No. I knew of an exposure. I think it was Pat, yeah.

21
22 YUHAS: Can you basically describe how you would assess a skin dose say
23 resulting from 40 mrad/hr measured with an E520 closed window contact with
24 the skin.

1 MULLEAVY: How I would assess that particular that particular dose. . .

2
3 YUHAS: How would you assess the dose, the skin dose from that sort of an
4 exposure?

5
6 MULLEAVY: How I would do it is to called Radiation Management Corporation
7 and ask for their particular advice, that's how I would handle that.

8
9 YUHAS: After . . .

10
11 MULLEAVY: I have that mechanism to call them.

12
13 YUHAS: After you asked Dr. Roger Leniman to talk to Mr. Houser make himself
14 familiar with that case, did you get any feedback whatsoever that Mr.
15 Leniman or Dr. Leniman assessed the skin dose to Mr. Houser?

16
17 MULLEAVY: No, no that I didn't get back that he, I asked Ed afterwards,
18 you know, how, how he was after he'd spoken with the doctor and so forth
19 and he seemed to be a little calmer, which I was hoping for and but as far
20 as the actual condition and so forth of what the doctor felt, I didn't get
21 any feedback after that.

22
23 YUHAS: Did Valez make you aware that he had also had substantial levels of
24 contamination?

1 MULLEAVY: No.

2
3 YUHAS: The retraining program for health physics foremen, does it involve
4 recognition of the dose commitment resulting from residual surface contamin-
5 ation on personels body, a persons body?

6
7 MULLEAVY: It does, it does not.

8
9 YUHAS: Could you make a, a subjected value judgement as to the theoretical
10 qualifications of your health physics foremen?

11
12 MULLEAVY: Theoretical qualifications of them? I would say judging from
13 other foremen that I have seen that their theoritical capabilities are
14 average in the field for the job that they have to perform, that is to
15 supervise technicians. We have assigned to the department the expertise to
16 make dose commitments, make dose evaluations and soforth, if not we have
17 the expertise behind us as far as consultants who we do have twenty-four
18 hour coverage on and that we can get a hold of them.

19
20 YUHAS: Who specifically by name are you referring to when you say within
21 your department you have the expertise to evaluate those commitments?

22
23 MULLEAVY: Mr. Len Landry and Richard Dubeil.

1 YUHAS: What is the mechanism of informing these two individuals of unusual
2 exposures or contamination or updates so they can use their expertise?

3
4 MULLEAVY: There is a procedure in our particular books on notification the
5 Radiation Protection Supervisor, or the Supervisor, Radiation Protection
6 Chemistry at different levels of contamination and that does exist we have
7 all read it, they were in on the review of the procedure everyone should be
8 aware of that mechanism.

9
10 YUHAS: In the first three days of this fiasco, it appeared that from my
11 preliminary review that many of the health physics procedures were not
12 followed, some for a good cause. In the course of training, have you
13 discussed with your members of health physics or the rad protection depart-
14 ment, what procedures must be followed even in emergencies?

15
16 MULLEAVY: No. No, we have never selected. We said if we have this we
17 will follow this, this and this. No.

18
19 YUHAS: In the course of your emergency plant training in your general
20 health physics training, have you discussed how to deal with inplant life
21 threatening exposures?

22
23 MULLEAVY: How to deal with them?
24
25

1 YUHAS: The health physics aspects of coping with dose rates that peg
2 teletectors?

3
4 MULLEAVY: We have spoken to the groups on what an individual could have as
5 far as life threatening or he was gonna save a life, he could take this, if
6 an individual was going to save a piece of equipment, we could allow this
7 much on a voluntary basis and so forth. We've done that on medical emergen-
8 cies. But what to do in the event that a teletectors pegs? We'd told them
9 what to do in the event anything pegs. And they know time distance and
10 shielding, and they know what and how to get out of areas, and I would hope
11 that they would know what to do in the event that that happened. The only
12 time that becomes difficult is if you are in an environment where wherever
13 you would move you would find that. . . situation, and the biggest thing
14 would be not to panic, but you'd have to move away from it.

15
16 YUHAS: You alleged or you just stated that we told them what to do for the
17 protection of vital equipment. Who decides, who did you tell them decides
18 when they're protecting vital equipment?

19
20 MULLEAVY: The shift supervisor would be the one to discuss this with if
21 equipment has to be taken care of; say that we're not in an emergency, but
22 something had to be saved, that would be, have to come from the shift
23 supervisor in the event that Dick or myself were not there, you then in
24 turn would get that from the shift supervisor.

1 YUHAS: In the emergency organization that was in place on the twenty-
2 eighth, the twenty-ninth and thirtieth, there were many operations which
3 required individuals to enter very high dose rate areas, ok, who specifically
4 evaluated where those entries were necessary for the protection of vital
5 equipment?

6
7 MULLEAVY: I would be high pressed to say whether they were totally evaluated
8 or not, I think it was due to what is going on, what do we have to do, all
9 of these situations, if there could be an individual responsible or able to
10 take care of that ALARA program that would be terrific, I don't think under
11 those circumstances it could be done.

12
13 YUHAS: In your emergency training has it been in the past that any time an
14 entry is made that would result in a single large acute exposure that
15 either Mr. Dubiel or yourself is a party to that decision?

16
17 MULLEAVY: Yes sir.

18
19 YUHAS: Did that occur in the sense, were you aware of entries, . . .

20
21 MULLEAVY: No.

22
23 YUHAS: In the auxiliary buildings?

1 MULLEAVY: No.

2
3 YUHAS: Can you describe the allocations for forming manpower during the
4 first couple days, who made the decisions to put them where?

5
6 MULLEAVY: That. . . I can't answer that, uh, the very first day when we
7 set up the ECS I did that, allocation of those people. As it progressed
8 later on the decision to put Pete Velez and I see Bob McCann out at the,
9 out at the washdown area, I did not make that decision to put those indivi-
10 duals out there I don't believe, unless the last time I remember Bob McCann
11 was under my direction staying at the ECS keeping individuals out. To go
12 to the washdown area, I know that Pete Velez went to the North Gate under
13 my direction to get the readings there, now he may have gone to the washdown
14 area because he saw a need there.

15
16 YUHAS: Was one foreman assigned a specific wall of responsibility for
17 coordinating entries in terms of these high dose rate areas?

18
19 MULLEAVY: No.

20
21 YUHAS: During a drill has one foreman been assigned responsibility for
22 insuring control over entry in these high rate areas?

23
24 MULLEAVY: No sir.

1 DONALDSON: Had anyone ever been assigned that responsibility?

2
3 MULLEAVY: No, no.

4
5 DONALDSON: Do you feel that, let me back up, did you ever run a drill
6 using the alternate ECS?

7
8 MULLEAVY: Yes, yes, which helped because that gave us a path and a mechanism
9 to go. We did that last year.

10
11 DONALDSON: Well how were entries into the auxiliary building controlled
12 during that drill? Normally you would be at the access point.

13
14 MULLEAVY: That's correct.

15
16 DONALDSON: At the ECS you would have visual control over it but when you
17 pull out of that area in a drill how did you control . . .

18
19 MULLEAVY: We came back to the control tower in Unit 1 and stopped access
20 there outside of the ECS with the door closed, that's exactly what we did
21 this time.

22
23 DONALDSON: Essentially what your saying is that because the organization
24 was implemented the way the plan had it set out during the drill then
25 people would not even enter there unless the right person told them to.

1 MULLEAVY: That's correct. And everybody had been accounted for there and
2 we just took the whole group out and it was foolish at the time we did it
3 last year I thought because it made everybody run from one unit to the
4 other but most helpful when we had to really do it.

5
6 YUHAS: Whats the general criteria for an individual wearing an extremity
7 monitor.

8
9 MULLEAVY: When an individual there is a rule of thumb somebody came up
10 with a long time ago if an individual is going to get ten times his whole
11 body exposure we would put an extremity on however; if an individual is
12 going to be handling something that is going to be of a consequence such as
13 a seal injection filter or something of this nature we would generally put
14 a wrist badge on the individual.

15
16 YUHAS: How did you evaluate the wrist badge in terms of dose to the fingers
17 when someone is picking something up.

18
19 MULLEAVY: That is not evaluated. We do not have ring badges here. We did
20 at one time but we felt that the wrist badge was close enough and I would
21 have to be almost convinced that it isn't. I'm not sure whether that isn't
22 a good way of evaluating.

23
24 YUHAS: Are you aware that several individuals at at least four different
25 points during the incident handled the reactor coolant samples directly.

1 MULLEAVY: Yes.

2
3 YUHAS: You are sir aware that none of these individuals had wrist badge or
4 any kind of extremity monitoring.

5
6 MULLEAVY: Are you sure they didn't have extremities? I understood they
7 did.

8
9 YUHAS: Please enlighten us if you think there was someone

10
11 MULLEAVY: I'm speaking of Mr. Houser.

12
13 DONALDSON: I believe the only kind of extremity monitoring they had was a
14 dosimeter taken taped to their forearm and I believe Mr. Velez had one and
15 it dropped and went off scale. I don't know whether Mr. Houser did or not.

16
17 YUHAS: Not that I know of.

18
19 MULLEAVY: I apologize, I stand corrected. I understood that he did.

20
21 YUHAS: In the part of the HP training is that covered on an annual basis.
22 When to wear extremity monitoring. How to evaluate.

23
24 MULLEAVY: To auxiliary operators and this type of thing.
25

1 YUHAS: To anyone that has an HP on their badge.

2
3 MULLEAVY: To our own people. No it probably is not. We mentioned the
4 fact that we do use them, we have them but the HP department will tell them
5 when to use them. it will be on the radiation work permit.

6
7 YUHAS: Are you familiar with RMA 12?

8
9 MULLEAVY: Yes.

10
11 YUHAS: How long is RMA 12 been out of operation?

12
13 MULLEAVY: Its been in and out of operation I would say almost for the last
14 year.

15
16 YUHAS: Do you know whether or not it was in operation the immediately
17 before the incident.

18
19 MULLEAVY: I do not specifically know. I know that it had been a concern
20 of mine during the last couple of weeks of the outage. A motor had been
21 placed in it. The mechanical maintenance department said that it was operable.
22 We turned it on it was making a very bad noise they said they had done
23 everything they could. This got to be a game we were playing and we did
24 turn it on, now whether it was on that particular day I don't know that.

1 YUHAS: Do you generally or do you always follow the malfunction report
2 procedure as far as when something breaks and pulling out the paper work
3 and sending it in to be logged in the control room and etc.

4
5 MULLEAVY: We fill out a work request to have it repaired yes.

6
7 YUHAS: The records indicate that that instrument has been out of commis-
8 sion since 4/8/78.

9
10 MULLEAVY: Okay

11
12 YUHAS: Is there a reason why you should doubt that documentation.

13
14 MULLEAVY: No, none at all. I said for approximately a year and thats
15 about it.

16
17 YUHAS: When you were at the ECS in Unit 1 and the air activity start going
18 up, did you personally look at the control tower ventilation monitor.

19
20 MULLEAVY: I did not. No

21
22 YUHAS: Did you direct that one of your technicians.

23
24 MULLEAVY: No now wait a minute. When I was in the ECS?

1 YUHAS: We're talking when your in the Unit 1 control room as an alternate
2 ECS and the air activities were going up you were talking about putting
3 people on masks in Unit 1, okay, inthe Control Room, did you go over and
4 look at the control room ventilation monitor.

5
6 MULLEAVY: I did not because I had my own air sampler running and we were
7 doing our own air samples.

8
9 YUHAS: Can you describe how you were counting that air sample?

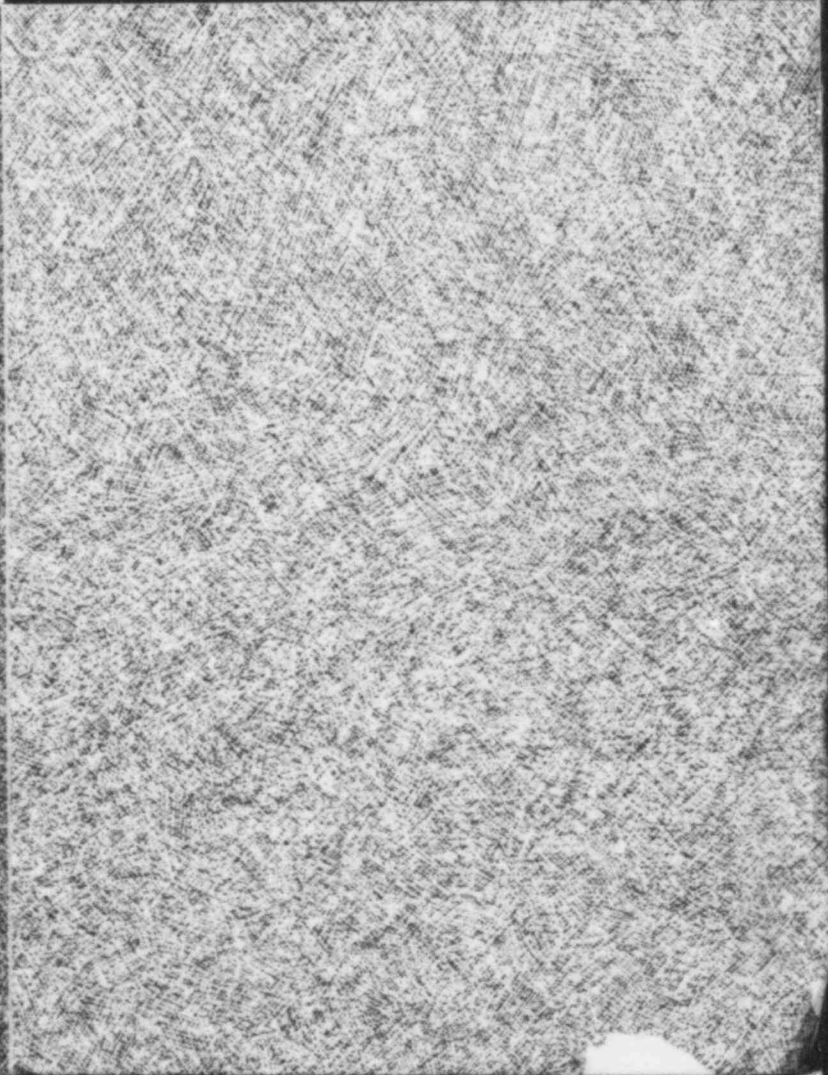
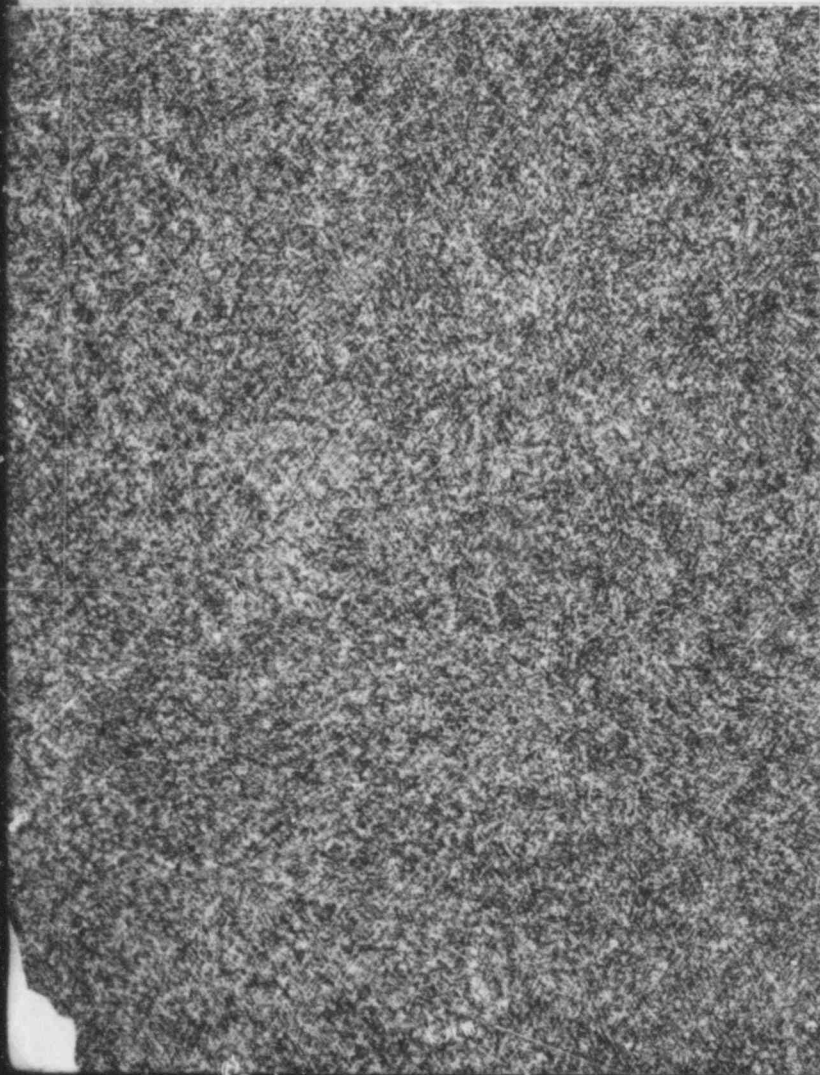
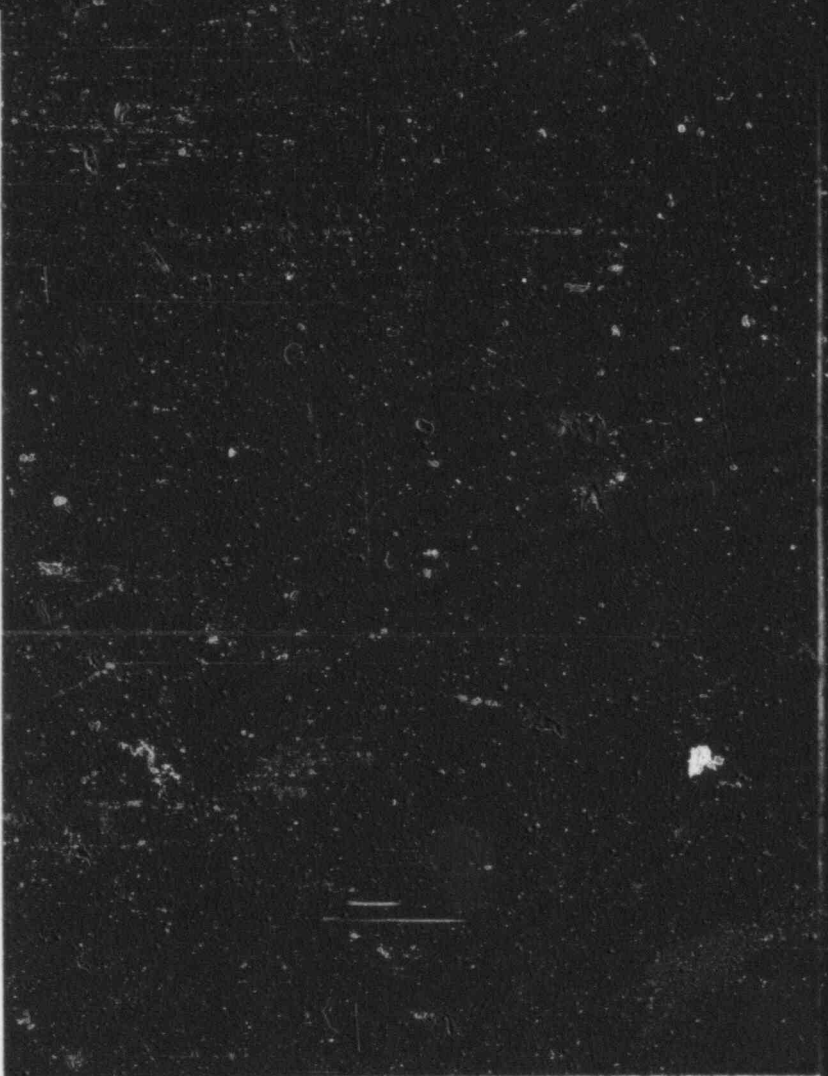
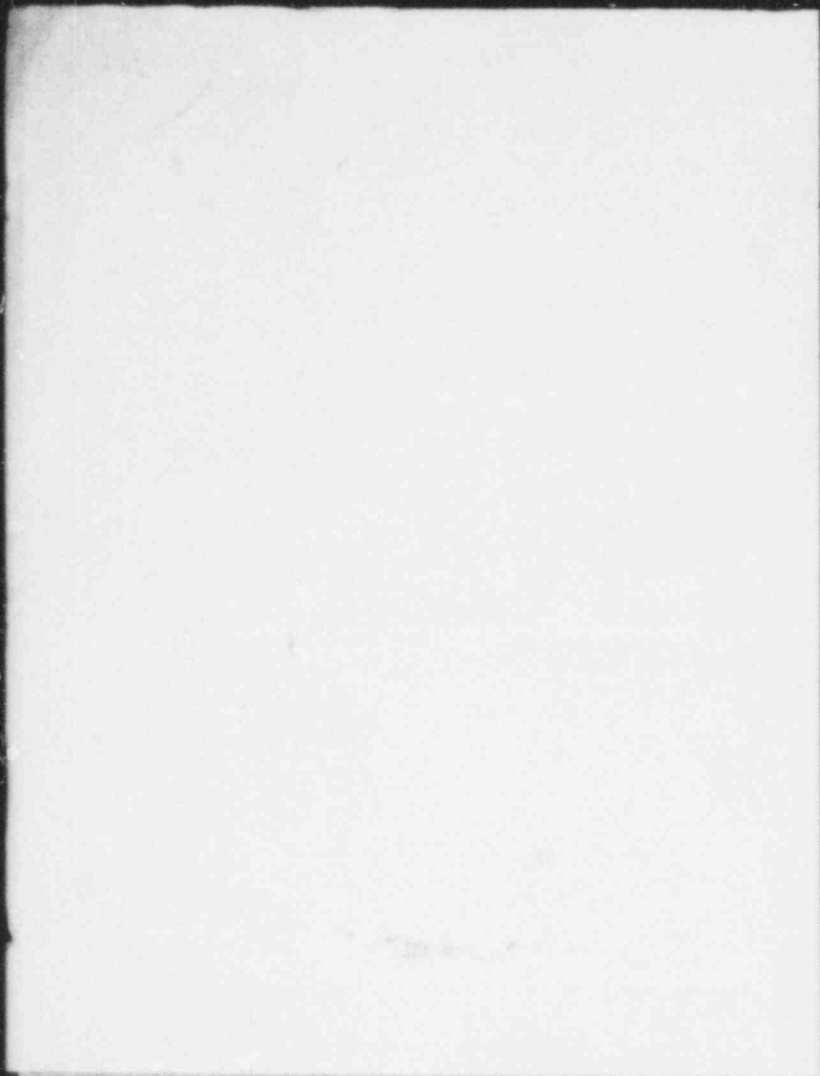
10
11 MULLEAVY: We were counting them on a SAM2 back in the, no we weren't. We
12 were counting them on a Ludlum I believe then a SAM2 and we were seeing
13 particulate activity going up.

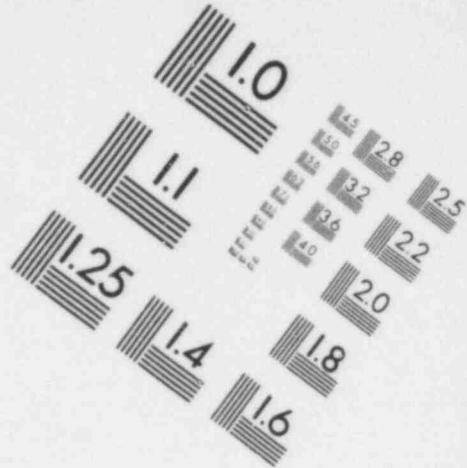
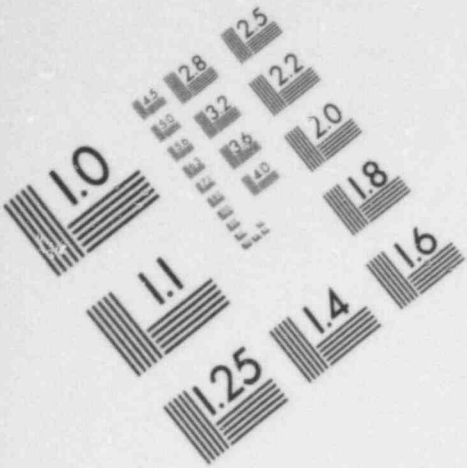
14
15 YUHAS: But did you tell either your techs or your foreman to go over and
16 look at the installed instrumentation for the control room air.

17
18 MULLEAVY: No sir, I did not.

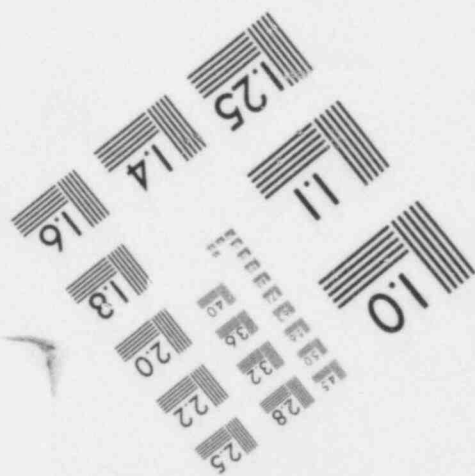
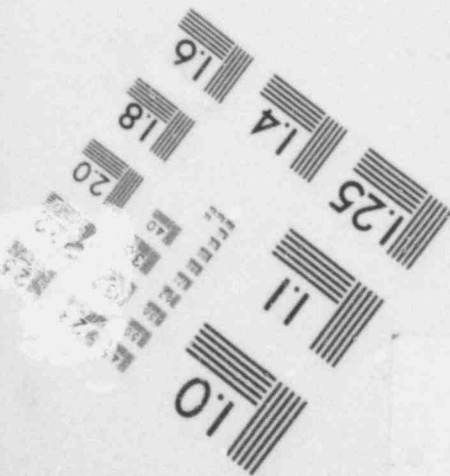
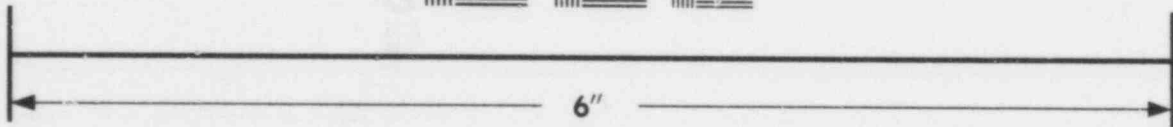
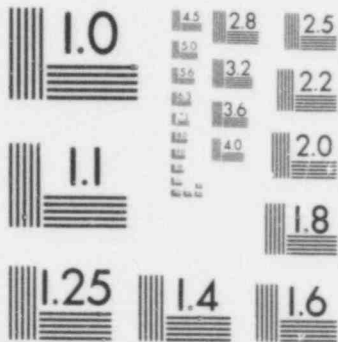
19
20 DONALDSON: Let me back up here for a second. I just. You say you were
21 counting those on a Sam-2 in the control room.

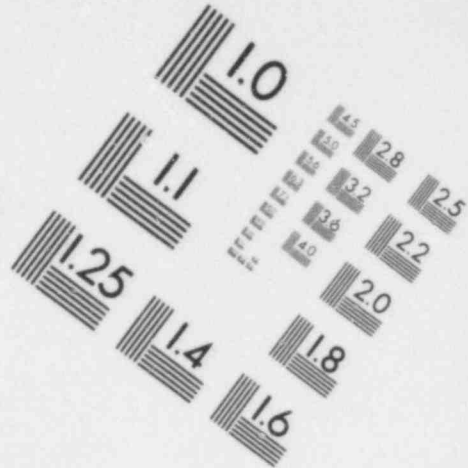
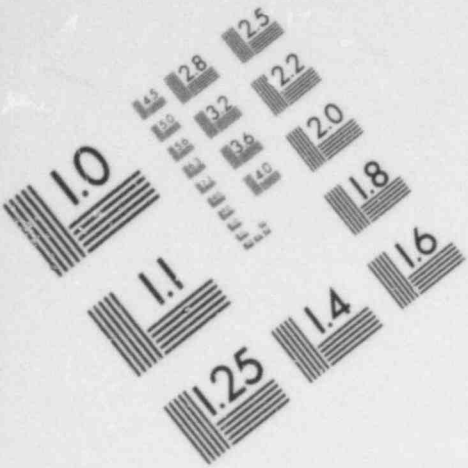
22
23 MULLEAVY: Now I may be wrong about that.



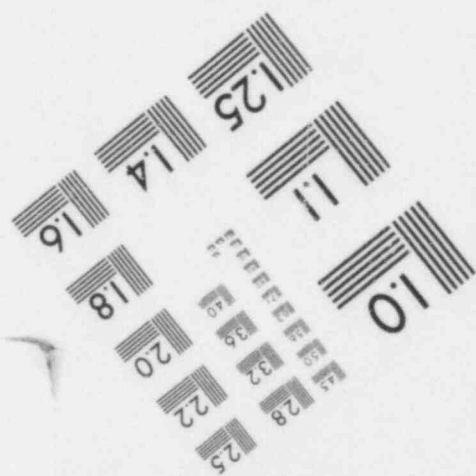
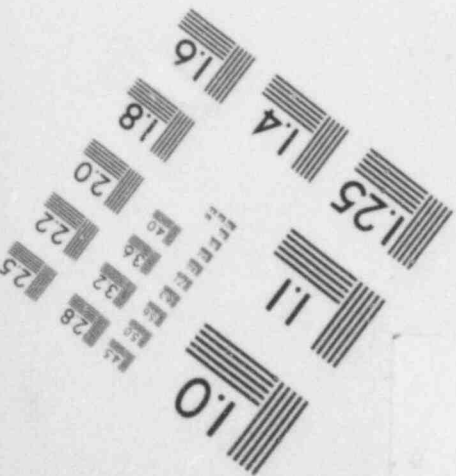
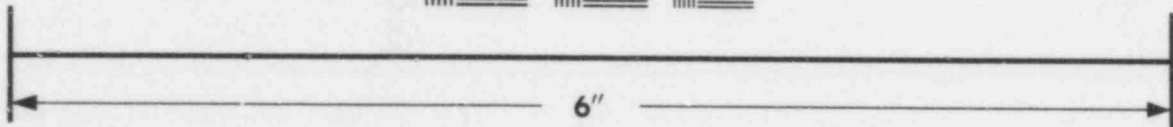
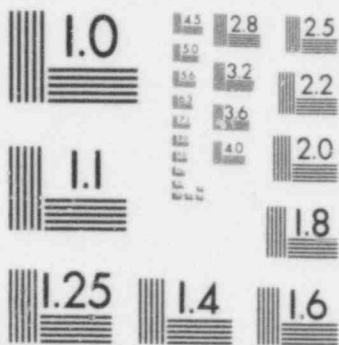


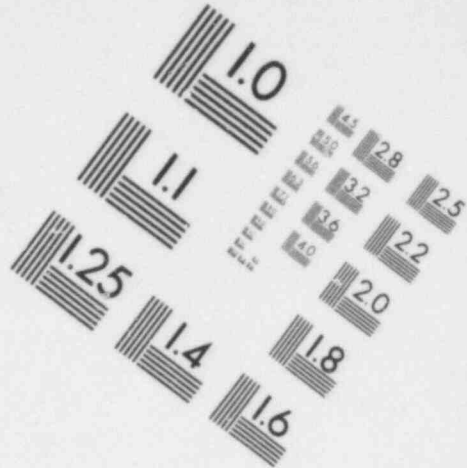
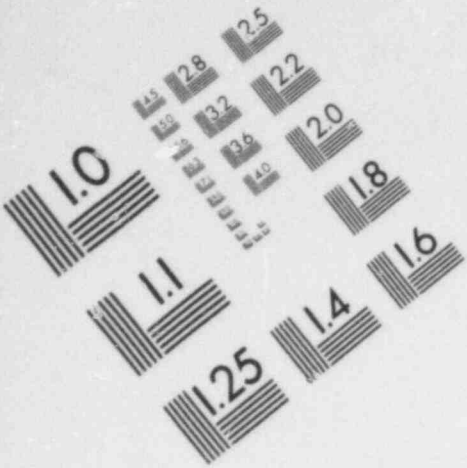
**IMAGE EVALUATION
TEST TARGET (MT-3)**



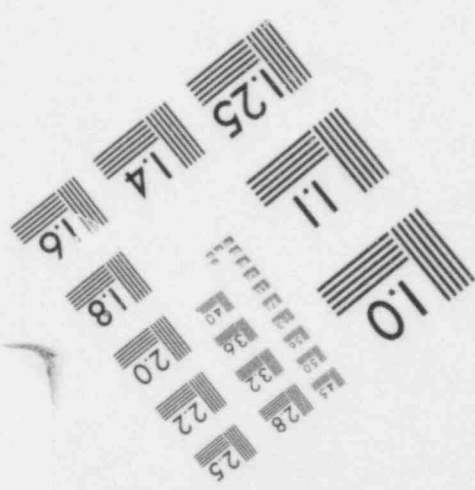
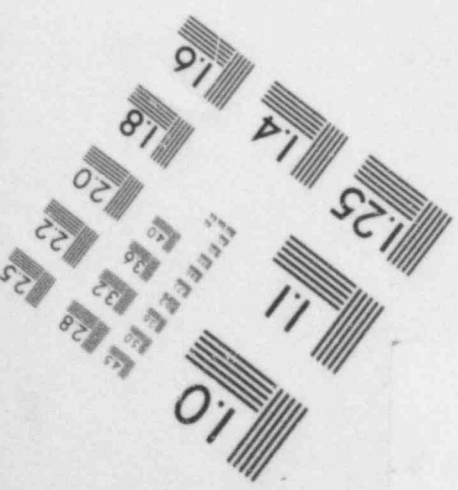
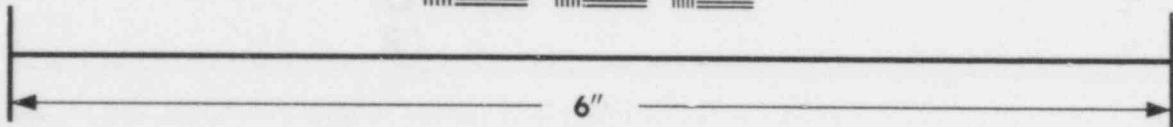
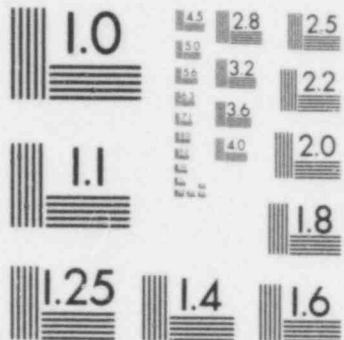


**IMAGE EVALUATION
TEST TARGET (MT-3)**





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



1 DONALDSON: Well I was just wondering we only had four and the teams were
2 out with three of them and one of those broke down.

3
4 MULLEAVY: I know, I guess I think it was a Ludlum and we doing only parti-
5 culate.

6
7 DONALDSON: Okay. Go ahead.

8
9 MULLEAVY: Thank you very much.

10
11 YUHAS: Can you describe what channels or what information can be gained
12 from the control room installed air monitor.

13
14 MULLEAVY: We would be able to see the activity in the building in the
15 room.

16
17 YUHAS: Can you be more specific as to the type of activity you could see.

18
19 MULLEAVY: Particulate gas and iodine.

20
21 YUHAS: Okay. You said you were counting samples with Ludlum. Did someone
22 determine the halflife of that.

23
24 MULLEAVY: Yes.

25
896 001

1 YUHAS: What did they find.

2
3 MULLEAVY: We found about an 18/19 minute halflife with our particular
4 sample and we decayed that many times and took many samples before we
5 decided to go out of respirators. I did also contact Unit 2. They were
6 experiencing the same difficulty and they went out of respirators before we
7 did. I wasn't quite sure. So I wanted some more decay time to determine
8 that we did have a short lived halflife.

9
10 YUHAS: Why didn't someone look at the iodine channel?

11
12 MULLEAVY: I can't answer that. I don't know. I really don't know.

13
14 YUHAS: Do you know if it was in the alarm or the alert?

15
16 MULLEAVY: I do not.

17
18 YUHAS: Are you aware of an individual on the 29th who got 3.1 rem of
19 exposure but was revised downward unbenounced to a fade factor. Do you know
20 something about that?

21
22 MULLEAVY: If thats the one we have already discussed this and I believe
23 that was up in the Unit 2 contro! room.

24
25
896 002

1 YUHAS: We aren't talking about Tolinko.

2
3 MULLEAVY: We are not talking about Tolinko. All right fine then I don't
4 know about that one.

5
6 YUHAS: Our records indicate that some person, unbenounced to us, apparently
7 received a 3.1 rem on the initial TLD readout and that an evaluation was
8 performed by the licensee unbenounced what part of the licensee did this
9 and we have lost track.

10
11 MULLEAVY: No sir, I don't. What date was that?

12
13 YUHAS: 29th.

14
15 MULLEAVY: 29th. TLDs were being done over at the Observation Center at
16 that particular point and I don't know who was in charge at that date.

17
18 YUHAS: Can you describe to me what breathing zone air samples means?

19
20 MULLEAVY: The breathing zone is an area in which an individual thats his
21 breath air or breathing zone area. The air sampling device is a lapel air
22 sampler which fits on the individual. He carries it with him wherever he
23 walks around. In an area whether he needs a respirator or not is not
24 necessary I guess its the area in which the individual is breathing and its
25 detected by a lapel air sampler.

1 YUHAS: Have there been many entries into the Unit 2 containment at power
2 in which operations personnel justified the entry on the basis of looking
3 for leaks?

4
5 MULLEAVY: Yes.

6
7 YUHAS: Can you describe what sort of air sample was performed for that
8 type of entry and what sort of respiratory protective devices, if any,
9 those individuals might have worn.

10
11 MULLEAVY: Well, air samples are generally taken every evening off of the
12 monitor that monitors the air in the reactor building. We have an entry
13 form that is made out before the individuals go in if it indicates that an
14 individual must wear a respirator it could be the particulate respirator or
15 generally here they wear the Scott. We wear Scott respirators for that
16 evolution whether it was or was not indicate I don't know what instance we
17 are talking about but thats what we would do.

18
19 YUHAS: For Unit 2 containment then you are saying you would draw samples
20 from HPR 227.

21
22 MULLEAVY: Thats correct.

23
24 YUHAS: Where is the suction point for that sample?

1 MULLEAVY: Generally in the dome.

2
3 YUHAS: That suction point is a three quarter inch stainless steel line
4 located about two thirds up the top of the dome. Is that correct.

5
6 MULLEAVY: Thats correct.

7
8 YUHAS: Can you estimate to me the number of feet of vertical piping followed
9 by bends before it ever gets to the monitor in the auxiliary building.

10
11 MULLEAVY: 200 feet perhaps.

12
13 YUHAS: 200 feet.

14
15 MULLEAVY: I guess.

16
17 YUHAS: Could you now describe for me how that sample would bear any corro-
18 lation to an operator going in in search of and finding a leak?

19
20 MULLEAVY: That's looking at reactor building air, I suppose that I'm, I
21 feel confident that that does tell us what the reactor building is holding
22 for air activity.

23
24 YUHAS: So you feel that that sampler does give you an indication of what
25 the workers breathing zone is as for instance if he was down in the basement
level of the, of the containment standing over the sump?

1 MULLEAVY: Going along my other judgement, yes I do.

2
3 YUHAS: I don't think I have any other questions at this time.

4
5 ESSIG: I had one, one other one, you referred to the Ludlum, could you,
6 could you elaborate a little bit? What type of Ludlum . . .

7
8 MULLEAVY: The Ludlum is, is a portable scaler beta/gamma unit, that we
9 utilize the HP-210 pancake probe with it and it's a digital scaler.

10
11 ESSIG: Were these utilized mostly in plant during the, during the period
12 of time that we're talking about?

13
14 MULLEAVY: Yes. That's our counting device for particulates, particulate
15 samples.

16
17 FOSTER: Ok, thank you Tom, we're gonna conclude this interview at 7:11 p.m.

18
19
20 .896 006
21
22
23
24
25