

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of:
IE TMI INVESTIGATION INTERVIEW
of Richard W. Dubiel
Supervisor
Radiation Protection, Nuclear

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

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NRC PERSONNEL:
Bob Marsh
Thomas Essig
Dale Donaldson

Bob Marsh

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1 MARSH: The time is 5:17, we will be resuming the interview of Mr. Richard
2 W. Dubiel.

3
4 ESSIG: I just want to come back to a couple of points just to clarify
5 something as I was taking a couple of notes as I was going. Dick, as you
6 said earlier, let's see, at about, oh, 6:40 the winds, you said, were like
7 260 to 270 degrees and doesn't your wind direction indicator... that indicates
8 the direction from which the wind is coming.

9
10 DUBIEL: Yes, that's correct. I had...

11
12 ESSIG: What you mean to say is, it was from 90?

13
14 DUBIEL: It was from 90, yes that's correct.

15
16 ESSIG: The wind was blowing toward..

17
18 DUBIEL: Yes, that's correct.

19
20 ESSIG: Okay, I just wanted to clarify that. And, then secondly, do
21 you,... I didn't get the approximate time that the, that you said the
22 technician's name, Ed Higgenrider, you think it was him, was the one who
23 went over to Goldsboro to start up the survey over there the last time I
24 had was about, oh, between 0720 and 0725 you were surveying around the
25 island at GE-9 and GE-8. Some time after that that I would like to if you
recall about when that sequence was.

1 DUBIEL: I don't recall specific time, I'm estimating that it was somewhere
2 in the 7:35, 7:40 range, that he was in the helicopter and it was moving
3 off site.

4
5 ESSIG: Okay.

6
7 DUBIEL: Okay, at some point, and I'm having a real difficult time, I've
8 never been able to really pinpoint the time, the State did call back, I
9 believe that George Kunder received that call and I recall at one point,
10 maybe two or three minutes after George had been talking to him, George
11 called me and said that he had Tom Gerusky on the phone and would I speak
12 with him and give him the information that I had at that point. I remember
13 talking to Tom and indicating that we had done monitor readings that were
14 in general emergency state, I knew that we greater than 8 R, I don't recall
15 exactly how high we were. I recall giving Tom the initial on-site readings
16 and indicating that we had people moving off-site to do monitoring off-
17 site. We then established, and I may,... there's a gap there, I don't
18 recall if we broke communications at that time and then reestablished them
19 shortly after or whether at that time we established direct communi-
20 cations. I believe the first call from the State, we did break the communi-
21 cation and at some point, some 15, 20 minutes later, I recall having the
22 State again on the phone in the shift supervisor's office, again talking to
23 Tom Gerusky and when I concluded my conversation, we agreed to leave the
24 line open and that I would leave the phone down right next to some of our
25 other phone talkers. That if he should need to raise us, he would just

1 holler and someone would hear it and he I believe had it on an intercom, or
2 box in his office.

3
4 MARSH: Excuse me, do you know his location, was he talking from his
5 office, or from the command center?

6
7 DUBIEL: I believe he was talking to us from his office. I don't know that
8 to be a fact, but that's my opinion.

9
10 MARSH: Have you spoken with him since?

11
12 DUBIEL: I've spoken with him, but I've never asked him exactly where they
13 were talking to us from. At that point, my major concern was to start
14 getting as much information as possible from on-site and off-site readings.
15 The on-site team started pulling air samples, charcoal filters, continuing
16 to do dose rate surveys at areas along the fence. I did direct them to try
17 to use the plume to line themselves up downwind and to stay in constant
18 communication and continue to feed back any indications that they had. The
19 off-site team, we started receiving information somewhere around 8:00 or
20 slightly before 8:00, I remember thoughts of the crew, the off-site team
21 actually out running the plume and being over there and back, expecting to
22 see anything. We began directing them to a few sampling points. At this
23 point, I really do not have a real good handle on when things were happening.
24 I think by reviewing the off-site team records and you'd be better able to
25 pinpoint times. At some point in time, between 8 and 9 o'clock is a guess

1 of mine, they did see a positive reading on a SAM-2, or let me clarify
2 that, a charcoal cartridge that had been used to sample air and then counted
3 on a SAM-2, which is a dual channel analyzer, using a sodium iodide crystal,
4 they received it or got a positive indication indicating concentrations of
5 approximately 10 to the minus 8th microcuries per cc. I immediately used
6 the open line to the State and talked to Margaret Reiley. I had very
7 little thought that that was a real number. We were not seeing iodine on
8 site, we were not seeing dose rates neither on site nor in Goldsboro that
9 would back up a number of a concentration of that level. Also, at about
10 that time, almost coincident with that, the value being relayed to us, we
11 noticed the wind shift. I think that's my reasoning for tying it to about
12 9:00, I think for a couple of days we saw the wind shift at about 9 a.m.
13 So my immediate concern was that we ought to verify that number and that
14 any radioiodine that might be there would now be blowing back across the
15 river and almost blowing right back on top of us which, from a public
16 standpoint, was a big benefit, a big plus.

17
18 MARSH: Dick, at this point, what was the status of HPR 219?

19
20 DUBIEL: I don't recall the exact level but it was considerable higher than
21 the 8 R/hour possibly as high as a thousand R/hour.

22
23 DONALDSON: This is not HPR-214, HPR-219.

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1 DUBIEL: Oh, excuse me, I'm sorry. HPR-219 the... HPR 219 I'm really
2 unable to give you a specific answer on that. I do recall that at a point
3 somewhere on that morning the levels were up to full scale on gas and close
4 to full scale on iodines and I don't recall if they were up at that time.
5 I feel that they were, but I don't remember.

6
7 DONALDSON: During this period, from the time the general emergency was
8 declared until 0900, did anyone use the readings on HPR-219 to project any
9 off-site whole body or thyroid doses?

10
11 DUBIEL: Yes, the projections were made by the people in the Unit 2 control
12 room, they... well,... for off-site doses based on the 219 monitor and the
13 dome monitor in the reactor building, HPR 214, the dome monitor itself was
14 the overwhelming source for both gases and iodine, based on the ability to
15 project the one thing that did give me a lot of problems with it though was
16 that those projections are based on a LOCA with an extremely high reactor
17 building pressure, atmospheric pressure. And we didn't have that building
18 pressure, so I felt that if anything, those levels would be,... projections
19 would be extremely high. Very conservative.

20
21 DONALDSON: The initial projections that were made, were they made using
22 the standard procedure listed in, I guess it's 1670.5?

23 DUBIEL: Well...
24
25

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1 DONALDSON: Or, did you use the backup procedures to be applied when
2 monitors are full scale?

3
4 DUBIEL: The original projections were, first of all, it's 1670.4 is the
5 procedure and the projections were used that... the method used was from
6 the calculational methods for if your recall, Dale, in the beginning of the
7 procedure where we actually used monitor data rather than assuming a
8 particular accident, one thing that was quite evident was we really didn't
9 know which category we could put the particular situation into. We didn't
10 know that we had a LOCA, we knew pretty well much that we did not have a
11 LOCA.

12
13 DONALDSON: Do you recall what the results of that calculation revealed?

14
15 DUBIEL: The projections,... I do not recall the projections specifically,
16 they were significantly high numbers for some reason a couple of rem type
17 numbers stick in my mind for the iodines. And some number of millirem and
18 the gases, I recall that the gas number didn't give me a big concern because
19 it allowed sufficient amount of time to verify the number. We essentially
20 had many, many hours until we reached the 5 rem criteria. So we had a
21 chance to verify and to get some off site numbers to back up our projections.
22 The iodine levels did not. They indicated several rem/hour type numbers at
23 the time. I don't recall the exact numbers Dale.

1 MARSH: You mentioned that, that the calculations were carried out in the
2 control room. By whom?

3
4 DUBIEL: They were carried out specifically by Howard Crawford and Mike
5 Benson. They may have had additional personnel assisting, but they were
6 the two main people.

7
8 MARSH: Approximately what time were these calculations complete?

9
10 DUBIEL: These calculations were complete somewhere in the shortly after
11 7:30.

12
13 MARSH: Were the results of these calculations brought to you for your
14 review.

15
16 DUBIEL: The results were... the indications were given to me and also I
17 recall presenting them to the State officials. I believe Margaret Reiley
18 at that time rather than Tom Gerusky, I think Margaret was in and we were
19 communicating. I think the major point at the time was that we were having
20 a hard time establishing our basis for the projections because we... prior
21 to the projections being made, we had people at the fence post, meaning on-
22 site at the perimeter and they were not detecting anything of significance.
23 And we felt that with the projections, they would definitely be seeing a
24 significant gamma dose rate, and therefore we were very hesitant to believe
25 that the projections were accurate. Also the projections that we were using

1 were based primarily on the LOCA conditions assuming a 55 pound containment
2 atmosphere, which we did not have and believe that the projections assumed
3 .2% per day leakage from the containment, which is design values from the
4 FSAR.

5
6 DONALDSON: Then, in discussions with State, it was mutually agreed that
7 the calculational numbers for projected dose were in all probability
8 incorrect?

9
10 DUBIEL: I can't specifically say that it was a mutually agreed thing, I
11 don't recall we came to a sound conclusion amongst both the State and
12 myself I can recall that I gave my interpretation and that I was not
13 willing to recommend that protective action be taken. And that the State,
14 I do recall agreement from Margaret Reiley. I don't,... I think I'm that
15 if, to that degree, yes, we did agree.

16
17 DONALDSON: You did agree, what?

18
19 DUBIEL: Yes, that protective action at that time was not warranted. And
20 that since we had the people off site that we should use the off site
21 readings to back up projections, to try to better define a source term
22 before it... also that we did not have an immediate hazard, that the off
23 site readings were in the on site readings were sufficiently low to warrant
24 waiting till we got off site values.
25

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1 DUBIEL: At approximately 9:00, the one indicated iodide level was relayed
2 to us and at the time, my first thought was that, I recall looking at the
3 fact that between the time the guy, drew the sample, and the time he relayed
4 the number through, which is a matter of a few minutes to count it, it
5 looked like the wind had made it shift just about at that time. I was a
6 relatively rapid shift of wind, covered only a few minutes before it had
7 stablized blowing toward approxmately 80-90 degrees. I immediately relayed
8 the information to Margaret Reiley, and we agreed that we ought to get a
9 quick analysis on a jelly detector with multi channel analyzer. My capa-
10 bilities on site for that were not at all available. None of my equipment
11 was available due to it being in plant and the background levels in the
12 plant that made it prohibitive.

13
14 DONALDSON: Dick, just to put things in perspective, you stated and let the
15 apparent positive iodine sample, indicated levels of approximately 1×10^{-8}
16 microcuries per cc. Could you give us a feel for the amount of time that
17 that level would have to persist in the enviro-nment, before a lower limit
18 protective action guide would be exceeded?

19
20 DUBIEL: I don't recall of making the calculation in terms of hours, but
21 rather I looked at the graph in our procedure and noted that it was, a
22 couple of orders of magnitude below the levels were we would have to start
23 worrying in terms of hours before we would reach the evacuation criteria of
24 the Protective Action Guides. I'm just right now, running through my mind
25 very quickly, I would estimate that we were probably in the 100 hour type

1 range before we would reach any levels that would require protective action.

2
3 DONALDSON: Was this evaluation also discussed with the State?

4
5 DUBIEL: The evaluation was not discussed with the State, however, the
6 level was and it was also confirmed in my conversation with Margaret Reiley
7 that a tem to the minus 8th level did allow for adequate time to confirm
8 the reading. We made arrangements at that time. I knew that we had a
9 helicopter ready to bring the technician back to the east shore where we
10 could get him into a vehicle and allow him to go around the... through the
11 off site monitoring from a car, a Met-Ed vehicle. Therefore, the helicopter
12 would be available for me to get the charcoal cartridge up to the State. I
13 asked Margaret Reiley if she had the capability to analyze it. She confirmed
14 that she did and we agreed that a relatively close landing point for the
15 helicopter would be Holy Spirit Hospital, right across the river from
16 Harrisburg, where I also knew there to be a helicopter pad. So we immediately
17 directed the helicopter pilot to take the charcoal cartridge and fly to the
18 Holy Spirit Hospital. He confirmed he knew where the Holy Spirit Hospital
19 was. And that he was to go to the helicopter pad and wait for personnel
20 from the State, BRH (Bureau of Radiological Health) to arrive and take the
21 charcoal cartridge from him.

22
23 DONALDSON: Now there is a point of confusion that I wish you would clear
24 for me. Was this sample actually counted by Holy Spirit Hospital or was
25 Holy Spirit Hospital merely a drop off point.

1 DUBIEL: Holy Spirit Hospital was merely a drop off point.

2
3 DONALDSON: Who did count the cartridge?

4
5 DUBIEL: The State Bureau of Radiological Health picked up the cartridge
6 from the helicopter pilot, transported it back to their laboratories in
7 Harrisburg and counted it there. It was some period of time later, a
8 couple of hours, that I had it confirmed to me that this cartridge did in
9 fact not show any iodine. However, subsequent to that we were... we had our
10 personnel on the east shore along 441 and directing them to various off-
11 site monitoring points, doing both dose rate surveys and air sampling using
12 the same technique--using a charcoal cartridge and counting on SAM-2. The
13 levels on-site started to come on scale for dose rates shortly... sometime
14 prior to 9 o'clock and then after 9 o'clock when the wind shifted. At that
15 time the ECS was putting well in place, Tom Mulleavy had come in and taken
16 over control of the ECS and control of the off site monitoring teams, the
17 on and off site monitoring teams.

18
19 DONALDSON: Now where was Mr. Muleavy located?

20
21 DUBIEL: Tom Muleavy initially entered the plant and went directly to the
22 Unit 1 Health Physics Laboratory, which was set up to be our Emergency
23 Control Station and he took over responsibility of directing the off-site
24 teams. From that point on, he essentially determined where individuals
25 would be sent to monitor and kept communications with them and we monitored

1 those commu-nications and noted dose rates as they were radioed back in.
2 We had a radio monitor in the Unit 2 control room so we could intercept the
3 messages and have a pretty good handle immediately on what types of levels
4 were being seen

5
6 ESSIG: Excuse me, this is an important point. You said that Muleavy was
7 pretty much in charge in the ECS directing off-site surveys. Do you remember
8 what time that was approximately?

9
10 DUBIEL: I would estimate that it was somewhere after 8:00 prior to 8:30.

11
12 ESSIG: Okay, so 8 to 8:30 somewhere in that...

13
14 DONALDSON: Just to clarify further on that point. From other records that
15 we have, the ECS was relocated to the Unit 2 control room at approximately
16 0800. Does that seem to fit?

17
18 DUBIEL: No, that indicates to me that Tom was in earlier than 0800. Tom
19 Muleavy was in charge of the ECS prior to its being located to the Unit 2
20 control room.

21
22 DONALDSON: That would have had to been some time between 0730 and 0800.

23
24 DUBIEL: It would have been if the other records were correct. Let me
25 maybe give a clue that we could follow up to find the exact time. The

1 reason for the ECS being relocated was tied to the shift in wind. And as
2 the wind shifted and came back across the intake structures, we started
3 pulling activity back into the units and the Unit 1 intake structure was
4 hit very rapidly as the wind shifted, the reason for them relocating was
5 that the background levels in the Unit 1 HP lab went up significantly and
6 they were worried about airborne activity levels in the ECS, so they
7 immediately made preparations to relocate to the Unit 2 control room.

8
9 DONALDSON: Now, clarify another point for me. I was under the impression
10 that that the ventilation for the HP laboratory area was able to be on
11 recirc, similar to the control room which is one of the reasons why the ECS
12 has been designated to be in that location, is that correct?

13
14 DUBIEL: That is correct and in retrospect, I feel that the relocation of
15 to the Unit 2 control room may not have been warranted, but unfortunately,
16 the gases that did migrate into the lab, caused increased background levels
17 of the various monitors and also grab samples started showing particulate
18 levels. It took us quite some time before we had the ability, and I should
19 say the time, to take the samples and analyse them to see what type of
20 particulate we were seeing. Once we had that time, we were able to show
21 that it was very short lived, approximately 15 minute half lived particulates,
22 leading me to believe that it was Rubidium-88 and that the relocation which
23 was really based on the fact that we were seeing about 3×10^{-9} type activity
24 which is well below the MPC for Rubidium-88 but not knowing specifically
25 what isotope, the action they took was taken based on what they were able
to determine at the time.

1 DONALDSON: Let me clarify this a little further if I can. The Unit 1
2 health physics checkpoint where the ECS is located is normally recirculated
3 air. Is that correct? The reason it is selected to be there is because
4 its ventilation is not directly from the outside?

5
6 DUBIEL: That's incorrect. During normal conditions, it is ventilated
7 through the normal control tower ventilation system. It has the capability
8 of going on recirc through its own filtration system.

9
10 DONALDSON: And how would this recirc be initiated?

11
12 DUBIEL: I don't believe I can answer that question, Dale, I'm just drawing
13 a blank. I don't know that there's an automatic recirc, although it might
14 very well come off of a high alarm on RMA-1.

15
16 DONALDSON: Now, at the time the levels began to increase, and you'de
17 mentioned particulate activity that was determined to be Rubidium 88, were
18 there corresponding increases in other areas of the plant, namely the Unit
19 1 or Unit 2 control room?

20
21 DUBIEL: Yes, there were first of all, let me just clarify, we did not at
22 that time determine it was Rubidium 88, and I don't believe that we ever
23 did at any point in time, specifically identify that those samples were
24 Rubidium-88. We did then start seeing Unit 1 control room, at some point
25 in time after the ECS noted the increases in activity. The Unit 1 control
room confirmed to us that they also were seeing activity increases.

1 like to say thank you now for your time and your recall. And we'll get
2 together at a later date. Anybody else have anything else? Okay, I'll
3 terminate the tape then, at this time, being 5:49, April 24, the reading on
4 the meter is 496.

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1 2 control room. At some point during that warning, I don't recall exactly
2 when, but one of the technicians set up for a sampler and we took periodic
3 air samples. We did see that activity levels build up. We got,... there's
4 primarily particulate activity and it was for several hours that we continued
5 to periodically go in and out of masks, particularly respirators due to the
6 periodic increases in activity in the room. It wasn't until sometime later
7 in the afternoon, I believe, that I personally had the presense of mind to
8 do something as simple as take an air sample and count it, and then count
9 it several more times over a half and hour, 45 minute period to watch the
10 decay on it. When we did get around to doing that, we saw the activity
11 decay off, quite rapidly. I also don't recall whether we ever hit a high
12 alarm on a Unit 2 control room monitor.

13
14 MARSH: Okay, before the break point, the time is 5:47, at 478 on the
15 meter, we're going to shut these down and change tapes.

16
17 MARSH: Okay, the time is 5:48 now, we're set to resume.

18
19 DONALDSON: No, I'd say we'll reconvene because Mr. Dubiel has an engagement
20 and will have to leave.

21
22 MARSH: Okay, during the change of tapes, it was indicated that due to
23 prior obligations here, Mr. Dubiel, we're going to have to terminate at
24 this time and we'll reconvene at some later date. So in the interest of
25 expediting Mr. Dubiel's departure, we're to wrap this thing up. We'd just

1 DONALDSON: Let me ask you now, normally wouldn't the Unit 1 control room
2 be on recirculation?

3
4 DUBIEL: Upon receiving a high alarm on RMA-1 which monitors control room
5 atmosphere, the system would automatically go into recirc.

6
7 DONALDSON: Is that in fact what happened?

8
9 DUBIEL: I believe it is, I have no reason to doubt that it did not work.

10
11 DONALDSON: Okay, now take me to the Unit 2 control room. Was there any
12 activity increase noted in there?

13
14 DUBIEL: At the time we're talking about, there was none. At some point in
15 time later during the day, and I'm just estimating that it was maybe 10 or
16 11 o'clock, we also saw the same situation; increased activity in the Unit
17 2 Control room. This, I felt was due entirely to the extremely stagnant
18 weather conditions that existed that day. That we were drawing air in
19 through the service building, oh, excuse me, ... air intake tunnels for each
20 unit and also that we were seeing air being pulled into the turbine halls
21 in both units through the normal turbine building ventilation systems and
22 that the air coming into the turbine buildings, was migrating through doors
23 as they were opened and things of that nature, personnel past from one area
24 to another and air flow was coming into some of these areas and causing
25 increased activity. We set up starting to monitor air activity in the Unit