

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

1 In the Matter of:

2 IE TMI INVESTIGATION INTERVIEW

3 of John P. Stohr
4 Chief, Environmental and Special
5 Projects Section (NRC)

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

13 May 23, 1979
14 (Date of Interview)

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19
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21 NRC PERSONNEL:
22 Thomas H. Essig
23 Mark E. Resner

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1 RESNER: This is an interview of Mr. John P. Stohr. Mr. Stohr is employed
2 with the Nuclear Regulatory Commission at Region I and his job title is
3 Chief, Environmental and Special Projects Section. The time now is 10:46
4 a.m., and today's date is May 23, 1979. This interview is being conducted
5 in trailer 203 which is located just outside of the south gate to the Three
6 Mile Island facility. Individuals present for this interview are Mr.
7 Thomas H. Essig. Mr. Essig is the Chief, Environmental and Special Projects
8 Section assigned to Region III of the U. S. Nuclear Regulatory Commission.
9 Moderating this interview is Mark E. Resner. I am an investigator with the
10 Office of Inspector and Auditor, Headquarters, Nuclear Regulatory Commission.
11 Prior to taping this interview Mr. Stohr was given a two-page document
12 which explained the purpose, the scope and the authority by which the
13 Nuclear Regulatory Commission conducts this investigation. In addition, it
14 apprised him that he is entitled to a representative to be present during
15 the interview and that in no way is he compelled to talk to us if he doesn't
16 want to. On the second page of this document, there are three questions
17 that Mr. Stohr has answered and I will state for the record. Question (1),
18 Do you understand the above? Mr. Stohr has checked "yes." Is that correct,
19 Mr. Stohr?

20
21 STOHR: That's correct.

22
23 RESNER: Question (2), do we have your permission to tape the interview?
24 Mr. Stohr has checked "yes." Is that correct, Mr. Stohr?
25

1 STOHR: That is correct.

2
3 RESNER: Question (3). Do you want a copy of the tape? Mr. Stohr has
4 checked "yes." Is that correct, Mr. Stohr?

5
6 STOHR: Yes.

7
8 RESNER: Okay. We'll provide you with a copy of the tape at the conclusion
9 of the interview. At this time I will ask Mr. Stohr if he will provide us
10 with a brief synopsis of his educational and job experience. Mr. Stohr.

11
12 STOHR: I have a Bachelors Degree in physics from Hofstra University.
13 Beyond that in terms of formal education I've taken several graduate level
14 courses at different universities, primarily in the environmental and
15 management areas. In terms of experience I started as a health physics
16 technician at Brookhaven National Laboratory in 1958. Progressed to the
17 position of health physicist with the research group at Brookhaven Laboratory
18 before I left to join the Commission in 1967. Do you want me to describe
19 experience with the Commission now? Are in interested in that position
20 ...?

21
22 RESNER: Yeah, please, Mr. Stohr.

23
24 STOHR: Okay. I started as a radiation specialist in the Materials section.
25 After approximately two years I was assigned as a radiation specialist for

1 the inspection of nuclear power plants and subsequent to that I was promoted
2 to chief of the section which I presently have. I don't recall the date of
3 when that promotion took place. But since that time I've worked in that
4 position.

5
6 RESNER: All right, thank you very much. Uh, at this time Mr. Essig has
7 some questions for you.

8
9 ESSIG: What I would like to do, Phil, is to go through as best as you can
10 recall of a chronology of when you first learned about the TMI incident
11 which occurred at 0400 on 3/28; which occurred beginning at 0400. And
12 where you were at the time, what time you arrived on the site, who was with
13 you and as best as you can recall. I'll just turn it over to you now and
14 you can give us... whatever you can recall as to the ... as to the things
15 that you did from the time you were dispatched to the site, arrived on the
16 site. In particular, we are interested in not so much the actions that you
17 took as an NRC employee or as part of your Inspection and Enforcement
18 normal function; but we're interested in any independent measurements or
19 other surveys which you may have made or were aware of under your super-
20 vision.... that were made available to the licensee which the licensee
21 could have then used as part of some decision-making process with respect
22 to offsite impacts or effluent releases or inplant radiation levels or
23 anything of the sort. So with that I think I'll turn it over to you and as
24 best you recall give us the chronology.

1 STOHR: Okay, on the morning of the 28th I was at Millstone Nuclear Power
2 Plant. I was accompanying James Cotton on a routine independent measure-
3 ments inspection. The night before, we had set up our mobile laboratory at
4 the site. Upon arrival on the morning of the 28th at approximately 8:30,
5 we were informed while checking in through security at the gate (or at the
6 access point) that we had a telephone call from the regional office. On
7 answering that call we were informed that there had been an incident on
8 Three Mile Island and we were directed to immediately bring the mobile
9 laboratory back to the regional office enroute to Three Mile Island. By
10 the time we left the area and turned in the rental car I believe it was
11 about 10 or 10:30 that morning. We drove back and arrived at the regional
12 office, I believe somewhere between 4:00 and 5:00 that afternoon. After
13 picking up a few supplies and getting a very quick briefing, we proceeded
14 to drive the mobile lab to Three Mile Island. During the brief stay at the
15 regional office, I was told that I would take charge, at least on an interim
16 basis, of the group that had been previously dispatched that morning to
17 Three Mile Island. I believe there was a total of six or seven individuals
18 already at the site. We took the Pennsylvania Turnpike and left the regional
19 office somewhere after 5:00, I believe. Enroute we had the radiation
20 survey instrument on; we had no communications either with the regional
21 office or Three Mile Island enroute. We did notice a radiation reading (I
22 believe open window) approximately a mile prior to arriving at Exit 19 of
23 about 2 millirem per hour. We proceeded through the exit with our survey
24 instrument on and we performed a quick survey at the turnpike administration
25 building. We had been informed, I believe at the regional office that this

1 facility might be used as a temporary emergency coordination center by the
2 State or maybe the licensee. I believe the survey results at that facility
3 showed above background but less than $\frac{1}{2}$ mR per hour. Finding no one at
4 this facility we proceeded towards the facility on 441 and 230. Near
5 the -- I believe it's the Olmstead Shopping Center, south of the McDonald's
6 fast food restaurant -- I believe we saw survey readings of approximately,
7 I believe they were about 12 to 15 mR per hour or 10 to 15 mR per hour, in
8 that range. We then proceeded to the observation center at Three Mile
9 Island. I believe we arrived at about 7:30 p.m. Shortly thereafter we
10 were set up and ready to count samples. On arrival at the site I established
11 contact with some of the other team members and went into the observation
12 center and established contact with the licensee. I believe that in the
13 information we were given at Region I, we were told that iodine concentra-
14 tions of approximately 2×10^{-8} microcuries per CC had been observed in Middle-
15 town. These had been based on the licensee's, stabilized assay meter Model
16 No. 2. The earliest things we did in terms of taking any measurements or
17 helping the licensee perform measurements was getting some of the air
18 sample cartridges that the licensee was in the progress of taking in the
19 environs and counting them on the mobile lab. We determined by this process
20 that there was no iodine, at least above minimum detectable levels, in the
21 environs. The activity which was being seen on the charcoal cartridges was
22 xenon; primarily xenon 133, I believe. The results of these counts are
23 probably available at the mobile lab in a log. We also informed the licensee
24 shortly after arrival in that evening of the results of our survey that we
25 had performed while coming down from the north. These results were confirmed

1 by at least one other person who had also driven down from the north from
2 another utility who had observed readings of 3 to 4 mR per hour, I believe.
3 Upon first arrival the licensee had been indicating that levels were, I
4 believe, all 1 mR per hour or less. When we told the licensee the results
5 of our surveys, he dispatched a survey team to this sector and confirmed
6 the higher levels which we were observing. I think it was also at approxi-
7 mately this time that Karl Plumlee, an inspector from Region I, was sent to
8 that area (for whatever reason I don't recall now) and he had an instrument
9 with him. I believe in that same general area he measuring about 12 mR per
10 hour and that was relayed to the licensee. Subsequent to this, since we
11 were the only operating laboratory available, we continued to count cart-
12 ridges --charcoal cartridges -- which the licensee had taken in the field
13 or air samples that he had taken in the field, to determine whether there
14 were any iodine concentrations existing at the sampling locations. The
15 counts on the mobile lab as I recall continued to indicate that there was
16 no problem with iodine but the activity being exhibited on the charcoal
17 cartridges was due to xenon or the noble gas radionuclides. Let's see...
18 earlier I had one person who I assigned to environmental surveys; this was
19 Barry O'Neill, a materials inspector from Region I. And I'm not sure now
20 whether he was ever able to actually perform any of his own surveys, -- he
21 was busy relaying information back and forth and he may have had opportunity
22 to accompany the licensee on one of his field survey trips, to take a look
23 at what they were doing and also to verify sampling locations, things of
24 that sort; serve a confirmatory check on his part. At least that's what I
25 had in mind and right I'm not sure how successful we were in actually

1 getting him out during these early stages. That's about all I recall with
2 regard to our independent measurements or assistance that we provided to
3 the licensee in doing these types of surveys. At least in the initial
4 stages.

5
6 ESSIG: Phil, you indicated a couple things I would like to come back to
7 very briefly. Do you recall the type of survey instrument that you were
8 using to make the initial measurement, the one that you indicated that you
9 had in the laboratory and was turned on?

10
11 STOHR: I don't know the exact model number but it would have been a GM
12 type instrument and I think it was an end-window tube on the GM.

13
14 ESSIG: Now in order to fix a time a little bit better to these surveys
15 that were performed in the Olmstead Shopping Center enroute to the site,
16 since you observed -- since you arrived at the observation center, as you
17 recall around 7:30 in the evening on the 28th, would you say that those
18 surveys in Olmstead might have been performed within a half hour prior to
19 that? Would that be a reasonable time?

20
21 STOHR: Yes, I think that would be so. Right. If I had to estimate a time
22 I'd say about approximately 7:00 p.m.

23
24 ESSIG: Okay. And was your recollection that these survey results were made
25 available to the licensee shortly after your arrival on site and it was

1 also your impression that the licensee then dispatched a survey team subse-
2 quently and that they did in fact confirm those radiation levels?

3
4 STOHR: Yes that's correct. I think it was a fairly narrow plume and he
5 might have, the licensee that is, might have been surveying in an area just
6 off the center line of the plume, and after we talked to him I believe he
7 redirected one of the survey or two of the survey teams that were already
8 in the field to the sector that we had driven through. And he thereby
9 confirmed our readings.

10
11 ESSIG: Okay. When you reported in the observation center, do you recall
12 the particular licensee individual that you reported to or that you contacted?

13
14 STOHR: Two persons that I know. One is, I believe, Dave Limroth was there
15 and I also spoke to Jack Herbein, Vice President of Met Ed.

16
17 ESSIG: And at that time did either Mr. Limroth or Mr. Herbein request that
18 the lab be made available or any certain NRC individuals be made available
19 to conduct surveys; or were these services offered to the licensee or did
20 no such discussion in fact take place?

21
22 STOHR: I think, as I recall, we probably, or I probably, told him of the
23 capability that we now had available and it was probably more of an offer
24 than it was a request on their part. Or a general agreement was arrived at
25 shortly after stating that they were here; that they could be used to count
some of these cartridges.

1 ESSIG: Okay and do you recall, how the licensee reacted when you indicated
2 that you did have a laboratory? Would you say that he sort of welcomed you
3 with open arms, or as I think you've stated and the record so far indicates
4 that the licensee's counting capability was essentially non-existent at
5 that time other than the field instruments that he had available; because
6 the background in the counting laboratory was just prohibitively high and
7 so the counting capability, I guess I would assume, was welcomed with open
8 arms by the licensee.

9
10 STOHR: Yes, that is correct, yes. He did not any in-house counting capa-
11 bility at that time so he was glad to have this available.

12
13 ESSIG: Okay. What would you say, Phil, were your general impressions of
14 the licensee actions in any of the area over which you were cognizant? For
15 example, offsite surveys which I believe would be your area of primary
16 cognizance, but if there were any other areas with regard to either, say,
17 emergency planning or effluent releases or any of the in-plant surveys? If
18 you were cognizant of what the licensee was doing in any of those other
19 areas, I would appreciate getting your impressions of, during the first two
20 days, did the licensee seem to be on top of things, and that type of thing.

21
22 STOHR: Okay. With regard to the instrumentation I guess, his offsite
23 teams -- survey teams -- were using pretty much what we consider to be
24 state-of-the art at the present time; using stabilized assay meter Model
25 No. 2 with the cartridges, as he was using them. I didn't actually go out

1 with any of the survey teams or see the equipment for myself. When we
2 arrived he did have surveys teams out; seemed to be following his emergency
3 plan in this regard; was gathering a lot of data and was providing this
4 data to the State as I recall. Which is what we would expect him to do in
5 this situation since the State, as I recall again, did not have any survey
6 teams of their own out. They did subsequently, a little later, have a
7 representative down at the observation center also, Bill Dornside. A general
8 impression with regard to the capabilities or talent of some of the people
9 directing some of survey effort was perhaps that they were a little lacking
10 in this area. I think they could have had a little more HP talent at the
11 observation center early on than they seemed to have. Operationally I
12 think they had a high level of talent over there. They had Jack Herbein
13 who is quite familiar with the plant and the equipment over there. I
14 didn't have much of a chance to form an opinion of operations in-plant. I
15 went in the plant briefly a couple of times and I just didn't spend that
16 much time there and couldn't get a good feel for those operations, but they
17 seemed to be fairly well in hand with regard to providing for the protection
18 of the workers from air concentrations or direct radiation surveys. They
19 were using protective clothing, they were using respiratory protective
20 equipment, and they were keeping people out of known areas of high concen-
21 trations. Let's see, were there some other areas now that you had requested
22 information on...? That was a lengthy question you gave me, Tom.

23 ESSIG: Well, I think you probably covered it. Essentially what I was
24 after were your general impressions of licensee actions during the first
25

1 three days in any of the areas over which you personally were cognizant;
2 such as the offsite survey effort and the emergency planning, and if you
3 cognizant of any in-plant activities. I think you pretty well...

4
5 STOHR: Yeah, I think I've pretty much covered...

6
7 ESSIG: ... answered the

8
9 STOHR: Yes.

10
11 ESSIG:the question. Do you recall, Phil, whether or not any additional
12 radiation surveys that would have been made surveys that would have
13 been made by any NRC teams were -- whether or not those results were made
14 available to the licensee other than the ones that you mentioned that you
15 took, that you personally performed on the way down.

16
17 RESNER: We'll change the tape and the time -- excuse me, flip the tape
18 over. The time now is 11:14 a.m., eastern daylight time. Mr. Stohr will
19 pick up with his answer at the next portion of the tape.

20
21 RESNER: This is a continuation of the interview with Mr. John Stohr and
22 the time now is 11:15 a.m. And Mr. Stohr was about to answer a question.

23
24 STOHR: Okay., Before we had much in the way of our own survey effort going
25 on, I believe it was the late afternoon or early evening on the 30th, I

1 believe Saturday after we had the influx of people from other regions,
2 after they arrived we were able to set up teams for the surveys we had in
3 mind. Basically the types of surveys we were performing sometime after
4 that were downwind radiation levels in the plume, and grab air samples in
5 the plume. Initially I believe with particulate and filters and charcoal
6 cartridges. These samples were then subsequently counted in our mobile
7 laboratory. I'm not quite sure now how we provided this information to the
8 licensee early on or what type of a feedback process we have, but it's my
9 general understanding that we did provide him with this information and
10 this would probably have been done by giving it, the information, to the
11 people who were in the observation center at that time or getting it into
12 their system somehow in accordance with that general arrangement.

13
14 ESSIG: Was there a...do you recall...was there a specific individual which
15 you had assigned that responsibility or did you just sort of let it happen?
16 If it was going to get over to the licensee, if somebody happened to think
17 that they would or ... do you recall having assigned any individual that
18 responsibility?

19
20 STOHR: I don't recall assigning any specific individual that responsi-
21 bility. I'm just thinking now... they were dropping off samples to us, I
22 believe. And they were, I think, picking up the results or we were running
23 over the results. There probably would have been a fellow in the mobile
24 lab who was getting that information over or someone who was running for
25 him.

1 ESSIG: Okay. I think I received that same or similar impression from Mr.
2 Cobb when I interviewed him with respect to the actual sample analyses. So
3 I guess what we're saying is that, as far as the first three days are
4 concerned following the event which was the period of interest for this
5 investigation, that there probably wasn't -- that our offsite survey effort
6 really got in full swing probably on Saturday the 31st or the morning of
7 the 31st or perhaps the evening on Friday. And so that we likely didn't
8 really have much in the way of offsite portable survey instrument measure-
9 ments to relate back to the licensee during those first three days. Would
10 that be a fair statement?

11
12 STOHR: Yes, I believe that's correct. Yes.

13
14 ESSIG: Okay. There is one particular measurement which I'd like to talk
15 with you about for a minute. It was a licensee measurement. What I've
16 been in the process of doing is to give you a background prior to asking
17 you the question about this measurement. We are looking at the first -- of
18 this three-day period if one looks at the first two days, what you find is
19 that the licensee in terms of radiation levels offsite which were attribu-
20 table to noble gas releases, the only results that he actually had in hand
21 were those which were obtained by portable survey instruments. The TLD's
22 were collected in the afternoon of the 29th and were made available, the
23 results were available on the morning of the 30th according to our inter-
24 views with the various licensee personnel. And so during the first few
25 days then, what the licensee really had in hand were these portable survey

1 instrument measurements and so they take on a fair importance because they
2 were really the only things the licensee had with respect to enable him to
3 make a recommendation to the State with regard to any protective actions
4 and that type of thing. It had already been established on a number of
5 occasions that radioiodine in the environment was not a particular problem,
6 even though they had some false indications on the stabilized assay meter
7 measurements. So with that as sort of a backdrop then for the question,
8 there is a particular measurement which occurred in Goldsboro at 6:00 in
9 the morning on the 29th of March. And what I would like to ask you about...is
10 and the radiation level was one of the more significant ones that were
11 measured offsite; it was 20 mR per hour gamma 30 beta gamma...and I know
12 there are probably a lot of measurements and surveys that were crossing
13 your mind at the time, but do you recall any such measurement that was ...
14 recall the circumstances of that measurement? What I'm trying to do is to
15 see if the licensee had a particular problem with regard to getting to the
16 other side of the river. Again, in the way of a little background, the
17 radiation levels ... there were surveys performed in Middletown at about
18 1:00 in the morning, 1:30 in the morning of the 29th, which really didn't
19 indicate very significant radiation levels. And then all of a sudden at
20 6:00 in the morning we're talking about a radiation level of, as I said, 20
21 mR per hour gamma 30 beta gamma. And the wind appears to have been blowing
22 in that general direction from about...as I recall, it was around 0200...it
23 was blowing toward the northwest and then it shifted slightly toward the
24 west but it was blowing reasonably steadily in that general direction; and
25 yet the licensee didn't appear to respond until about 0600. Now with all

1 of that preamble, do you recall anything about that particular measurement?
2 Did you recall any discussions with the licensee as to why he might not
3 have been able to get to Goldsboro for such a period of time?
4

5 STOHR: No. I don't recall any specific discussions in that regard at all.
6 I think I -- at about that time I probably would have been just checked
7 into a motel. I went back and I got about an hour and a half sleep, not
8 more ... and then I came back out or I was gone for about an hour and half
9 or something like that; I really just got refreshed a little. And I think
10 that measurement, it was reported at that time, would have occurred when I
11 was out. I do recall, though, that the numbers...but I didn't recall at
12 the time...but I do recall that numbers of this level being associated at
13 some point early on in Goldsboro. That's about all I recall at the time.
14

15 ESSIG: Okay.
16

17 STOHR: The only other thing I do know: they were differentiating a you've
18 indicated here between the gamma and beta gamma readings.
19

20 ESSIG: Phil, what I'd like to do now is to give you the opportunity if
21 you would like to do it, any observations that you'd like to make with
22 respect to lessons that we've learned from this; that we could have done
23 things differently. Either in the way of a having more people, better
24 equipment --anything that either we, the NRC, or that you thought the
25 licensee maybe could have done better. Just any comments that you would

1 like to make, just personal observations in terms of lessons learned. We
2 would like to give you the opportunity at this time to put any of those on
3 the record that you'd like to.

4
5 STOHR: I just wish you had told me that you were going to ask this question;
6 I might have been a little better prepared. However, --

7
8 RESNER: Feel free to contact us at a later date and offer your comments if
9 you want to also, in addition what you're going to comment on now.

10
11 STOHR: Okay. Just a couple of things that have come to mind and I have
12 thought about it some. One is the problem that's caused by limitations in
13 the range of your effluent monitoring instrumentation, your stack monitoring
14 instrumentation. I think that's something that should be considered in
15 terms of either providing additional ranges or types of equipment or what-
16 ever, so that you could get a better handle on what the effluents were
17 actually doing and not just have a monitor off-scale and staying off-scale
18 and not being able to follow how the releases were going. That's one
19 aspect. I think one other area where there still needs to be some improve-
20 ment and I think perhaps some generally accepted consensus of opinion
21 established or Reg Guide perhaps, is in the area of field monitoring and
22 acceptable field monitoring techniques to differentiate between radioiodine,
23 noble gases; things of that sort. I think licensees would appreciate some
24 guidance in this area as well. I think as a result of this we'll probably
25 give emphasis to, perhaps additional emphasis, to these two areas and some

1 other areas in our inspection plan -- in our inspections of emergency
2 planning, I should say. I haven't thought that out fully but I think this
3 is something we should get from this; someone should look at that: We
4 should perhaps be tailoring our inspection plan to match or to answer
5 problems associated with the difficulties that did arise here. I think in
6 general...I think in terms of the accident you had, I think things were
7 handled fairly well in terms of our response; not just Region I, the Commis-
8 sion in general. Perhaps this has not been emphasized enough in some of
9 the discussions with our people and the news media to the extent that we
10 had supposedly the most significant reactor accident in a nuclear power
11 plant in this country. The offsite consequences were essentially quite
12 minimum, even though the facility and systems were not designed to handle
13 this type of accident. I think the engineered safeguards that were built
14 in; training capabilities of the people, although they have been questioned
15 rather severely here, were sufficient at least when augmented with the NRC
16 staff, such that the consequences were kept at a fairly low level. If
17 there is one thing I feel rather bad about I think it's in the concern that
18 has been caused on the part of the surrounding public. And I think in some
19 cases unnecessary concern. I think if we or someone in NRC, it would
20 probably have to be NRC, put things in a little better perspective in terms
21 of whatever potential hazard these people have faced or still face, I think
22 it would certainly be appreciated by the people; I think it's something
23 that we should have done and maybe stressed a little more strongly through-
24 out this whole situation. One other point I guess I might like to make and
25 that is, at least my understanding is that perhaps early recommendations

1 from the Commission with regard to evacuation may or may not have been
2 based on sound information that existed at that time. And the indication
3 I get from my levels is that those in the Commission making that decision
4 could have pursued obtaining more substantiating information before those
5 recommendations were made. After those recommendations were made is when
6 things developed very rapidly in terms of news media coverage concerned on
7 the part of the political bodies and also the public in general. I think
8 we, the NRC, could have handled that situation a little better perhaps than
9 we did. That's about all I can think of right now, Tom.

10
11 RESNER: Okay, thank you very much, Phil. This concludes the interview
12 with Mr. Stohr. The time now is 11:37 p.m.-- excuse me, a.m. eastern
13 daylight time.

14
15
16 [end of interview]

809 200