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NUCLEAR REGULATORY COMMISSION
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In the Matter of:

THREE MILE ISLAND UNIT II) DOCKET NO. 50-320-OLP
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NUCLEAR REGULATORY COMMISSION

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3 In the Matter of:

4 THREE MILE ISLAND UNIT II

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Docket No. 50-320-OLP

Courtroom No. 1
Public Utilities Commission
Commonwealth Ave. & North St.
Harrisburg, Pennsylvania

Tuesday, July 8, 1980

10 The above-entitled matter met for prehearing
conference at 9:05 a.m.

11 BEFORE:

JOHN WOLF, BOARD CHAIRMAN

OSCAR H. PARIS, Ph.D., BOARD MEMBER

FREDERICK J. SHON, BOARD MEMBER

14 APPEARANCES:

JUDITH JOHNSRUD, Ph.D.

On behalf of ECNP

STEPHEN SHOLLY

On behalf of himself

STEPHEN C. GOLDBERG, Esq.

LAWRENCE CHANDLER

On behalf of the Nuclear Regulatory Commission

KARIN CARTER, Esq.

ROBERT ADLER, Esq.

On behalf of the Commonwealth of Pennsylvania

GEORGE S. TROWBRIDGE, Esq.

DEBBIE BERNSTEIN

Shaw, Pittman, Potts & Trowbridge

On behalf of Metropolitan Edison Company

1 P R O C E E D I N G S

2 CHAIRMAN WOLF: Good morning, ladies and
3 gentlemen.

4 We will begin the morning session by asking that
5 appearances be stated. We will begin with you, Mr. Sholly,
6 please.

7 MR. SHOLLY: Stephen Sholly, pro se/

8 MS. CARTER: Karin Carter, Assistant Attorney
9 General, representing the Commonwealth of Pennsylvania.
10 With me is Mr. Robert Adler.

11 MR. GOLDBERG: Stephen C. Goldberg, representing
12 the NRC staff. Along with me at counsel's table is Mr.
13 Lawrence Chandler.

14 MR. TROWBRIDGE: George S. Trowbridge,
15 representing the licensee. On my right is Ms. Debbie
16 Bernstein from my office.

17 MR. WOLF: I have a couple of preliminary
18 matters. Can we get an expression as to when the work that
19 is to be done in connection with the consolidation of
20 contentions and the modifying of them, if that is possible,
21 will be completed and submitted to the Board?

22 MR. TROWBRIDGE: Mr. Chairman, we are meeting with
23 all the intervenors in the tech spec aspect of this hearing
24 on Friday of this week. We will report back the results of
25 that meeting. I would suggest that we enlarge our meeting

1 to include our recommendations on time tables for any
2 further hearings, assuming that we don't settle all the
3 contentions on Friday.

4 CHAIRMAN WOLF: You will submit a piece of paper?

5 MR. TROWBRIDGE: We will submit a paper stating
6 where agreements have been reached, and a suggestion as to
7 time table for any remaining hearing.

8 CHAIRMAN WOLF: In that connection I have a
9 statement from Mr. Lochstet regarding problem dates that he
10 has. I will give it to you, and if we can work around the
11 dates that he has indicated as a problem I would like to do
12 that.

13 MR. TROWBRIDGE: Mr. Lochstet will be our Friday
14 session.

15 CHAIRMAN WOLF: He will, then I will not have to
16 give this to you.

17 MR. TROWBRIDGE: It is Dr. Lochstet, by the way, I
18 was informed yesterday.

19 CHAIRMAN WOLF: Ms. Carter, do you have copies of
20 that?

21 MS. CARTER: We have not yet received Mr. Sholly's
22 contentions.

23 MR. SHOLLY: They will be getting them today.

24 CHAIRMAN WOLF: Very well.

25 Does any counsel or pro se have any preliminary

1 matter that they would like to take up?

2 MR. TROWBRIDGE: Mr. Chairman, I have one piece of
3 logistics. These two exhibits, 1a and 1b, which we intend
4 to introduce, we ran out of the energy or the ability to
5 count at about midnight on Thursday, so that I do not have
6 enough copies to give the three exhibits to the reporter. I
7 do have one extra.

8 I am wondering, since the Board Members are all in
9 Washington, whether two of the Board copies could be added
10 to my copy as exhibits. This could be done at the end of
11 the hearing because we may have some references to it.

12 CHAIRMAN WOLF: I think that we are ready to
13 proceed on the matter of the venting problem. The Board is
14 amenable to proceeding in any order that the parties want to
15 proceed in, whatever will facilitate the furnishing of the
16 information.

17 MR. TROWBRIDGE: I might start simply by
18 explaining our plan of action, so the others can do the
19 same. Then the Board can decide what order to follow.

20 We are prepared to go through Mr. Sholly's latest
21 motion, and discuss in order the six grounds for the
22 motion. However, when we get past the first three, which
23 will be largely my talking and my referring to documents
24 that the Board already has, I would like to put on a live
25 witness to describe the venting program. He is here, Mr.

1 Morrell. Then, we will proceed to a brief discussion of
2 grounds 4, 5, and 6.

3 CHAIRMAN WOLF: Mr. Goldberg.

4 MR. GOLDBERG: Yes, Mr. Chairman. I believe the
5 staff position on the several requests before this Board are
6 already contained in filings we have made before this Board
7 on July 3rd and July 7th. We will rest on those pleadings,
8 and reserve any additional argument that may be necessary
9 until Mr. Trowbridge has completed his direct presentation.

10 CHAIRMAN WOLF: At the end of whatever
11 presentation is made, I am going to ask counsel to make
12 whatever arguments they wish to make.

13 MR. GOLDBERG: Thank you.

14 CHAIRMAN WOLF: Ms. Carter, do you have any
15 comments?

16 MS. CARTER: No, we do not.

17 CHAIRMAN WOLF: Mr. Sholly, I assume that we
18 should have the parties, that is, Commonwealth Edison and
19 staff, give their position first, and then have you come
20 back and state your position, and make whatever argument you
21 care to make at that time.

22 MR. SHOLLY: I think that it might be more
23 efficient if I could address the parties briefly.

24 CHAIRMAN WOLF: First?

25 MR. SHOLLY: Yes, sir.

1 CHAIRMAN WOLF: You may do that. Do you want to
2 start it off; is that what you would like to do?

3 MR. SHOLLY: It is difficult to say what will
4 happen after, it will depend largely on the Board and on the
5 other parties.

6 I have had an opportunity last evening, for the
7 first time, to read the various pleadings that were placed
8 before the District Court in Washington, and the Appeals
9 Court. I have had a chance to review the staff's brief, and
10 also the licensee's brief. Looking at the way things have
11 developed thus far, it would be difficult for me to assess
12 my chances of convincing the Board that the fast purging
13 system should be stopped.

14 Regardless of that, however, I am of the opinion
15 that if the Board does in fact rule that way, it will be
16 immediately appealed to the Appeals Board, and if
17 unsuccessful there, the licensee will take it further to the
18 Commission, who I am sure will rule against the position
19 that I proposed, that the fast purge should be halted.

20 It would seem to me that a delay in the fast purge
21 of, perhaps, a day or two, or maybe three, would be the best
22 that I could hope to accomplish. At this point, while I am
23 essentially opposed to the venting, and I not personally
24 feel that it is or has been necessary, if that is the
25 declared position of the Commission, which I think it is, I

1 do not care to delay that.

2 I disagree with the basis for the venting having
3 started. I think there was a gross mistake made in assuming
4 that psychological stress would be minimized by the
5 venting. I think that that is completely in error.
6 However, since the venting has started, and it is clearly
7 not going to be stopped either by the Commission, and as
8 near as I can tell by the courts, it would seem to me that
9 given the situation we have now, the best thing to do would
10 be to go ahead and complete the venting as rapidly as
11 possible. Once it is started, the stress that was created
12 by the start of the venting is there. It is real, it exists
13 now. The best way to minimize it is to get it over with.

14 I disagree with the venting, as I said before. I
15 think that it is totally unnecessary. However, given this
16 current situation, the way things are developing, the past
17 history of the Commission on this issue and the courts', I
18 do not feel that it would be useful of anybody's time or
19 energy at this point to go forward with this motion.

20 I had briefly discussed this with Mr. Trowbridge
21 and with Mr. Chandler, and they both agreed with my
22 assessment, which I suspected that they would.

23 CHAIRMAN WOLF: Are you saying that you want to
24 formally withdraw the complaint?

25 MR. SHOLLY: I will do that. If that would please

1 the Board.

2 CHAIRMAN WOLF: You know, Mr. Sholly, the Board
3 has no feeling in this matter. We are here to hear it and
4 come up with a decision that is based on whatever evidence
5 is submitted.

6 MR. SHOLLY: Yes, sir.

7 CHAIRMAN WOLF: We do not want our feeling in the
8 matter to be a factor. I have no feeling personally.

9 How are you proposing that you would like to
10 appeal the matter to the Appeals Board?

11 MR. SHOLLY: No, sir. I think that that would be
12 a futile gesture in my estimation because it would certainly
13 go to the Commission ultimately, and I am convinced that the
14 Commission would rule that things should proceed as
15 planned.

16 I think that it would simply be more efficient to
17 simply withdraw the motion, and that is what I am proposing
18 to do.

19 I regret any feelings that I may have wasted
20 witnesses' time, and so forth. However, having not had an
21 opportunity to read most of the filings until last night, I
22 was not in a position, really, to make this assessment until
23 sometime late last night. I regret any inconvenience that
24 this may have caused to the parties.

25 CHAIRMAN WOLF: It is your right to bring the

1 motion and the appeal. There is no problem with that.

2 MR. SHOLLY: I formally withdraw the motion at
3 this point.

4 CHAIRMAN WOLF: Very well.

5 Dr. Johnsrud, will you state your appearance for
6 the record?

7 DR. JOHNSRUD: Yes. My name is Dr. Judith
8 Johnsrud. I apologize for being late. I have had to drive
9 nearly 100 miles to get here this morning for the
10 information that the purpose of today's hearing will
11 evidently not go forward, which I regret, too.

12 I do want, however, to place on the record ECNP's
13 concurrence with Mr. Sholly's views on venting, and express
14 our regret that we share his belief that any attempts to
15 prevent the venting at this stage will be futile, and not
16 worth the cost in time and effort for anyone. We do also
17 oppose the continuation of the venting given the fact that
18 other mechanisms for control of the krypton are available.

19 CHAIRMAN WOLF: At this point, Ms. Carter, do you
20 have any position regarding the withdrawal of the motion?

21 MS. CARTER: May I have a brief moment to confer
22 with my colleagues.

23 CHAIRMAN WOLF: Certainly .

24 MS. CARTER: I have just a brief two or three
25 sentences.

1 We concur with Mr. Sholly's assessment of the
2 futility of proceeding further with his motion, and
3 therefore approve of his withdrawal of the motion. But we
4 certainly have at all times respected his right to bring
5 that motion, and we commend now and have commended him
6 privately in the past for his performance in these and other
7 proceedings.

8 We think that he has always acted in a manner to
9 conserve time and effort of other parties, and to bring
10 matters to the Board which were not frivolous.

11 We would state once again for the record what we
12 have stated publicly in other forums. We concurred in the
13 venting decision by the NRC, and we agree with the NRC and
14 others that the venting should continue to proceed, and we
15 are sure that it will.

16 CHAIRMAN WOLF: In light of the withdrawal of the
17 motion, I don't see any reason why we should go through the
18 analysis of the briefs, and the affidavits and materials
19 that have been submitted, unless the parties want to.

20 MR. TROWBRIDGE: I have no interest in wasting the
21 Board's time or anybody else's time.

22 CHAIRMAN: What about staff?

23 MR. CHANDLER: We would agree, Mr. Chairman.

24 I would like to note that although the staff has
25 taken a position contrary to the views, both as a matter of

1 law and fact, that are raised by Mr. Sholly, under no
2 circumstances should it be understood that we consider his
3 efforts and his claims to be frivolous, or a burden, or
4 inconvenience upon the staff.

5 We think that he has very valid and legitimate
6 concern, and we trust he appreciates the views and
7 considerations that the staff of the Commission have given
8 to this matter.

9 CHAIRMAN WOLF: As we move along, then, I would
10 still like to have a statement from anyone who can make it
11 regarding the newspaper article that we have from the New
12 York Times of July 4th, which is headed, "Scientists fear
13 release of krypton may have serious weather effects."

14 I would like the staff to comment on that, or
15 present whatever information they have on it, and also the
16 representative of the licensee.

17 MR. CHANDLER: Mr. Chairman, the staff would have
18 available Mr. Frank Congel who can make a statement
19 regarding the article.

20 CHAIRMAN WOLF: Could you spell your name, please?

21 MR. CONGEL: Yes, it is C-o-n-g-e-l.

22 CHAIRMAN WOLF: Will you first start off by giving
23 us your qualifications and background?

24 MR. CONGEL: Yes, sir. I am the Leader of the
25 Radiological Impact Section in the Office of Nuclear Reactor

1 Regulation. As part of my duties I do both dose and
2 population calculations associated with the release of
3 nuclides to the environment. My group also evaluates the
4 health and risk impacts associated with those releases.

5 In the course of our duties, we do attempt to keep
6 track and current with some studies such as the one that is
7 referred to in the New York Times article. I think the
8 important point to be made is the fact that we were aware of
9 this study when it was published several years ago. I
10 believe that it was published in 1976.

11 I have just had a chance to quickly glance at the
12 article. It did draw attention to the fact that there is a
13 possibility of geometric, in terms of overall weather
14 effects, associated or possible with substantial releases of
15 Krypton -85 into the atmosphere.

16 Of course this was taken into consideration by EPA
17 in its proposals for ultimately limiting the Krypton-85
18 releases.

19 CHAIRMAN WOLF: How do you know that EPA took that
20 position?

21 MR. CONGEL: We were participants in their fuel
22 cycle standards hearing before they promulgated the uranium
23 cycle standard, which is 40 CFR Part 190. 40 CFR Part 190
24 includes the individual dose limitations and proposals to
25 limit ultimately the release of Krypton-85 into the

1 atmosphere.

2 During those proceedings this fact, it is my
3 understanding, was brought up, and one of the things that
4 were considered and recognized as a potential problem if
5 Krypton-85 continued to be released into the atmosphere
6 without any control systems being in the design built or
7 used.

8 CHAIRMAN WOLF: What control systems are
9 contemplated?

10 MR. CONGEL: The control system, I am not in
11 detail familiar with. The standard regarding the release of
12 Krypton-85 into the atmosphere is not now in effect, and is
13 proposed to go into effect, I believe, in 1982 or 1983.

14 At the time the uranium fuel cycle was
15 promulgated, it was recognized that control systems were not
16 available on a general basis, or they were pretty much on a
17 feasibility stage of investigation. We felt that by 1982 or
18 1983, I am not sure what year, the Krypton 85 releases
19 primarily from fuel reprocessing would have to be controlled
20 so that they would release -- I am trying to recall the
21 number -- so many thousands of curies per gygowatt year of
22 electric generating capacity that the fuel cycle plant was
23 handling. It was 50,000 curies per gygowatt year of
24 electric.

25 Because of the fact that the fuel processing, or

1 fuel reprocessing industry has not considered this as an
2 option right at this moment.

3 CHAIRMAN WOLF: Now tell us the amount of releases
4 in connection with this plant, TMI-II; what is the
5 relationship between that and what the studies show to be a
6 safe amount?

7 MR. CONGEL: I think the way to handle it is, the
8 present worldwide inventory of Krypton-85 associated with
9 fuel reprocessing activities in other parts of the world, as
10 well as the Krypton 85 that is in the atmosphere as a result
11 of weapons testing is on the order of 300 million curies.
12 The addition of 50,000 curies from the Three Mile Island
13 facility is a very small fraction of the total world
14 inventory.

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1 CHAIRMAN WOLF: Are you saying that the world
2 inventory is not a threat at this time, the 300 million?

3 MR. CONGEL: Based on my understanding, the
4 potential threat would come if the releases associated with
5 the uranium fuel cycle were to continue unabated without any
6 potential controls. There is a possibility of some future
7 effects. There is an early warning associated with this
8 particular article that has to be considered when one is
9 looking at the overall impact of the operation of the
10 uranium fuel cycle.

11 CHAIRMAN WOLF: Is there any agreement with
12 foreign nations regarding the release?

13 MR. CONGEL: I don't know.

14 CHAIRMAN WOLF: Does the Commission know?

15 MR. GOLDBERG: Mr. Chairman, Mr. John Collins of
16 the staff has indicated his preparedness to answer the
17 Board's question. He is the Deputy Director of the Three
18 Mile Island Program Support Staff.

19 CHAIRMAN WOLF: Thank you.

20 MR. COLLINS: Mr. Chairman, I am senior NRC man on
21 the site. With regard to the worldwide situation, there are
22 two committees presently developing criteria.

23 One is established by IAEA looking at the total
24 amount of krypton being released from fuel in processing
25 plants and nuclear power plants worldwide with the exception

1 of the Russians. It has been very difficult to get any
2 information from them.

3 The other organization is OECD, the Office of
4 Economic Community Development, which is made of the Western
5 and European communities.

6 Both of those groups at the present time have
7 studies underway. I happen to be on both committees. They
8 will come out and hopefully adopt some type of standards
9 similar to EPA standards.

10 CHAIRMAN WOLF: Thank you.

11 Would you continue now, Mr. Congel.

12 MR. CONGEL: Yes, sir. The only thing that I
13 wanted to conclude is based on the existing world inventory
14 and the facts that the studies indicate a long-term
15 consideration of this phenomena is in order. Fifty thousand
16 additional curies associated with the TMI purge would have
17 no effect and would not be related or could possible
18 seriously increase the risk associated with this potential
19 effect at all.

20 CHAIRMAN WOLF: Thank you, Mr. Congel.

21 MR. GOLDBERG: Mr. Chairman, I would just like to
22 note for the record that the statement of Dr. Congel's
23 professional qualifications accompanied the staff's July 7th
24 response to Mr. Sholly's motion in this matter.

25 CHAIRMAN WOLF: Thank you.

1 Are there any comments on the statements that have
2 been made?

3 Dr. Johnsrud.

4 DR. JOHNSRUD: I would only comment, Mr. Chairman,
5 that it seems to me that the Board would be well advised to
6 have the recommendations, the assistance of qualified
7 research meteorologists in regard to this matter. Training
8 in radiation health may or may not involve sufficient
9 knowledge of the issues that are clearly at stake with
10 respect to this article.

11 MR. TROWBRIDGE: Neither ECNP nor Dr. Johnsrud is
12 a participant in the venting program. I don't think the
13 suggestions are in order.

14 DR. JOHNSRUD: I believe that the Chairman asked
15 for comments from any of the parties here.

16 MR. TROWBRIDGE: You are not a party to the
17 venting.

18 DR. JOHNSRUD: Here.

19 CHAIRMAN WOLF: Very well. Do you have anything
20 further, Mr. Goldberg?

21 MR. GOLDBERG: No, Mr. Chairman. I would just
22 like to say that Dr. Congel tried as best as he can to
23 respond to the inquiry that the Board made during the recess
24 yesterday and we tried to oblige the Board by Dr. Congel's
25 remarks. We do not feel that any further evidentiary

1 investigation into these matters is either warranted or
2 appropriate given the apparent determination of the
3 proceeding regarding the June order.

4 CHAIRMAN WOLF: Well, as we said before, we
5 appreciate Dr. Congel's statement. I think it was helpful.

6 Do you have anything that you wish to offer in
7 connection with this, Mr. Trowbridge?

8 MR. TROWBRIDGE: I think Dr. Johnsrud was not here
9 when we started the proceeding and is unaware that we have
10 discussed already the fact that we are meeting Friday in an
11 effort to see what can be done about agreement on
12 contentions. Also we suggested that following that meeting,
13 assuming we don't agree in all of the contentions, that we
14 would get word to the Board in writing as to what agreements
15 had been reached and what was proposed in the way of further
16 schedule.

17 DR. JOHNSRUD: I understand then that this is the
18 agreement that was reached yesterday afternoon among the
19 parties?

20 MR. TROWBRIDGE: Right.

21 CHAIRMAN WOLF: Well, at this time then I am going
22 to ask the members of the Board, Mr. Shon and Dr. Paris to
23 ask some questions.

24 MR. SHON: We are still curious about a couple of
25 things that have happened in connection with the venting.

1 One is the behavior of the particulate monitor.
2 Is there anyone here that can tell us two things about the
3 difficulty that apparently was experienced with the
4 particulate monitor early on last Saturday or so?

5 I want to know two things: one, what went wrong;
6 and, two, what was done to fix it.

7 MR. TROWBRIDGE: Mr. Michael Morrel who is the
8 project engineer for the venting program, a Metropolitan
9 Edison employee, is here and would have been our witness
10 this morning, is prepared to talk. Why don't I have him
11 stand up and answer the Board's questions.

12 Why don't you state your full name and your
13 position and give a brief description of your qualifications
14 first.

15 MR. MORRELL: My name is Mike Morrell. I have a
16 BS from the U. S. Navel Academy, an MBA from Fairleigh
17 Dickinson University and am a professional engineer in the
18 State of Pennsylvania. I am the project manager associated
19 with reactor purge at Three Mile Island.

20 I was present in the control room on Saturday,
21 June 28th, when we started the venting. Your questions are
22 about alarms that we saw on particulate monitors when we
23 starting the venting process.

24 MR. TROWBRIDGE: Was that your question, what
25 happened this morning at 3:45 a.m., or am I wrong?

1 MR. SHON: We had seen in the newspapers that when
2 the venting first started there were alarms on the
3 particulate monitor that something was going to clear the
4 alarms and that the monitor was thereafter in some manner
5 modified to make sure this would not happen again.

6 It was also said in the newspapers that it was
7 because the monitor was detecting krypton and not
8 particulate, and I can understand that that might well
9 happen with a moving paper monitor, but we want on the
10 record an explanation of what went wrong and what was going
11 to fix it.

12 MR. MORRELL: When we began the venting on June
13 28th at 8 a.m. we experienced a high particulate alarm on
14 the hydrogen control system radiation monitor and also on
15 the monitor which is the final stack monitor that was on
16 both alarms on both monitors.

17 The alarm was not due to particulate. It was due
18 to the counters actually seeing the beta activity from the
19 krypton 85 which was being passed through the monitors.

20 When we received the alarm, which was about three
21 to four minutes after starting the venting, we immediately
22 shut down the venting in accordance with the procedure and
23 then removed the filter paper in both monitors to countdown
24 for particulate activity. That counting showed no
25 detectable particulate activity.

1 After that we did several things prior to starting
2 back up in a test venting mode. We instituted a fifteen
3 minute sampling program on a bypass filter which we
4 installed on the stack monitor. By that I mean we installed
5 a pump which bypasses the normal particulate monitor and
6 removed the air from the stack to put the particulates on a
7 filter paper. We removed that paper and counted it every
8 fifteen minutes so that it was almost continuous.

9 We also began the installation of a sodium iodide
10 crystal hooked up to a multichannel analyzer which would
11 then be able to be discriminative to pick up only the gamma
12 radiation associated with the particulates in question.

13 We then also made a computer program modification
14 after talking with the manufacturer of the stack monitor,
15 Eberline Company. We talked to them and they indicated
16 there was a possibility of adjusting the weed-out of the
17 particulate channel to subtract the krypton reading. So on
18 their advice and using their recommendations we made that
19 adjustment in the program. We did now, however, use that
20 particulate channel in the normal stack monitor as the
21 particular monitor when we started up. We were simply
22 trying to see how it would work with this modification
23 made.

24 So when we started back up our particulate
25 monitoring system was a 15-minute sampling accounting of the

1 stack monitor filter. Shortly thereafter we put on line the
2 multichannel analyzer which then became out real-time
3 particulate radiation monitor.

4 DR. PARIS: Mr. Morrell, how did the particulate
5 monitor discriminate between the radiation from krypton and
6 particulate radiation in this particular matter?

7 MR. MORRELL: Are you asking about the original
8 particulate monitor or the second one that we installed?

9 DR. PARIS: Well, the modification that Eberline
10 suggested.

11 MR. MORRELL: Well, the modification that Eberline
12 suggested did not really discriminate. The particulate
13 monitor in the Eberline system is a beta assimilation
14 detector. A beta assimilation detector is then calibrated
15 to be sensitive to the betas from strontium 90. Krypton is
16 also a beta emitter. So the betas from the krypton made
17 that high alarm condition occur.

18 The modification that Eberline proposed was simply
19 subtracting the krypton reading in the computer did not
20 really discriminate against the krypton. So it was a
21 programming change rather than a discrimination of the
22 krypton betas.

23 DR. PARIS: So in effect it was seeing the same
24 thing that we have seen before but it was being subtracted
25 from your read-out and you unplugged the alarm, or something

1 like that?

2 MR. MORRELL: We did not unplug an alarm, but in
3 the same monitor we have a krypton channel. We have a
4 krypton channel and a particulate channel. So if you take
5 the krypton channel reading and subtract it from the
6 particulate channel reading then what is left should be only
7 particulate and that was the modification we made. We did
8 it in accordance with Eberline.

9 MR. SHON: That is probably true, Mr. Morrell, but
10 I think that the constants that you have to use to multiply
11 by to get a ratio between the krypton count and particulate
12 contaminated by krypton count would be something that would
13 take a little doing. It is not immediately obvious that
14 either of these are absolute counters or anything like
15 that. What I am saying is that I don't think I quite trust
16 that system. Evidently you didn't either.

17 MR. MORRELL: We did not trust it. Eberline
18 recommended we make the change and we did. We were not
19 certain if the constant you should use is a ratio of one; in
20 other words, do you subtract out one times the krypton
21 reading or some fraction times the krypton reading.

22 We subsequently asked Eberline to do their lab
23 calibration to try to better determine the fraction we
24 should use. They did that and we changed the fraction
25 subsequently. We still have not been satisfied with it and

1
2 that is why we have gone to a different particulate detector.

3 MR. SHON: It looks as if that would be exactly
4 the difficulty you would have. I take it that krypton is
5 for some reason simply adhering to the paper and carrying
6 through?

7 MR. MORRELL: It may be adhering to the paper or
8 it may just be the fact that it is such a high concentration
9 stream going through the monitor. Our opinion is that the
10 stream going through is of such concentration that the betas
11 from the stream passing through are the cause of the alarm
12 rather than krypton collecting on the paper.

13 MR. SHON: The structure of the monitor is such
14 that the gas is actually passed near the scintillation
15 crystal?

16 MR. MORRELL: Yes.

17 MR. SHON: Would it be in a beta range?

18 MR. MORRELL: Say that again.

19 MR. SHON: Within a beta range of the crystal? I
20 mean, you can see it directly?

21 MR. MORRELL: Yes, within a beta range. The gas
22 comes straight down and then makes a 90 degree turn and goes
23 through the filter paper. Then the scintillation detector
24 is sitting right at that 90 degree minute so the krypton
25 goes right in front of the face of the scintillation

1 detector and then turns 90 degrees and goes through the
2 filter paper.

3 MR. SHON: It would seem though just offhand if it
4 took four or five minutes for it to start alarming that that
5 might be due to something building up on the filter paper
6 rather than due to what passes right in front of the crystal.

7 MR. MORRELL: I believe that it is just the
8 response time of the hydrogen control system. In other
9 words, when you start the venting you do not immediately get
10 krypton in the stack. Then when you get krypton in the
11 particulate monitor you do not immediately get response due
12 to electronic delay time also. So what we saw is a slow,
13 steady increase of the needle after about one minute of the
14 venting. I believe it was simply due to transit time of
15 krypton and then electronic delay time.

16 MR. SHON: I see. Thank you.

17 Go ahead, Dr. Paris, I didn't mean to interrupt.
18 You were asking some questions I think.

19 DR. PARIS: Well, I have nothing else on this
20 particular subject.

21 MR. SHON: That is all I had. I wanted to know
22 what went wrong and how you fixed it and I think you have
23 explained that to us.

24 You had something else I believe.

25 DR. PARIS: Mr. Morrell, I think you can answer

1 this for us. The Board reads in the morning news that the
2 rapid purge will begin around mid-day today; is that correct?

3 MR. MORRELL: That is correct.

4 DR. PARIS: Can you give us an estimate of the
5 rate at which you expect krypton to be released in terms of,
6 say, a 24-hour period and the amount you expect to be
7 released, say, in the first 24 hours and an estimate of the
8 dose that you would expect that to give at, say, the
9 perimeter of the exclusionary?

10 MR. MORRELL: I can answer that question to some
11 extent. However, it has to have a lot of provisos on the
12 front. You have to assume the meteorology which I cannot
13 predict or accurately assume, and you have to assume that
14 there will be other mechanical problems or computer problems
15 associated with the system. In other words, the
16 meteorological conditions must be such that I can assume a
17 constant flow rate or some flow rate in making predictions.

18 The meteorological conditions would also have to
19 be such that I could predict the wind direction and
20 therefore I could predict the impact of the plume with the
21 terrain and therefore state what the dispersion of the plume
22 would be prior to its impacting the ground.

23 So in terms of doses I could not give you any real
24 dose estimate. I could give you an estimate based on our
25 past days of purging perhaps.

1 DR. PARIS: Why don't you do that.

2 MR. MORRELL: All right.

3 DR. PARIS: Indicate the assumptions you are
4 making.

5 MR. MORRELL: My assumption will be that we purge
6 at 1,000 cubic feet per minute for the entire 24 hours and
7 that the release rate would be in the neighborhood of what
8 we have seen over the past few days which is approximately
9 40,000 microcuries per second.

10 If you take 40,000 microcuries per second and
11 simply multiply out that number of microcuries per second by
12 the number of seconds in a day that would give you the
13 release. I will have to make a quick calculation to do
14 that. I am also assuming that we will purge the entire day
15 with no interruptions, 24 straight hours in other words.

16 That would be 3,888 curies in 24 hours which is
17 not out of line with some of the days that we have already
18 had. Our maximum day so far has been about 4,980 curies in
19 a single day. However, due to the now diluted concentration
20 of krypton in the building, even though we can move to a
21 faster rate system, the number of curies discharged will be
22 down some.

23 So if you take 3,888 curies and then assume some
24 meteorology then you could calculate those offsite. Since it
25 is very direction dependent I would only be willing to say

1 that it will certainly be much less than the .3 millirem per
2 hour skin dose limit which we are using right now in our
3 computer program. Therefore, if you assume that it was
4 somewhere less than probably .1, which is logical, it would
5 be significantly less than a 2 millirem skin dose to a
6 hypothetically maximally exposed individual offsite. That
7 person would have to be at the point when the plume touches
8 down for the entire time.

9 DR. PARIS: Today's weather I take it is very
10 different from the weather you have been experiencing for
11 the last week or so. How would this affect the plume or how
12 would it affect your venting?

13 MR. MORRELL: The rain has no effect whatsoever on
14 the venting. I do not know the exact wind conditions but I
15 suspect there is a several mile an hour wind and therefore
16 it should allow us to purge at least to the 1,000 cubic feet
17 per minute rate. So it should be fairly good weather
18 conditions for venting at a thousand cubic feet per minute
19 or less. When I left the allowable flow rate was
20 approximately 1,100 cubic feet per minute with our latest
21 computer printout. The normal cycle is that when the sun
22 comes up and it starts heating up the earth then your
23 allowable flow rate slowly increases at least towards noon.
24 So I suspect the conditions are very good right now for
25 venting with the fast system.

1 DR. PARIS: Have you been cutting back the release
2 rate at night?

3 MR. MORRELL: Yes, usually we do. There have been
4 some conditions when we have been flow limited. That means
5 we are at the maximum flow rate of the system because of the
6 very low concentrations that we now have in the reactor
7 building. Therefore we didn't have to cut back because we
8 were not at our allowable release rates anyway. In general
9 our flow rates at night and our curie releases at night have
10 been significantly less than our daytime releases.

11 DR. PARIS: One final question. If things go as
12 you hope they will technologically when will you be done?

13 MR. MORRELL: Assuming we get on the large flow
14 rate system today I believe we will be done in approximately
15 seven days.

16 DR. PARIS: Thank you, Mr. Morrell.

17 MR. CHANDLER: Mr. Chairman?

18 CHAIRMAN WOLF: Yes.

19 MR. CHANDLER: Dr. Bernard Synder, who is Director
20 of the TMI Program Office, has something he wished to add to
21 a statement made earlier by Mr. Morrell in response to the
22 Board's question. If he may just add something.

23 CHAIRMAN WOLF: Would he do that then, please.
24 Please announce your name.

25 DR. SNYDER: I am Dr. Snyder. I am the TMI

1 Program Director and have been since the 1st of April.

2 The only minor thing I wanted to make sure you
3 were aware of is that when Mr. Morrell mentioned that the
4 filter papers were being sampled on a 15-minute cycle
5 including the beginning of the purge, both we and the
6 Environmental Protection Agency obtained from that end those
7 same filter papers and did the benefit counting of the
8 particulates. Neither they nor our laboratory people were
9 able to detect any particulates at all. That is my point.

10 DR. PARIS: Dr. Synder, is the NRC and the EPA
11 analysis of the filter papers continuing?

12 DR. SNYDER: Yes. They will be continuing.

13 MR. SHON: Mr. Morrell mentioned that you were
14 using sodium iodide crystal to count. Are you using it on
15 the filter papers also.

16 FROM THE AUDIENCE: (Chorus of agreement.)

17 MR. SHON: What particular nuclides were you
18 looking at?

19 MR. MORRELL: We are not still doing 15-minute
20 sampling. With the real-time particulate monitor we are now
21 using daily counting of the filter. We are doing a scan
22 with a Geli detector and therefore it should pick up
23 essentially any gamma-emitting isotope.

24 MR. SHON: I see.

25 CHAIRMAN WOLF: Thank you.

1 Are there any further questions?

2 MR. CHANDER: Mr. Chairman, yesterday, Mr. Shon
3 raised a couple of questions. I am not sure whether his
4 questions have been answered this morning.

5 MR. SHON: I don't believe they have, Mr.
6 Chandler. Actually I asked them in connection with us
7 considering the motion that was at that time before us but
8 it has since been withdrawn. Out of curiosity it would be
9 nice to have answers.

10 They were: What fraction of the total curies had
11 been released; and whether or not the operation as it now
12 stands could continue were we to reverse the Commission and
13 put the technical specs back to what they were before
14 modification.

15 MR. CHANDLER: Let me see if I can provide some
16 general information. If I start floundering I will call on
17 somebody to help me out.

18 I believe, as Mr. Trowbridge indicated yesterday,
19 approximately 50 percent of the krypton has already been
20 released from the TMI-2 reactor building. There were two
21 technical specifications that were affected by the
22 Commission's action.

23 One of them pertained to the instantaneous release
24 rates and when calculated out I believe permitted the rate
25 of approximately 45,000 microcuries per second.

1 The quarterly limit is not a rate but a total
2 amount and would have been approximately 55,980. The slow
3 purge would not have exceeded that quarterly rate but would
4 have and did exceed the instantaneous rate.

5 MR. SHON: That is what we thought. However, you
6 are now down to the point in the purge where you are not
7 exceeding the instantaneous rate any more. If I understood,
8 the number given by Mr. Morrell was 40,000 microcuries per
9 second and you are allowed 45 or some such thing as that; is
10 that right?

11 MR. MORRELL: That is correct. We are not
12 routinely using the small system exceeding the instantaneous
13 release rate tech spec. When we get to the bigger system we
14 will at least have a larger flow rate capability and we
15 might again exceed it.

16 MR. SHON: And obviously also if you complete the
17 entire operation in less than a quarter or even in a week or
18 so you don't exceed the quarterly limit either because it is
19 a few thousand curies over the total; is that correct?

20 MR. MORRELL: That is correct. You should also
21 realize we put some curies out during the past quarter of
22 approximately, if I remember correctly, four or five
23 thousand. So if the quarterly release tech spec were in
24 effect we should not reach it at this point.

25 MR. SHON: Thank you. I think that clears the

1 whole thing up.

2 CHAIRMAN WOLF: Mr. Sholly, Dr. Paris wants to
3 speak for the Board and will do directly to you.

4 DR. PARIS: Mr. Sholly, the Board also wants to
5 express its appreciation for your efforts in this matter and
6 to indicate to you that we certainly appreciate the sense of
7 frustration that you have experienced because of the
8 Commission's order permitting fast rate venting to
9 proceeding while at the same time allowing for a hearing to
10 be held if necessary in the matter.

11 CHAIRMAN WOLF: Does anyone have anything further
12 to add at this time?

13 (No response.)

14 If not, we will adjourn sine die I guess.

15 (Laughter.)

16 We will wait to hear from the counsel before we
17 proceed. However, we will issue a memorandum regarding the
18 venting situation and we will withhold any memorandum
19 regarding the change in the technical specifications until
20 we have heard from the parties and have the contentions in
21 hand to submit.

22 MR. TROWBRIDGE: It appears to me we will have
23 open, Mr. Chairman, the question of standing fo
24 Lochstet. Even though we will be discussing contentions
25 with him the Board may wish to rule on that subject.

1 CHAIRMAN WOLF: At this time you mean? I thought
2 we would rule on that when we got out the memorandum and
3 order on the changing of the technical specifications.

4 MR. LOWBRIDGE: If you were to rule against Dr.
5 Lochstet you would save him a trip.

6 CHAIRMAN WOLF: I beg your pardon?

7 MR. TROWBRIDGE: If you were to rule against Dr.
8 Lochstet you would save him a trip.

9 CHAIRMAN WOLF: I haven't conferred with the other
10 members of the Board, but at least as far as I am concerned
11 I would not rule against him.

12 MR. TROWBRIDGE: We will proceed on the assumption
13 that he is a party.

14 CHAIRMAN WOLF: There is no basis for worrying
15 about the trip.

16 Very well then we will stand adjourned.

17 (Whereupon, at 9:55 a.m., the hearing adjourned
18 sine die.)

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NUCLEAR REGULATORY COMMISSION

This is to certify that the attached proceedings before the

in the matter of: THREE MILE ISLAND UNIT II

Date of Proceeding: July 8, 1980

Docket Number: 50-320-OLP

Place of Proceeding: Harrisburg, Pa.

were held as herein appears, and that this is the original transcript thereof for the file of the Commission.

Patricia A. Minson

Official Reporter (Typed)

Patricia A. Minson

Official Reporter (Signature)

POOR ORIGINAL

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Official Reporter (Typed)

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