UNITED STATES NUCLEAR REGULATORY AGENCY

ENCLOSURE 2

*****

ADVISORY PANEL FOR THE DECONTAMINATION
OF THE THREE MILE ISLAND, UNIT 2

*****

75th Meeting

Thursday, April 16, 1992
Pennsylvania Ballroom
Harrisburg Hotel
23th South 2nd Street
Harrisburgh, Pennsylvania

PANEL PARTICIPANTS:

ARTHUR E. MORRIS, Chairman
ELIZABETH N. MARSHALL
FREDRICK S. RICE
JOEL ROTH
THOMAS D. SMITHGALL
GORDON E. ROBINSON
KENNETH L. MILLER

PANEL PARTICIPANTS: [Continued]

NIEL WALD, M.D.

THOMAS GERUSKY

MICHAEL T. MASNIK

AUDIENCE PARTICIPANTS:

ERNEST SCHYDER, GPUN Staff

ROBERT ROGAN, GPUN Staff

RICHARD DUDLEY, NRC

SKIP YOUNG, NRC

LEE THONUS, NRC

REBECCA HARTY, NRC

ERIC EPSTEIN, Member of the Public

SCOTT PORTSLINE, Member of the Public

KAY PICKERING, Member of the Public

DEBORAH DAVENPORT, Member of the Public

ROGER SHAW, Radiological Control, TMI Units I & II

P R O C E E D I N G S

[7:03 p.m.]

CHAIRMAN MORRIS: Good evening, ladies and gentlemen.

I'd like to call the panel meeting together, to order, and announce that this is our 75th meeting, a milestone. We haven't been meeting very often, however, lately. The last meeting was on January 15th of last year, 1991.

Since that time, we have been waiting for the NRC staff to publish the Safety Evaluation Report on PDMS, and I think they took more time, I'm sure, than they expected to take, and we were hoping that we would have met before now, but it was not published until February the 20th of 1992.

It's my understanding that the NRC has copies with them tonight that the public may receive. There are limited copies that they have with them. So, if they run out of copies, please give your name and address to -- I guess Mike Masnik, is it?

DR. MASNIK: Right.

CHAIRMAN MORRIS: And he will be happy to make sure that you get a copy of the document.

I am circulating -- and maybe everybody has seen it already, the six panel members that are here -- information on panel membe. ' names and addresses. If

anything has changed, please so note. Otherwise, just put "okay" next to your name, please.

Since we last met, Ivan Selin is the new chairman of the NRC, and Gail dePlanque is a new commissioner, and hopefully, maybe two or three months from now, we'll have an opportunity, I hope, to meet with the NRC, and through these minutes, we tell them that we look forward to working with them as panel members.

Just two other comments: Tom Gerusky, who I think has been a panel member since the inception, has requested to resign. As I understand it, you can't resign from this panel. You must request to resign, and then you are informed whether you -- whether it's accepted or not.

Tom apparently is doing work for the DOE. I don't think he's an employee of the DOE yet, but he apparently is doing work for them.

And Gordon Robinson has also requested to resign. He is with us this evening, as is -- Tom, why don't you come up and join us tonight, if you would?

Lastly, I would like to mention that Niel Wald, one of our outstanding members, has recently prepared, if I can find it here -- recently did a paper on the Nuclear Regulatory Commission's TMI Decontamination Advisory Panel and public stress mitigation, and it's quite an interesting report, and I maybe would recommend it to anybody from the

public that maybe has not had a chance to see it, and we thank Niel for maybe having the only formal explanation of what we're all about, and now that --

MR. ~~ROSCH~~ WALD: Just a hypothesis.

CHAIRMAN MORRIS: Well, we're growing old with this panel, actually.

Tom, good evening.

MR. GERUSKY: Good evening.

CHAIRMAN MORRIS: Hopefully at the end of the meeting, we'll have a chance to thank you, but in case we adjourn quickly, if the hour is late, if it turns out that tonight is your last meeting and that of Gordon Robinson, I would like to thank you, on behalf of the panel, for all of the outstanding work you've done for the panel in attending the meetings and doing a lot of homework and preparation for the meetings and give this your -- both of you -- your recommendations and your technical background as to issues.

I keep -- every time I think of Gordon Robinson, I guess I think of criticality, and the issue is back again. You never let it go, I guess. From your standpoint, it's always been here. So, it's back again for, I think, a pretty serious review again.

But you both have served the panel extremely well, and on behalf of the panel, I thank you. Maybe some members of the panel want to express thanks, too, but I thank you on

behalf of the panel for your service.

And with that, we do have, as usual, a pretty tightly-scheduled agenda. The first order is the -- if I can -- let me ask first, does everybody have a copy of the agenda? Are they available to the public?

DR. MASNIK: Yes.

CHAIRMAN MORRIS: You have them? Okay. Then I won't read through it.

The first item, after my remarks, is the status of the clean-up activities by the GPU. So, if GPU would like to come forward, if they can figure out which one would like to do it --

MR. SCHYDER: You mentioned after you finished your remarks. I wasn't sure you were finished.

I'm glad to see you all here tonight. I'm looking forward to a very pleasant evening.

My name is Ernest -- my friends call me Ernie -- Schyder.

I am presently the Site Operations Director at Unit 2, and the bulk of my responsibilities involve managing all the work that's left to have Unit 2 meet the conditions specified in the SAR for shifting from Mode III to Mode IV, which you all understand as PDMS.

I have one slide I'm going to use tonight that summarizes in a -- in a rather, I think, oversight fashion

the bulk of the activities that are ongoing, but before getting into those details, a couple of opening remarks regarding some of the things that set the stage for 1992 and '93 are appropriate.

First of all, the company provided the required funding to make sure -- or adequate funding for the plan that is currently being executed for shifting from Mode III to Mode IV.

The budget for 1992 and '93 involves some $36 million, which we are expending, pretty much in accordance with the plan, since January of this year.

The second point I want to make is that, in this era of job security, the company is utilizing a portion of its excess capability in an effort to make sure that people stay employed in the general Harrisburg area for as long as they can be usefully employed within the company. That's the second prong of our effort.

Now, with that as a background, I plan to talk, for the remainder of my portion of the presentation, on the details of the work in process.

MR. SMITHGALL: As you're getting ready with that, if I might interrupt you a little bit, you mentioned the level of employment. Can you share with us the level of employment at present at the site and anticipated for the rest of '92 and '93?

MR. SCHYDER: Would you please repeat the question?

MR. SMITHGALL: The level of employment that you presently have at the site and what you anticipate for the remainder of your fiscal year that you just mentioned?

MR. SCHYDER: Presently -- prior to the start of 1992, the level of employment at Unit 2 was in the vicinity of approximately 60 people.

The workforce for GPUN system people has approximately doubled, and contractor presence in support of the activities in the order of magnitude of approximately 50.

MR. SMITHGALL: Thank you.

[Slide.]

MR. SCHYDER: Can you all see that slide that's up there?

This is a summary slide of the major activities that will be ongoing through the balance of this year.

The first is putting the reactor building into its PDMS condition.

The second involves balance-of-plant work, those areas outside the reactor building.

The third involves the staging and processing of accident-generated water, setting the stage for it to go to the fourth line, which is to complete the evaporation of the

accident-generated water.

On top of the first line, things that have happened, major things that have happened since your last meeting: Inside the reactor building, the reactor vessel met the planned PDMS conditions and is now in its PDMS condition.

It's been drained of all the water, and borated material has been placed in the bottom of the reactor vessel. It's been basically sealed up except for a chimney at the top of the reactor vessel which provides access for periodic inspections during PDMS.

The second triangle refers to the issuance of the SER by the NRC, which really set the stage for this evening's events and any events that will be forthcoming over the next few months.

With the infusion of -- I have to say this differently. Largely, in 1991, the bulk of the effort was in initiating the evaporation of accident-generated water. That process has continued up through February of this year.

We experienced some damage to one of the components in the evaporative process caused by caustic stress-corrosion cracking, which led us to make a decision with the contractor who is doing the evaporation with us to replace the entire unit.

That occurred in February, and we expect to have a

replacement unit on the site by May of this year and resume the evaporative process.

So, the bulk of the activities in 1991 involved evaporating AGW and making preparations for the reactor vessel to meet the PDMS conditions. Those two events were largely accomplished rather successfully.

In January of this year, with the expansion of the workforce, not only the workforce itself but the critical talent needed to plan, organize the work, as well as get the work done, we laid out a detailed schedule for all of the major things that had to be done in the reactor building itself.

Those major things included the removal of all combustible material, all of the temporary services, electrical services, etcetera, hoses and the miscellaneous material inside the reactor vessel, inside the reactor building, for eventual packaging and shipment to a disposal site.

We have shipped off a considerable amount of waste since January of this year, and as of this Monday, we will be shipping another 24 LSA containers off to be compacted down in South Carolina.

So, when we initially developed the schedules in January, it looked like we'd be able to complete the project by October of this year.

Our latest snapshot that's about two weeks old indicates that we're slightly ahead of that and that we'll probably complete the work by mid- to late September.

So, the planned work for achieving the PDMS conditions within the reactor building itself will complete early in the fourth quarter of this year or late in the third.

The next major item is balance of plant. We put the priority this year, early in the year, on developing the plans and the schedules for the reactor building.

The planning and scheduling is basically behind us for the reactor building, and as of the early part of February, we started to send teams out into the balance of plant to look at what had to be done out there.

There are 130-odd compartments that exist out there that have to be brought to a condition to satisfy the requirements of the SAR and the comments in the SER. That work is proceeding very nicely.

As a matter of fact, we expanded the number of teams of people required to do that over the past two weeks, with an expectation that our planning will be fully complete sometime by this summer.

Note that the PDMS condition of balance of plant is scheduled to complete in September of 1993, and I see that as not a major problem.

EPICOR processing: That is preconditioning the accident-generated water to a condition that will allow evaporation and allow the waste generated from the evaporation process to meet the transportation rules for shipping the waste for burial.

The bulk of the base-case water has been evaporated, about 1.2 million gallons. We will have evaporated approximately another million-and-a-half gallons before the summer of 1993.

So, the EPICOR processing that we're working on right now is the water in the spent fuel pool, and we'll get to the water in the fuel transfer canal, and then we'll get to the basement water -- that's the bulk of the water that's left for processing -- with the intent of leaving the spent fuel pool and fuel transfer canal dry and the basement dry, and those conditions will be ongoing as part of the balance-of-plant preparations for PDMS.

So, we're in the actual process of processing spent fuel pool water now, and that will be ongoing and ongoing and ongoing.

We have a sufficient inventory process right now so that when the evaporator is put back on the line sometime in May, there is adequate inventory to keep the evaporator busy for the rest of the year.

The evaporation rate that we expect to achieve is

approximately 150,000 gallons a month. If you look at a million-and-a-half gallons, that gets you up to about 10 months of processing.

The bottom bullet indicates that -- the green line means that we expect to achieve the conditions for PDMS no later than the end of the third quarter of 1993.

That concludes my remarks. I will be happy to answer any questions.

CHAIRMAN MORRIS: Thank you.

Any questions from the panel?

Joel and then Tom.

MR. ROTH: Do you happen to have with you or available a cost analysis of this program that you're showing us right now?

MR. SCHYDER: I don't have a copy with me, no. What I'm telling you are the current facts as I am fully aware, and I'm confident that my facts are factual.

MR. ROTH: I'm talking dollars. I'm not talking -- you're talking facts.

MR. SCHYDER: I'm talking dollars, too. I told you $36 million, didn't I?

MR. ROTH: Did you?

CHAIRMAN MORRIS: Yes. I thought you meant --

MR. SCHYDER: Then you obviously weren't listening.

MR. ROTH: I'm sorry, sir. I apologize.

MR. SCHYDER: I accept your apology.

MR. ROTH: Now can I start asking you questions, Ernest? I simply asked you a question. Do you have a cost breakdown. If you want to give me a wise remark, that's fine.

MR. SCHYDER: I didn't think it was a wise remark. I thought it was a candid reply.

MR. ROTH: I said a breakdown. Do you have a breakdown -- it's a simple question -- of these different processes?

MR. SCHYDER: Of course I have a breakdown. It's not with me.

MR. ROTH: Can you bring it with you next time?

MR. SCHYDER: No. I'll be glad to discuss it with the NRC.

MR. ROTH: What do you mean you will "be glad to discuss it with the NRC"?

MR. SCHYDER: Just exactly what I said.

MR. ROTH: Is this a new policy?

MR. SCHYDER: What do you mean by "a new policy"? Would you explain that for me, Mr. Morris?

CHAIRMAN MORRIS: I sense in you some arrogance this evening --

MR. ROTH: Yes.

MR. SCHYDER: Why?

CHAIRMAN MORRIS: -- quite frankly, sir, I heard the $30-some million, but that doesn't mean that somebody else didn't hear it wasn't listening, and it wasn't clear to me that it was the cost from the beginning of this year through the end of --

MR. SCHYDER: I think I clearly stated --

CHAIRMAN MORRIS: Excuse me, sir.

MR. SCHYDER: -- what the two-year budget --

CHAIRMAN MORRIS: Wait a minute.

MR. SCHYDER: -- $36 million --

CHAIRMAN MORRIS: Hey! Hey!

MR. SCHYDER: -- for 1992 and 1993.

CHAIRMAN MORRIS: Are you running this meeting?

MR. SCHYDER: I'd like to.

CHAIRMAN MORRIS: That's pretty clear. You are really arrogant, you know that? I will repeat again -- I mean this is an incredible outburst here by GPU. I can't believe it.

MR. SCHYDER: I don't think it's an outburst.

CHAIRMAN MORRIS: I do want to finish here. Until you're appointed the chairman, would you please let me finish?

What I heard you say was there was $30-some million available from the beginning of this year.

MR. SCHYDER: No. What I said was there was $36 million available.

MR. ROTH: Can we just get back to -- in other words, what you're saying -- let's just pretend that we're starting again.

MR. SCHYDER: Fine.

MR. ROTH: Okay? Do you have a breakdown of the individual projects that you have? I think that was my question.

MR. SCHYDER: Yes, there is, in great detail.

MR. ROTH: Okay. Then you said that you don't have it with you and that you won't bring it here, but you would discuss it with the NRC.

MR. SCHYDER: I will be glad to give the copy of the breakdown to the NRC, yes.

MR. ROTH: All right.

Then, Michael, would you please get that breakdown?

DR. MASNIK: I'll get it. I guess the question is whether or not the company will allow me to release it.

You know, you have to make a decision as to whether or not that kind of information ~~you would~~ can be released to us.

MR. SCHYDER: Let me defer to one of my assistants.

By the way, I meant to say in the beginning that any question that I can't handle myself, there are some other fellows from the company with me.

I'll ask Bob Rogan to comment on that.

CHAIRMAN MORRIS: While you're coming, could you, for the record, sir, tell us who your superior is, name and address, please?

MR. SCHYDER: Dr. Robert Long.

CHAIRMAN MORRIS: And address? Can you provide that for the record?

MR. SCHYDER: GPU Nuclear, Parsippany, New Jersey.

CHAIRMAN MORRIS: Okay.

For the record, I would like a copy of this transcript to be sent to that person, and I will send a letter to the person, too.

As I was saying before, before you rudely cut into me for the third time, what I heard you say on the record was 30-some million, whether it was -- excuse me -- don't jump in again; let me finish -- was 36 million or 30-some million from the beginning of this year, which was -- what was not clear to me was whether that was through all of this year or through the third quarter of 1993, including everything.

MR. SCHYDER: Through 1993.

CHAIRMAN MORRIS: Thank you.

MR. ROTH: Then can I just -- I'm almost afraid to ask, you know.

MR. SCHYDER: Oh, please don't.

MR. ROTH: Well, I won't, but I'll still ask. What type of timeframe, then, are we working on to get this information? In other words, if it's available, as you said --

MR. SCHYDER: I'll ask Mr. Rogan to answer that question.

MR. ROGAN: My understanding is the information is available. We would want to take a look at it.

I'd like to consult with my senior management, and assuming that the company would have no objection to its release, we would turn it over to Mike with the understanding that he would be able to distribute it to the members of the panel, but that is subject, of course, to my management's concurrence. I would feel obliged to ask them about it first.

MR. ROTH: Well, I guess the reason it seemed to me, at the beginning, to be a very simple straightforward question that's going on for almost 13 years, you know, is the dollars available, and most of the time, it's been pretty forthcoming, you know, from GPU, and all of a sudden, it seems that there are new processes that are now involved in dealing with this.

MR. ROGAN: No, I don't mean to imply there is any new process.

I'd just like -- I feel I ought to consult with my management and say the panel has requested this information --

MR. ROTH: I appreciate that.

MR. ROGAN: -- that's available, and do you have any objections to our providing it to them through the normal conduit, which would be through Mike, in which case I would be delighted to provide that information to you, because it does exist. There is no question about that.

DR. MASNIK: Bob, can you tell us -- in other words, can you give me a timeframe in which you would have an answer, so I can tell the panel? I mean would you know in a month, let's say?

MR. ROGAN: Oh, sure. I would expect, within the next week or two, we could give an answer and have whatever information would be appropriate release -- have it available.

I mean I don't think there is any intent on our part to withhold the appropriate information, and that's the way I'll pursue it, and it will be up to senior management to make the determination as to whether the format and what I have is appropriate.

CHAIRMAN MORRIS: Tom?

MR. GERUSKY: Yes.

I apologize if I didn't hear this as you were explaining it, but what is going to be the cost, the continuing cost following the final preparation for PDMS? What's the annual cost for maintenance of PDMS?

MR. SCHYDER: The current number, the current planning number for post-PDMS maintenance is in the vicinity of $6 million a year, ongoing for the duration of PDMS.

MR. GERUSKY: Okay.

CHAIRMAN MORRIS: Any other questions from the panel?

MR. SMITHGALL: I have a bunch.

CHAIRMAN MORRIS: Tom, go ahead, please.

MR. SMITHGALL: Maybe we'll all want to try to vent our feelings over the last 5 or 10 minutes of this, but I can remember back, right after the accident, this was kind of the feeling we had working with a utility company that's caused a problem down here, and I hate to see us, in 1992, going back to the same kind of a format.

We thought we had been working with the utility company straightforwardly, and it's unfortunate that we have to get back to that kind of rhetoric, but nonetheless that's just a comment.

My questions probably are not dollar questions, which, Mr. Schyder, you will getting more of. So, my

suggestion is, any meetings hence, come prepared for those questions to come more and more, because that's really the issue that we're talking about when we talk about PDMS.

But just a couple of questions to try to clear up my mind on some of the comments that you made in reference to the evaporation process and the effects of corrosion and stress and cracking on your equipment.

I guess my concern would be, if I'm correct, that you might be dealing with some of the tougher water as you get down into the basement, and would you be anticipating continuing --

MR. SCHYDER: I didn't hear that last statement.

MR. SMITHGALL: -- tougher problems, tougher water, I should say, in the basement area of the reactor, and would you be anticipating continuing problems with your evaporator process?

MR. SCHYDER: With the reactor -- with the replacement --

MR. SMITHGALL: Well, with the spent fuel water and the basement water.

MR. SCHYDER: I understand your question.

The problem with the -- would you mind if I digressed and gave you some background on what we think happened?

When the evaporator was procured by the company,

it was competitively bid, and the main feature or selling point of the design that was ultimately selected was the significantly reduced costs associated with shipping the waste, the residue from the process.

The traditional methods for packaging up the leftover waste was to take the slurry, harden it up, turn it into sort of a cement, and then ship it off for waste.

The company that was awarded the evaporator contract developed a technique for converting the slurry into a very fine powder.

Now, this very fine powder is produced in a device that's called a blender/dryer, in which the slurry from the process, the leftover from the evaporation process, is put into this vessel that heats it, evaporates off the water, and the remaining residue is a fine powder, and it has mechanical devices inside which tends to collect the powder and discharge it through a valve into a barrel, and the barrel is significantly reduced in volume compared to other methods.

The operating temperatures for this early design were such that it got the material, which was into the range where the caustic stress corrosion cracking could take place, and it failed.

There was a crack that developed along one of the helix arms inside the blender/dryer, which ultimately

failed, and that's when we, in concert with our contractor, made the decision to replace it.

Now, the upgraded design in the new blender/dryer will operate the device in a different environment, at reduced temperatures, and at a higher vacuum.

So, the environment inside the device will be different than the environment in which its predecessor operated.

MR. SMITHGALL: Is that at an increased cost to the utility?

MR. SCHYDER: No, not. The contract is a fixed-price contract. The contractor is paid exclusively on the gallons of water evaporated.

MR. SMITHGALL: Okay. Fine. That's good.

Just one other question in reference to your EPICOR II process and what you anticipate as the number of shipments of those off island now and through July, I guess it was?

MR. SCHYDER: We'll be processing probably up through the end of the year. I don't have that number with me. I'll be glad to get it for you, though.

MR. SMITHGALL: That's all I have.

CHAIRMAN MORRIS: Any other questions from the panel?

[No response.]

CHAIRMAN MORRIS: Are you prepared or is anybody prepared from GPU to speak to the cost for decommissioning at all, the amount of money that's been set aside to this point by the utility?

MR. SCHYDER: I'll defer that to Mr. Rogan.

MR. ROGAN: I can try and answer your specific questions. I don't have all of the details.

CHAIRMAN MORRIS: What would be, for me, specifically helpful is two numbers. One is a reminder to us as to the amount of monies that GPU had projected to be needed for the ultimate decommissioning, and secondarily, how much of that money has been set aside as of this date?

MR. ROGAN: As to the first question, Mr. Chairman, the number that has been highly advertised in the past as a result of the NRC's regulations was not an estimate of cost but a demonstration of reasonable assurance of availability of funds, and there is a difference there, because in each case, for each reactor and each site, there will be required at a certain point, in preparation for decommissioning, a site-specific cost estimate which will be the number, then, that everything else has to revolve around, and the funds will have to be adjusted to make sure that amount is ready.

Our certification amount, or what we call our target amount, is today, in 1991 dollars, $215.8 million.

Now, that sounds like a new number. It really is simply the 1989 number adjusted on an annual basis to 1991 dollars.

That compares with $135.8 million for Unit 1. So, you see a difference for the accident reactor versus a normal reactor at the ends of its normal life in terms of requirements for demonstration of financial assurance.

Today, my latest numbers indicate that we have collected, as of the end of February, just on the order of $37 million, which actually in the fund.

MR. SMITHGALL: Which one? That's in 2?

MR. ROGAN: This is for Unit 2.

MR. SMITHGALL: Okay.

MR. ROGAN: This is exclusively a Unit 2 number, $37 million, and our collections of funds are currently programmed to continue to the year 2014, which incidentally, obviously assumes that, at some point, the NRC will favorably consider our request for license extension from 2009 to 2014 to put it in track with Unit 1.

But as of right now, our funding program calls for collection of monies out to the year 2014.

CHAIRMAN MORRIS: Just one last question. How did you or GPU establish the 215 -- I realize, back in 1989 dollars, that's different -- but the 215 in 1991 dollars?

MR. ROGAN: We used several sources of information

to develop our technique.

The first was we used the basic information that was provided in the NRC's regulation, which said that, if you had a reactor of a certain size and a certain type and you plugged in certain numbers for energy output and so on and you got a number which was the lowest acceptable number or the number which would be acceptable to the NRC in terms of demonstration of financial responsibility.

In the case of Unit 2, we recognized there had to be some difference. So, we went back to some different NRC regulatory guidelines which were a result of some work that was done at Pacific Northwest Laboratories on various accident scenarios.

There were three accident scenarios presented, one minor, one half-serious, and one real serious, and none of them really matched up against the Unit 2 accident, but the Unit 2 accident seemed to fall somewhere between the midline accident scenario and the worst line accident scenario.

So, we did an extrapolation of the funding requirements that were identified in those guidelines and that analysis, added that onto the standard demonstration of assurance number, and came up with the number for the accident damage, and that turns out to be about an $80 million difference, and it is that $80 million that you may recall, around the first of the year, was the subject of

some discussion in information released from the company which said that the stockholders accepted the responsibility for making the difference between the baseline financial assurance number and the accident assurance number, and that $80 million is being funded out of stockholder funds from the three companies.

CHAIRMAN MORRIS: Thank you very much. That was very helpful.

MR. ROGAN: You're very welcome.

CHAIRMAN MORRIS: Appreciate it.

Anybody else have any questions, comments?

[No response.]

CHAIRMAN MORRIS: If not, thank you very much. We'll go to --

MR. SCHYDER: Mr. Chairman?

CHAIRMAN MORRIS: Yes.

MR. SCHYDER: I'd like to make one more comment, if I may.

CHAIRMAN MORRIS: Certainly.

MR. SCHYDER: Tom Smithgall, your comment about days gone by, I appreciate the sensitivity of that comment, and I don't expect that that is the case, and I also would expect that the relationship between the company and this committee will continue to be as it has been in the past, and I will endeavor to provide whatever support I can to

make sure that those relationships continue to be constructive.

CHAIRMAN MORRIS: Thank you for your comments. The proof of the pudding will be in the eating. I must say that.

I will finish by saying, on this subject, that I have been a person that, in the past, has been very supportive of GPU on their technical ability of cleanup.

I have been very critical of their public approach at times, and there's been times when they've handled themselves very well publicly, and there's other times when they have not.

Tonight, I think, was not a good night so far, and I've chaired this panel for over a decade now, it did not start out well with GPU, but thank you very much for your final comments. We appreciate them.

The next one is the NRC for status of their activities.

MR. DUDLEY: Good evening. My name is Richard Dudley. I am the Decommissioning Section Chief in NRR.

I'd like to first just briefly talk about a reorganization that ~~will be~~ is planned in the near future that would affect the way the organization that the NRC will use to manage TMI-2 licensing activities.

The licensing activities are in the Project

Directorate for Decommissioning Non-Power Rectors. Currently, that PD is headed by Dr. Sy Weiss, and he works in the Division of Advanced Reactors for Mr. Dennis Crutchfield.

Mr. Crutchfield's other responsibilities include standard plant licensing, advanced reactor work, and plant license renewal. As such, the decommissioning activities are not that directly related to his other activities.

So, after a period of about two years, the Commission has decided that the decommissioning activities, since they don't relate closely to the other things that Mr. Crutchfield normally does, we will reorgarize shortly to move the decommissioning activities from Mr. Crutchfield's division to a different division headed by Bruce Boger, the Division Director for the Division of Reactor Projects in Regions III, IV, and V.

This would be basically the operating reactors in the central to the western part of the country, and then Dr. Weiss will report directly to Bruce Boger, the Division Director.

So, other than moving the project directorate from one division director to another, there will be no other organizational changes.

CHAIRMAN MORRIS: Thank you.

Any questions?

MR. DUDLEY: Any questions on that?

MR. GERUSKY: Why not the division that handles the region this reactor is in?

MR. DUDLEY: It was a decision by management just based on --

MR. GERUSKY: Okay. That's the answer.

DR. MASNIK: The answer is obvious, that there are a number of reactors in this group in the decommissioning section.

MR. GERUSKY: Okay.

MR. DUDLEY: That's correct, yes.

DR. MASNIK: And some of them --

MR. DUDLEY: Yes. We're working on decommissioning reactors in Regions V, IV, and I.

MR. GERUSKY: Right.

MR. DUDLEY: So, neither division is exactly proper. So, you had to pick one, and one was picked.

MR. SMITHGALL: And does that meant that 2 is going to be under one directorate and Unit 1 under another directorate?

MR. DUDLEY: That is the case currently.

MR. SMITHGALL: Okay.

MR. DUDLEY: Currently, TMI-1 is administered by a different project director in yet another division of the NRC reporting to Mr. Steve Varga.

Any other questions?

CHAIRMAN MORRIS: No, but thank you very much.

Mr. Thonus, it's good to see you this evening.

MR. DUDLEY: Mr. Skip Young here will discuss some changes in the regional management chain.

MR. YOUNG: I'm Skip Young. I'm the Senior Resident Inspector assigned permanently down at the island at this time out of Region I. I had a slide, but --

CHAIRMAN MORRIS: You had a slide. Very good.

MR. YOUNG: I have a slide.

CHAIRMAN MORRIS: Good.

Right on time, Lee.

MR. YOUNG: Presently assigned to the TMI NRC resident office is a Senior Resident and a Resident Inspector. I presently hold the position of the Senior Resident, and I have a Resident working for me by the name of Dave ~~Boyer~~ Beaulieu.

On the 4th of May of this year, several individuals that presently are in my chain of command will change.

Presently, my Section Chief is Bill Ruland, who will, on the 4th of May, become John Rogge, and my Branch Chief, who is presently Ed Wenzinger, will become Alan Blough, and Bill Hehl will still be the Division Director, and we all report to Tim Martin, who is the Regional

Administrator.

Different from NRR, I am responsible for the inspection that occurs both at TMI-1 and -2. So, all the inspections and the direction of the inspection program at the island is conducted by me out of the region.

Comments or questions?

CHAIRMAN MORRIS: Any questions?

[No response.]

CHAIRMAN MORRIS: I don't hear any.

Thank you much.

Mr. Masnik?

DR. MASNIK: The last item that I want to cover quickly is the status of the PDMS review and the opportunity we gave for a hearing to the public.

The notice for opportunity for a hearing was issued in April of '91, and in May of '91, Mr. Epstein forwarded a petition to intervene.

The Board, after discussing with the parties, decided to wait until the PDMS Safety Evaluation Report was issued before they would take any further action, and as you had mentioned earlier, the staff took a little longer than they expected.

So, really, nothing was done as far as Mr. Epstein's petition until we issued that document, and we did that in February of this year.

Then Mr. Epstein filed contentions at the beginning of March, and we received those. The licensee also received them, and the Board had set up a schedule for responding to those filed contentions.

The licensee responded to Mr. Epstein's petition and contentions also in March, and then the staff filed its response on the last day of March.

The petitioner, Eric Epstein, was allowed to reply to the licensee's filing, which he did early this month, and now the petitioner's filing, Mr. Epstein, is pending before the Board.

So, that's where we are as far as the request for hearing is concerned.

I'll answer any questions you have on that.

CHAIRMAN MORRIS: Does anybody have a question at all at this point?

[No response.]

CHAIRMAN MORRIS: I don't hear any, Mike, or see anybody wanting to.

DR. MASNIK: Okay. We're done.

CHAIRMAN MORRIS: Thanks much.

I guess it's Lee Thonus at this point on the PDMS document.

MR. THONUS: My name is Lee Thonus, T-H-O-N-U-S, and I have with me Rebecca Harty from Battelle's Pacific

Northwest Laboratory, who will follow immediately after me.

[Slide.]

MR. THONUS: My first slide, I will be discussing the NRC's Safety Evaluation, and Becky will be discussing the TER, or Technical Evaluation Report.

The Safety Evaluation is a document that goes through the technical specification change that brings about Post-Defueling Monitored Storage on a point-by-point basis. It goes through, line by line, in order that they appear in the tech specs.

The TER uses a more integrated approach. It's a little bit easier, especially for a lay person, to read the TER.

You all have copies of both the SE and the TER.

[Slide.]

MR. THONUS: The main things that the PDMS license amendment does, the first, it changes the current operating license, which has restrictions on it such that it's an operating license, but they're not allowed to operate the plant, to -- it formalizes it with the possession-only license.

I guess you may ask what's the difference between a possession-only license and an operating license. You'd have to read Part 50 and digest it. There are some requirements in Part 50 that apply only to operating plants.

As a for instance, the station blackout rule is not applicable to a plant that's permanently shutdown and defueled.

The next bullet on my slide, the current technical specifications have an Appendix A and an Appendix B to the license, and they're just going to be consolidated into one group. That's not a change of any significance, other than editorial.

The next bullet, the PDMS Safety Analysis Report will replace the Final Safety Analysis Report for the facility.

Currently, the NRC issued an exemption in 1981 to the utility that they didn't have to update the FSAR like other plants do, but they gave us a series of TERs and Safety Evaluations describing various and sundry clean-up activities as they occurred and systems that would be put in place for the cleanup.

Normally, the FSAR, for an operating plant, is a living document. It provides continuous documentation of the safety basis for the plant.

Since, during PDMS, the plant will be permanently shut down, there will be the parallel to that of an operating plant, and it will be the PDMS SAR.

The next bullet there, there's a lot of language that's updated. It's mainly administrative in nature. The

word "operate" is often taken out and replaced with "maintained."

There's some references in the current license to the construction of TMI-2 which are taken out, since it was long ago constructed and they no longer need to be in there.

In the Safety Evaluation, every little change, whether you're changing the spelling of a word, has to have some line item addressing it.

There will be new license conditions generated by this change, and there are some technical and plant changes. The next slide shows the conditions of the license.

[Slide.]

MR. THONUS: The first item is a ventilation study.

Essentially, that condition is that GPU has to do a two-year study of contamination and the generation of airborne radioactivity in the auxiliary building and successfully demonstrate that any airborne radioactivity generated from the Aux and Fuel Handling Building would be less than 1 percent of their current limitations in order for the Aux and Fuel Handling Building ventilation to be secured during PDMS.

The second condition is a containment leak test. It's currently described, but it needs to be fleshed out as to the specifics of the containment leak test. This also

will demonstrate 1 percent of their current limits.

The purpose of both of those is to demonstrate that, if there is any radioactivity, any airborne radioactivity from either of the buildings, it would be extremely small.

Then there is a series of plans that they have to have approved by the NRC, and these are pretty much the same types of plans, although there will be some differences between this shutdown plant and operating plant, but every plant has to have a radiation protection plan for the protection of the workers.

There will be a flood protection plan. Given that TMI-2 sits in the middle of the river, it will be pretty much the same as TMI-1's, but that has to be an NRC-approved document.

The "ODCM" stands for -- I couldn't fit that all on one line -- it's Offsite Dose Calculation Manual, where they would have to project any environmental impact of any effluents.

A fire protection, which would have to be appropriate to the circumstance -- the general philosophy of fire protection is to limit the sources of combustibles or limit the amount of combustibles, limit the potential sources for those combustibles, and detect and fight fires to protect safe shutdown equipment.

Since TMI-2 doesn't have any safe shutdown equipment, their fire protection plan would be geared around limited the likelihood of a fire by limiting the amount of combustibles and live electrical sources and just basically environmental protection on any airborne activity that would be generated by a fire.

The next item, the REMP, is the Radiological Environmental Monitoring Program, which as I understand will be essentially unchanged from what it is now. TMI-1 and TMI-2 share.

It's just going out and taking samples in the environment, the river, samples around the plant that have been happening, I guess, since TMI-1 went operational.

And the last one is the quality assurance plan, same thing as the fire protection plan. It has to be appropriate to the circumstance.

Given that TMI-2 is not operating, the kind of safe reactor shutdown accident mitigating systems and the level of quality assurance that go into those won't exist, but there are some things that -- environmental protection systems -- that retain a certain degree of importance.

So, the plan has to be not quite of the scale of an operating plant, but it has to be appropriate to the circumstance.

[Slide.]

MR. THONUS: The last one -- my slide number two talked about principle technical changes, the technical changes that we evaluated in the Safety Evaluation Report.

First is the concept of a containment breather. Currently, the reactor building is kept at atmospheric or lower pressure, meaning that, if you were to put a small hole in the building, air would go in, and it's maintained at a slight negative pressure by the use of the reactor building purge system.

During the PDMS period, if PDMS is approved, there will be a device which is called a breather.

There will be essentially an open pathway from the reactor building to the interior of the aux and fuel handling building, and it will be in the auxiliary building, which will allow air to pass freely between the reactor building and that portion of the aux building, but it will be going through a high-efficiency particulate filter.

The building wouldn't be maintained under continuous negative pressure.

For instance, if the building were at a "normal pressure" and a day like today were to occur where we had a storm front, a low pressure system passed through, the outside air would be at low pressure, and air would go out the next day, and the building would then go to a low pressure.

The next day, if we get a nice, sunny day with a high pressure system, the air would go back into the building, and there would be a filter paper placed on that breather to estimate the amount of particulate matter that would be passing through that filter, and then it will be changed out on a semiannual basis over the life of PDMS.

You'd be able to estimate the amount of airborne radioactivity that the filter encountered, not necessarily the amount that was released, although GPU will use a conservative method for estimating the release. That's described in their SAR.

The next bullet that I have -- and this is probably up Gordon's ~~ally~~ alley -- we have a 42-kilogram fuel movement limit. You may ask where this is derived.

We first derived a 93-kilogram safe fuel mass limit, which was a very conservatively-derived number.

I should have a picture up here, but we looked at the highest enrichment fuel that exists or would exist after the accident, and assumed the optimal size pellets, optimal fuel-to-water ratio, spherical geometry, maximally reflected, such that, if, somehow, someone was to take the stuff and it wouldn't be in the size of the dust or the big chunks that it's in, but it would be in pieces approximately the size of dice, and it would have to be a perfect sphere, something like a basketball, and in doing so, defy gravity.

It would have to have some pure water in it. So, it's a geometry that would be very difficult to envision actually occurring, but it would be the worst case that one get could, in theory.

Now, there is nothing in the reactor vessel where you would have something with that radius of curvature or anyplace else around the planet, to the best of my knowledge.

Anyway, that came out with 93 kilograms with the margin of safety that one allows in the computer codes and the adequate shutdown margin. I think we chose a K effective of .95.

Then we took the 93 kilograms that we derived that way, we divided it in two, and then subtracted 10 percent, such that, if someone, somehow, made two mistakes, they would still have 10 percent less than what they could use to approach getting themselves in trouble if they got into geometry that they couldn't get themselves into.

That's where that number came from. It's a fairly conservative approach.

The next one is the Aux and Fuel Handling Building ventilation, which, if GPU's study is successful in demonstrating that there is very little airborne generated in the Aux and Fuel Handling Building, that they will be able to turn off the Aux and Fuel Handling Building

ventilation system during PDMS.

The vent radiation monitors on the plant stack, known as HPR-219, 219-A, will only be turned on when one of the ventilation systems is operating.

They may chose, during PDMS, to periodically run the Aux and Fuel Handling Building ventilation for some purpose or to run the reactor building purge. During those times, they will have the radiation monitors on, but only at those times.

Currently, those radiation monitors are operational all the time. It doesn't make sense to run them when the air system is not turned on. There would be no airflow to sample. Right now, the airflow through the building is continuously monitored.

The last bullet that I have is -- loads over the reactor vessel is one of the other sort of principle technical changes, although if you delve deeply into the written record, it really isn't that much of a change.

The current limit is 2,400 pounds over the reactor vessel, except as documented in a Safety Evaluation submitted to the NRC, and they have submitted several which allow them certain loads over the ~~NRC~~ RV.

The analysis, the generic analysis for a nuclear plant was that was the amount that you could safely put over -- it was a fuel assembly drop which was analyzed, and

during the TMI-2 cleanup, we looked at the potential for a load drop breaking off one of the in-core penetrations on the bottom of the reactor vessel and allowing fuel fines to -- well, causing, one, an un-isolable leak in the bottom of the reactor vessel which would allow fuel fines to spill out into the cavity underneath the vessel.

Since the vessel is now defueled and the vessel has also been de-watered, it's no longer a concern. There's no water in it. There's no water to leak out.

In fact, neither the NRC nor GPU wants any water to accumulate in the reactor vessel. It's one of the things that assures a much larger margin of sub-criticality than we currently have.

The load limit of 50,000 pounds is there to assure that a very humongous weight could not somehow rearrange the reactor vessel, which is a very massive steel structure, in such a way to void the current criticality analysis by crushing the reactor vessel internals.

Do you guys have any questions?

CHAIRMAN MORRIS: Tom?

MR. SMITHGALL: Just some obvious ones that might be of benefit to some of the members of the public that haven't had a chance to read this, but you mentioned a radioactive effluent controls program.

That is mentioned in here as far as administrative

controls, and I'm wondering what process would be implemented to notify members of the public of any releases during PDMS.

How would it be accomplished, how often, by whom, access to the results and so forth that would be accumulated over the years?

MR. THONUS: GPU's quarterly and semiannual reports to the NRC are in the PDR. You're looking at a more instantaneous basis than that, some kind of a real time --

MR. SMITHGALL: Well, I guess my concern is the results are -- if there is an event, I understand that process, if there is a reportable event, I guess, but it's sometimes difficult, as we've found over the number of years that we've been doing this, for people to get information, and I guess I'm just wondering where this information goes.

Will it be under the same kind of process that information goes to the NRC, and do we go to the same places to get that information?

MR. THONUS: GPU submits periodic reports on their effluents to the NRC, and the local public document room is the Forum Building at Harrisburg, and a copy of everything they send to the NRC goes to the local public document room at the Forum Building in Harrisburg.

MR. SMITHGALL: Okay.

I'll try to move along, because I have a number of

questions. I'd like to get through a couple of these.

The possession-only license, this process whereby you take an operating license and convert it through changes to the license, amendments to the license, and create a possession-only license: Is it irrevocable? Can they activate it again in the future? Has it been done before that way?

MR. THONUS: No one has ever tried to -- we've only recently started issuing possession-only licenses. I suppose that, in theory, someone could go through the public hearing process. They'd almost have to start like a utility with a new reactor.

They'd have to go through the whole public hearing process to get an operating license.

MR. SMITHGALL: The other proposed changes to the license, it makes mention of the fact that you're changing the license to disallow the utility to receive or use nuclear materials. Is that an irrevocable situation?

You're making these technical changes throughout the license that all relate back to the possession-only license.

I guess the question that keeps popping up in my brain is, if we have the utility, in 2014, saying, well, let's start it all up again and refurbish the plant, they have the ability, you're saying, to maybe come back in

through a hearing process and get an operating license again.

MR. THONUS: But they'd have to start from scratch.

MR. SMITHGALL: Start from scratch.

MR. THONUS: It would be a long process.

MR. SMITHGALL: All right.

DR. MASNIK: There is nothing in this license that, you know, prohibits forever and ever.

MR. SMITHGALL: That's what I'm asking. Thank you.

It makes mention in the physical protection of the plan during PDMS that the changes don't eliminate the requirements for the physical protection, but it transfers the specifics of the program to the TMI-1 license.

Does that mean the costs are transferred? Is that your inference to that, or is it just the specifics of having physical protection of 2 under TMI-1's license?

MR. THONUS: The responsibility would belong to a TMI-1 organization.

MR. SMITHGALL: What about the cost?

MR. THONUS: You'd have to ask GPU. We don't --

MR. YOUNG: The site protection area, the protected area for Unit -- which Unit 2 is part of is under Unit 1. So, the site protection is now under Unit 1.

So, the program is administered by one group on the island. Unit 2 has no vital areas, but it happens to be inside the protected area. So, the fence that goes around Unit 1 also goes around Unit 1.

So, the site protection plan addresses the protected area.

MR. SMITHGALL: The physical guarding of 2, while it is under PDMS and your containment breather fabric, is going to be maintained under the auspices of the TMI-1 license.

MR. YOUNG: That's correct.

MR. SMITHGALL: Again, I get back to the costs of it. Are we shifting costs of that into the TMI-1 license?

MR. YOUNG: I can't answer that.

MR. SMITHGALL: Okay.

You made mention of a section that was right under the physical protection where the license changes remove specific requirements from a license subject to the outcome of certain Federal court rulings, and it was the staff's opinion that the license change is acceptable, because the court rulings pertain to operating licenses and not defueled and non-operating reactors.

What court rulings are we referring to there?

DR. MASNIK: What page are you on?

MR. SMITHGALL: Fourteen of what you gave us,

whatever page that it is on. I think it's 14 of the SER section.

MR. YOUNG: The staff is looking at the Island, from a security perspective, as one protected area. So we look at the rules that apply to Unit 1 or the rules that we're applying, because Unit 1 has more a more restrictive license in the area of security.

MR. SMITHGALL: I think it's, again, Mike, I guess if you're asking me, it refers back to some paragraphs within the license itself, which -- I don't know exactly where they're referring.

DR. MASNIK: Give me just a second. Maybe if you want to go on, I'll look at this.

MR. SMITHGALL: I think I'm coming to the end. I'm sure everyone will be glad of that.

MR. ROGAN: Mr. Chairman, while they're looking that up, I think I can answer the other question with regard to funding. Although we will receive -- the TMI-II organization will receive functional support from, for instance, Radcon or security or what have you, the various sites functional support organizations, it will be funded proportionately in the Unit 2 budget for the PDMS funding.

MR. SMITHGALL: Thank you, Bob.

CHAIRMAN MORRIS: Thank you for offering that. Appreciate it. Mr. Smithgall, any other questions?

DR. MASNIK: Tom, I'll have to check with the lawyers on this and I'll give you a written response. What I need to do is have a copy of the old license.

MR. SMITHGALL: And I didn't have that. It just made reference to the change, the Court rulings, and I didn't really have that.

DR. MASNIK: I'll find out and send a letter to you.

MR. SMITHGALL: Maybe I should ask Eric. He probably knows all the legals.

MR. EPSTEIN: I may not. They're paying to retain me.

CHAIRMAN MORRIS: Any other questions?

MR. GERUSKY: Lee, because you mentioned the continuation of the radiation monitors and since GPU isn't coming back up here again, maybe you can answer the question. Has there been an increase in airborne radioactivity inside the reactor building since the water has been removed from the vessel and the building?

MR. THONUS: Not that I know of. The reactor vessel is completely covered, as Mr. Schyder said. except for one small -- I call it like sort of a standpipe opening. So the reactor vessel, it can breathe, but it's fairly well buttoned up.

MR. GERUSKY: But the basement has been de-

watered. The water has been removed from the basement, too.

MR. THONUS: The basement has been de-watered on and off over a period of several years. The basement is dry, but it's been pretty much completely dry when they did the sludge removal.

CHAIRMAN MORRIS: Any other questions?

MR. SMITHGALL: I think maybe I should ask Lee these questions before Rebecca gets into the technical evaluation. The TMI-I license -- let me back up.

If we're tracking through PDMS as proposed by the utility and we get out to the 2014 year and they decide that they want to extend the license of TMI-I, does that automatically allow the PDMS to be extended beyond that? It's a refresher for me here.

MR. THONUS: No. They'd have to submit, (A) a document to extend the TMI-I license and they would also have to extend a document to ask for a change to extend PDMS.

MR. SMITHGALL: One of my problems is in any of these requirements that you place on the utility, you always leave the door open at the end to allow a document to be filed and allow for extensions to be given. This is a constant problem to regulatory agencies.

My opinion is that they don't ever say, okay, is this the final, final situation that we have, and it leaves

a lot of doors open and a lot of question marks in people's minds. So, again, I get the same answer that, yes, they can file a document and if it sounds reasonable to our staff at the particular time, we don't really have any power but to say yes.

I think maybe the time for staff to really say, okay, if this is what you want to do when 2014 comes rolling around, you better start thinking about decommissioning that plant, because we're not going to give you an extension. If you don't pay your mortgage, after about three or four months, they give you a couple extensions, but then they foreclose. But there never seems to be a foreclosure process or any closure process, if you will, with regulatory agencies. That's just as a comment to your response to that particular part of it.

I guess, again, I have to ask it since we haven't been here since January of 1991, I'd just kind of like to hear staff's opinion as to why this doesn't, again, with the PDMS process, become a defacto waste site in the middle of the Susquehanna River, contrary to the Commissioners' opinion that they really don't to have a waste site in the middle of the Susquehanna River, which I don't think the rest of the people in this area do, either.

I'd kind of like to have you revisit that and make another comment for the record as to what the latest and

greatest is from the Commission, the staff, the Commissioners themselves on this issue.

MR. THONUS: I don't think the Commissioners themselves have addressed the issues of TMI-2. You sort of provided a good lead-in for Becky, because her group -- it wasn't one of the things that she had, I guess, as a principal topic. But Becky's group at of PNL did a lot of our technical and environmental evaluation.

The staff has do a dispassionate look at the proposals the licensee makes. In this particular case, we looked at it and this is not a proposal to make it a permanent waste disposal facility.

Certainly there is, for any reactor that's licensed for a life of 40 years, during that entire 40-year period, there will be some radioactive material; in fact, a considerable amount on the site, especially in the form of the spent fuel that's in the spent fuel pool.

That does not make each and every one of the 112 or so operating reactors in the United States a disposal facility. The intent is not to keep it there. The intent is to move it off-site, and you have to look at is it safe to keep it there for the 40 years while the plant is operating, and we have reasonable assurance that you can remove it at the end of that time.

A waste disposal facility, the ones that the

nation has operated in the past, they've buried things in the ground with the intent of leaving them there until they decay. There, you have to ask the question after you bury it in the ground, will it migrate off-site and somehow adversely affect the environment.

Here the intent is at the end of some period of time to remove all the radioactivity below some reasonable residual limit, which the Commission is currently re-grappling with. We have a reg guide, Reg Guide 1.86 out there that gives some numbers and we're going to have another shot at those numbers.

MR. SMITHGALL: I appreciate your answer and I was glad that you kind of framed it in that context, because my concern here is I think you have an excellent opportunity here to send a message to the industry that if these things happen, it's not going to be normal business as usual, that you've got an opportunity to say you have presented a wonderful plan here and it sounds reasonable, it sounds like it's the best way to go, but 2014, it's done, you're going to have to do something with it.

Don't leave the door open. That's all I'm saying. And you framed it in the sense that we've got normal operating reactors with spent fuel sitting on the islands in the sense they would be waste sites, if you will, and we'd ship it off to -- not in the middle of a river, although

there are some that are close to rivers in Hanford.

You have an excellent opportunity here to send a message because I'm concerned about the precedent that you set. You're allowing a utility that has an accident at a site to say, all right, well, we've done what we can do, now we're just going to kind of close the doors and we're going to watch it real close and then when we get ready to decommission the other plant, we'll clean this one up, too.

Still leaving the door open that if they file the right document and they make the most strenuous arguments with all the technical background that can be presented, giving them another ten years or another five years or what have you.

That's my concern and it's one that's been there right from the very, very beginning of this whole thing, and I feel that it's necessary to revisit it. I appreciate that, to at least get it on the record or at least get your comments.

DR. MASNIK: I think it's the Commission's intent, Mike -- in fact, I know it's the Commission's intent to make sure that all these sites are cleaned up.

MR. SMITHGALL: That was before the NRC. The AEC said that, too. How many years has that been? I don't want to get into that argument, but, holy cow, that's --

CHAIRMAN MORRIS: Could we do that, because there

is an opportunity for the panel to express opinions and we are about 45 minutes behind the schedule at this point.

MR. THONUS: With that, I will turn it over to Becky, who will be much more informative than I.

CHAIRMAN MORRIS: We should try our best to stay no longer than the 30-minute period because we are way behind at this point. I know you mentioned before the meeting that you intend to use up all your time.

MS. HARTY: Okay. I'll talk fast and I'll try and hold it down. As Lee mentioned, he discussed the safety evaluation and I'm going to discuss the technical evaluation report.

The purpose of writing the technical evaluation was to evaluate the safety significance of PDMS and also to provide a basis for the requirements and the controls that will be maintained during PDMS to ensure the safety and health of the public and also the protection of the environment.

On the next slide, I'd like to first quickly give you an overview of the technical evaluation report, and then I'd like to focus primarily on Chapters 5 and a little bit on Chapter 6. There are seven chapters; an introduction, a regulatory history, a description of what will occur during PDMS, and a description of the status of the facility before it enters PDMS.

What I would like to emphasize tonight is the prerequisites for PDMS, of which there are seven, and then discuss a little bit about the PDMS environmental protection systems and give you the conclusions.

The first prerequisite was defueling of the facility to the extent reasonably achievable and to such a degree that a nuclear criticality is precluded. I understand that you've had a presentation on the defueling completion report. Also, Lee has got into some discussion about that already. So I'd just like to go to the next slide and give you -- this -- I'm not going to even read the slide, unless you'd like me to for the record.

This gives you the quantities that were estimated and placed in the safety analysis report by the utility. I'd like to emphasize that, as you've heard at previous meetings, the NRC, and we assisted them with that, have gone back and looked and made some confirmatory measurements and are in agreement with the numbers that are presented in the safety analysis report.

I would also like to say that the numbers that are up there were below the safe fuel mass limit and did not present a problem from a criticality aspect. If you're interested in those numbers, I can give those to you later on on the safe fuel mass limits.

DR. ROBINSON: Excuse me just a minute, but I

don't think you mean those numbers are below, because the 1,339 pounds as a number is not below.

MS. HARTY: That's correct. Let me correct that. The safe fuel mass limit for the reactor vessel, and you're correct, was 205 pounds. The number, that 1,339 that you see up there is not below the safe fuel mass limit, but it is below a model of the reactor vessel, instead of just applying the reactor vessel, because it's very large as one area.

A criticality analysis was conducted that looked at the placement of the fuel and then looked at the potential for criticality, and it was below the number, the highest number that could be assumed in that geometry, which was 6,400 pounds.

That's correct. Thank you for bringing that up. The second prerequisite is removal of fuel and core debris from the Three Mile Island site. The NRC has confirmed that all remaining defueling canisters that contain core debris have been removed from the reactor facility and shipped off-site.

Prerequisite number three is removal of accident-generated water. As you've heard from GPU earlier tonight, that was initiated and is still being continued and will be completed either before or shortly after the start of PDMS.

The fourth prerequisite, and this is the one I

think I'm going to spend the most time on tonight, is the reduction in the potential for release of radioactive material. This has been minimized, as you have heard, by the removal of fuel and core debris and by decontaminating the facilities that were involved in the accident.

In addition to our looking at the removal of the fuel and the contamination, we have also considered routine and accidental release pathways, to look at what the effects would be on the environment and to the public from the contamination that is left in the facility.

What we've done is looked at routine releases, both atmospheric and liquid, and accidental releases. There were a total of accidents. Four of them involved decontamination activities. We looked at two different fires, possibilities of fires in the containment building. We looked at a containment penetration failure and a release of makeup and purification demineralizer resins. I'm going to quickly go through these.

The routine atmospheric release assumptions looked at the radioactivity that was in the reactor building, because that's where the majority of the contamination is, and we applied a re-suspension factor. You can see the factor up there. The factor was derived from a report that talked about re-suspension rates in a locker room where there was a lot of movement, a lot of traffic and

ventilation. So it's a conservative number.

We also took a conservative approach on the number of air changes per year, and we took credit for the HEPA filters in the breather and also in the building ventilation system.

I might add that these air changes, some of them were through the breather and some of them were the air changes that would be expected before entry into containment.

MR. SMITHGALL: Can I interrupt you there just briefly? The 50 air changes that you're referring to, those are basically releases to the atmosphere.

MS. HARTY: That is correct, but some of them are through the ventilation system and then they go through the filters.

MR. SMITHGALL: They eventually are releases to the atmosphere.

MS. HARTY: That's right.

MR. SMITHGALL: Let's make sure we understand what you're saying. Thank you.

MS. HARTY: These are the calculated doses. I've also given you the percent of the annual background. I need to make a point here that the calculated doses are a 50-year dose commitment based on a one-year release. That sounds very technical, but what it means is that if you were

exposed to that for one year, because if you are ingesting or inhaling some of the contamination over the 50 years, you would expect some to stay in your body and then you get that dose.

This is the maximum individual, the person who stands at the fencepost and eats fish and breathes the air continually.

Anyway, the annual background is just a one-year dose. So the percentage of the annual background, if you computed a 50-year dose commitment, would have been a lower percentage than you see there.

The other thing I'd like to state about this is that this is an estimate based on a model. After the first year or two of PDMS, the utility and also the NRC will have better numbers for the release rates. We have some very conservative estimates of what got out of the building and we'll be able at that point to come up with a better, more accurate dose estimate.

This is the routine liquid release assumptions; 5,000 gallons per year. The sources were groundwater and in-leakage at the cork seal, some collected precipitation, and then occasional small quantities of fluids that were used for minor decontamination jobs.

We used concentrations of cesium and strontium based on the EPICOR capabilities, assuming that it would all

be reprocessed before it was released, and the doses are again shown on this slide and they're a small fraction of the annual background dose.

The accidental releases, as I mentioned, there were four that were based on decontamination activities. And although there are no major decontamination activities that are planned during PDMS, the option of decontaminating areas if the need arises is available to the licensee.

Back to these here and the subsequent doses that I'm going to show you that the NRC evaluated for these activities are based on activities and doses that were evaluated during a study of decommissioning of a generic PWR, pressurized water reactor, following an accident, and this is a report that was prepared for the NRC.

On the next slide you will see the doses and the percentage that they are of annual background.

MR. SMITHGALL: A lot of zeros.

MS. HARTY: A lot of people don't like exponents, so I just threw up the zeros. The next slide shows the assumptions for the first accidental release from fire analysis. This is the one that was put in PEIS Supplement 3 and I talked about this before when I was here several years ago. It involved the stairwell and the elevator structure and the reactor building basement.

We used that because that's one of the highest

sources of contamination in the building, and you can see 19,000 curies of cesium were assumed and 910 curies of strontium. We looked at the analysis assuming both ventilation to the purge system and through the breather.

The next slide are the assumptions that were used for the second analysis of a fire. I might add that these are basically non-mechanistic accident. We don't really have a mechanism for them happening exactly like this, but we went ahead and did the analysis and made the assumptions anyway.

The D-rings is also the very large source of contamination, and we assumed 17,000 curies of cesium and 830 curies of strontium. We assumed on this one overpressurization of the breather's HEPA filter; in other words, the HEPA filter going into the auxiliary building is no longer working. Then we looked at the possibility of the air in the auxiliary building having the ventilation system turned on there so it is ventilating through the auxiliary and fuel handling building system.

We also looked at the possibility of no ventilation; in other words, they are just kind of leaks out of that building. We did not take credit for entrainment or deposition of the particles. The next slide shows you the doses there. Again, they're a small fraction or a fraction of the annual background and also a small fraction of the 10

CFR 100 guidance for releases from accidents.

The next accident is a penetration failure where we assumed that a 14-inch diameter penetration in the reactor building failed and was vented to the turbine building and ultimately to the atmosphere with no filtering of that air. We assumed that there was no -- no one noticed for three months that that had happened and the reactor building was not ventilated and that a total of two-and-a-half building volumes of air were released. That's just by diffusion of the air. You can see the results there, which, again, are a small fraction of the annual background and the guidance from 10 CFR 100.

I think this is the last one. This is an accidental release from the demineralizers, where the resins from the makeup and purification demineralizer rupture and the contents spill onto the floor. You can see the quantity of contamination that's released. We, again, looked at with ventilation and without ventilation of the auxiliary and fuel handling building systems. Again, the results are on the next slide, and, again, small fractions of the background and the limits.

CHAIRMAN MORRIS: On the prior one, you picked a diameter of a penetration. What is that an example of?

MR. THONUS: It's penetration 401. It's the largest containment penetration that was modified after the

accident. Most of the original penetrations are still designed 60 psi. Penetration 401 is a 14-inch penetration on the 281 foot elevation of the reactor building, heads out toward the turbine building, and, post-accident, was used for monitoring the water level in the reactor building and it was no longer designed for the 60 psi that was leak rate tested.

It would probably hold considerably more than five psi, but that's all it's basically guaranteed for. So that was chosen as the biggest one that didn't meet the original design.

CHAIRMAN MORRIS: So penetration 401 is not a course in college. It's something different.

MR. THONUS: I was the one that told PNL that that's the likely one they should use for a penetration failure, because it was the biggest and it had the most direct pathway to the environment.

MS. HARTY: This is the fifth prerequisite, which is removal of radioactive waste resulting from the major decontamination activities. This waste has been shipped off-site or it has been packaged and is staged for shipment off-site.

The sixth prerequisite is reduction of radiation levels to allow plant maintenance and surveillance, and radiation levels have been reduced to the extent that

personnel can enter the building to perform maintenance and supervision of the facility in the required areas.

The final prerequisite is establishment of a surveillance program. The licensee is required to conduct surveillance programs to ensure the maintenance of the environmental protection systems. On the next slide, we have a list of the systems that we felt were important, including the reactor vessel and the reactor containment building isolation, the ventilation and filtration systems, both in the containment building and in the auxiliary and fuel handling buildings, the fire protection system, the electrical system, the fluid monitoring systems, administrative systems, and surveillance program.

These were addressed somewhat by Lee, so I'm not going to go back through them. I just will state that we looked at that and felt that those systems and surveillance programs have been and are being put in place, and the NRC's review on that will continue.

Next, and we're to the conclusions already. There were quite a few conclusions that were placed in the report. The first was that defueling of the reactor has been accomplished to the extent reasonably achievable. Also, fuel and core debris that have been removed from systems have been shipped off-site. There is no potential for criticality.

The decontamination wastes have been shipped off-site or packaged and ready to be shipped off-site. The radiation levels have been reduced to facilitate maintenance and monitoring. The radiological controls will ensure control of occupational exposure.

The surveillance programs are adequate to monitor environmental systems, and then environmental monitoring will ensure adequate environmental surveillance and control. The fire protection will ensure risk of fires within the bound and analyzed. As I reported to you on the dose system, it's that we analyze fire accidents. Also, that the facility will be maintained in a condition that's environmentally safe.

The final conclusions are that the facility can safely be placed into long-term monitored storage and that the facility configuration during storage under both the accident and the routine release conditions will not result in impacts that exceed those identified in the staff's PEIS Supplement 3 that was written on PDMS.

That's all I've got, unless there are questions.

CHAIRMAN MORRIS: Questions.

DR. MASNIK: Can we take a break?

CHAIRMAN MORRIS: If there are no questions, we'll take a break. I just want to make sure.

MR. SMITHGALL: I do have some questions.

CHAIRMAN MORRIS: I thought you might.

MR. SMITHGALL: These will be short. I'm sorry. I read this -- I'm sorry. I'm going to ask these questions, Mr. Chairman.

CHAIRMAN MORRIS: Realize this, that there is an opportunity for the panel to discuss and ask questions at some point. So go ahead and ask some now, but let's get to the break.

MR. SMITHGALL: Can I just get some clarification on the amount of fuel, and this might be somewhat of a refresher, but my brain is slow year after year on this process.

The 1,723 pounds that's mentioned as residual fuel, where does the factoring in of the effects on some of the components and structure in the building? Has there been a compilation of what kind of waste is going to be generated from stairways and things that are going to have to come out of this thing that are contaminated, other than just residual fuel?

MS. HARTY: The fuel is not located in the stairway, so I guess I'm a little confused. Can you say this again?

MR. SMITHGALL: Piping, for example, that is contaminated with radioactivity.

MS. HARTY: The fuel that's left is located in

nooks and crannies of the piping and lots of times there's corrosion products on the piping.

MR. SMITHGALL: Is the weight you're quoting there just the fuel component of it or fuel where the structure is?

MR. THONUS: In our document, it's fuel as uranium dioxide. It's kilograms of UO2.

MR. SMITHGALL: So there's greater weight that will have to be disposed of with structure that's to come out of this building.

MR. THONUS: Yes.

MR. SMITHGALL: I guess my other question is maybe something you can get back to me with, because I'm not maybe necessarily looking for an answer right now. But you basically have got to buy a couple of arguments that the licensee is presenting here as far as PDMS being beneficial.

A couple of these I might agree with as far as occupational dose. It's tough to argue that to a certain extent. But the second and third reasons that are given in their description of their storage and the rationale behind it --

DR. MASNIK: Can you tell us what page you're on?

MR. SMITHGALL: 3-1 of the TER. That the monitored storage would allow time for development of decontamination technology, so that more effective and

efficient techniques can be applied at a later date.

Also, further reduction in the occupational exposure could be achieved through the use of advanced robotics, automatic cleaning and so forth.

I guess what I would like to hear is whether or not the staff has evaluated what technologies have been developed to date to maybe give you an idea of whether or not this argument really holds any water, so to speak, bad pun, as to whether or not advanced technology really is going on here or whether it is something that they're just using to fill up the page.

MR. THONUS: If you go back to PEIS Supplement 3, when the staff evaluated the concept of PDMS and how much man rem would be saved, there's a certain amount of error bars, but it looked like there would be -- you could project some number plus and minus and another number plus and minus and another number plus and minus, and if you look at the upper of one and the lower of another, it overlaps.

But in all likelihood there would be a significant man rem savings without taking any credit for robotics improvements. There's no way to quantify. I think in computers you can say that every so many years, we double the speed of the computers and we double the memory capacity of chips. So the robots -- the computers would control the robots, but the staff did not in its evaluation take any

credit.

You have to assume that the technology will improve, but how fast the robotic technology and artificial intelligence and those things will improve can't be predicted very well in advance, and we did not take credit for it.

MR. SMITHGALL: But you can go back and evaluate that argument that was given five or ten years ago and evaluate whether or not the technologies really did help the decontamination process to date, using that as a guide for projecting out into the future.

That's what I'm asking, I guess. Maybe it would be --

MR. THONUS: The robots that they used at TMI during the initial stages of the cleanup compared to what they were using in the later part of the 1980s. The robots were very much improved.

DR. MASNIK: Becky?

MS. HARTY: Yes. I haven't done a full analysis of the subject, but I have been finding documents on improved decontamination techniques and sticking them in a file. I'd be more than happy to provide those.

MR. SMITHGALL: That's all I'm asking for. Thank you. The final comment and then we'll break, and back to Mr. Thonus. The rationale again of placing the TMI-II

facility in storage until decommissioning of TMI-I would allow more efficient use of the site decommissioning workforce.

That sounds like it might be a little bit contradictory that we're going to save the dose rate for when they really go in and take care of I, as well. And then what we're going to do -- it's going to be increasing what you'd be projecting from the decommissioning of I.

So that seemed to -- in my mind, I'm trying to figure out whether that's really a good reason to go into PDMS at this particular time.

MR. THONUS: The staff didn't in our evaluation again put any -- didn't allow any quantitative weight for that in the decisionmaking process. Certainly, if you -- I guess the classic example of what we're trying to say is perhaps someone who is constructing a four-unit nuclear plant of replicate units.

They bring in -- maybe like building houses. You bring in a crew that does the masonry work on the first one, and then the framing crew comes in on that one while the second unit is having the foundation and masonry work done.

If you would bring in a large number of people with decontamination expertise, you could have them all on the site at the same time.

MR. SMITHGALL: If they don't exceed their

allowable exposure limits. And if they do, then you ship them out and bring new people in.

MR. THONUS: Well, if you're talking about laborers, that's one aspect of it. The other is the people -- the engineers who would be doing the engineering work of it. It would actually be slightly more efficient to shift them just a little bit so that you would solve an engineering problem on one unit and then you'd use that solution on the next unit.

But any of the types of things that you might need, whether they're some kind of a mobile super trash compactor or whatever, if you brought it in for one unit, you could use it on both, whatever we might be using 20 years from now.

MR. SMITHGALL: Okay.

CHAIRMAN MORRIS: Let's take a break until 9:00 and start again at 9:00. Thank you.

[Recess.]

CHAIRMAN MORRIS: I'd like to call the meeting of the panel to order. The next item of business is Eric Epstein, I believe, if he'd like to be the first ten minutes of the public comment, and I think typically he does. Just kidding, Eric. Don't start yelling at us.

MR. EPSTEIN: Didn't you get it the first time?

CHAIRMAN MORRIS: Yes. We've had enough. Just

wanted to make sure you knew we were joking.

MR. EPSTEIN: Is this a clean glass? They've got a new brand of herpes around, although working at the plant should probably minimize the chance of spread.

CHAIRMAN MORRIS: Channel 24 at 10:00 at night, Eric. You'd be good, stand-up comic. Go ahead.

MR. EPSTEIN: Obsessive compulsive.

CHAIRMAN MORRIS: You're on, Eric.

MR. EPSTEIN: My name is Eric Epstein. What I'd like to do, because I only have ten minutes and I have a lot of questions, is I'd like to enter two documents for the record, with your approval, Arthur. One document is the problems that have occurred at Three Mile Island Unit 2, why you guys have been on break or recess or whatever you call it, and I'm going to read a brief statement on evaporation because I think that's still a relevant issue since it's not completed yet.

Art, are you ready?

CHAIRMAN MORRIS: I've been ready, Eric.

MR. EPSTEIN: Okay. Just as a review, quickly, on December 12, 1990, two days after GPU announced it would begin evaporation of 2.3 million gallons of radioactive water, the evaporator was shut down due to mechanical problems. The NRC predicted the evaporator would be back in mid-January.

Last year, January 3, 1991, GPU identified a procedural non-compliance associated with the accident-generated evaporator. Three weeks later, the evaporator was shut down four times due to various mechanical and electrical difficulties.

February 21, 1991, according to the NRC, and I quote, "An operator inadvertantly flooded the vaporized section of the evaporator." Three days later, "An evaporator operator was discovered apparently sleeping. The operator was replaced."

March 8, 1991, the NRC reported, I quote, "A small quantity of accident-generated water was vaporized, was out being processed through the evaporator section of the Unit 2 AGW evaporator."

April 3, 1991, the NRC observed, quote, "During an AGW startup, NUPAC, subcontractor, found several valves closed that should have been open by the evaporator startup procedure."

The back of the paper, April 7 through May 11, 1991, the evaporator was, I quote, "shut down for the majority of the period so the licensee could rewrite the main operating procedures."

April 12, 1991, GPU and NUPAC, I quote, "operated the evaporator with Valve V-86 closed, thereby preventing proper collection of the composite sample." This event

prompted the NRC to issue a notice of violation on May 24, 1991.

One month after the violation was issued, GPU and NUPAC once again mis-positioned the AGW vaporizer Valve V-86. The evaporator was operating for 15 minutes before the error was detected. Between August 12 and 19, 1991, I quote, "Low level increases in tritium concentration have been measured at groundwater and special precipitation sampling stations at the station. According to the licensee personnel, three increases were at least partly attributable to the operation of Unit 2 evaporator and had been anticipated."

Finally, although this is not final, this is what's on the paper anyway, October 1991, GPU asks the DER for permission to reduce the frequency of two of their analyses conducted on water samples, analyses for strontium-90 and carbon-14.

Do you guys have any questions or is that clear? Tom, are you all right? This is your last meeting. Hang in there, babe.

By the way, if you guys are free, Gordon, Tom, we could use you down at TMIA. The money's not good, but ethically it's satisfying.

CHAIRMAN MORRIS: You may regret that.

MR. EPSTEIN: Let me make some comments. I've

read a lot of documents on PDMS and some things tonight disturbed me, and I think we need clarification.

First of all, Lee Thonus of the NRC conducted a dispassionate look at GPU. Fifty-four out of the 65 references they relied on were from GPU. I find that hard to be dispassionate. That's my new -- pretty cool, huh -- new sweater.

I think it's worth noting. I think one of the things, when this program goes in, I think people in the community would like to have a control group. In other words, they do these analyses without comparing it to anything. It might be helpful.

I don't know if Bob is going to do that, but I'll run down these issues and maybe Bob would answer them. Not the other guy. Bob.

Also, I think there's an issue -- we talked about a fire plan, but I don't think there's a real site-specific plan. When Appendix R came out, and you remember this with the site fire plans, a lot of it required on-site inspections. So I don't know what they're doing in order to prevent fires.

One area which hasn't been talked about is the collection of dust particles on the HEPA filter which may ignite, and I think it's something that should be looked at.

Arthur, from your vantage point, I think it needs

to be clarified whether or not the Lancaster agreement is over or not for monitoring radioactive water. If you read the agreement, it says it's over after the completion of decontamination.

Five thousand gallons of water which are obviously accident-generated or accident-related seems to me to indicate that the mechanism should stay in place.

As far as the fuel, I think that's disturbing. Rebecca said there were 1,700 pounds. I was originally told 1,300 pounds. I don't know where we're at now, 2,600, 2,900. The utility -- I think we need a clarification, because all of a sudden a couple hundred -- this phantom fuel just showed up. I think it's important.

There is no potential for criticality is disturbing. I will prove, and I won't mention it, but I have an expert who will prove that criticality is possible. The utility never said that it was impossible, just that the conditions were removed.

One of the things we'll prove is that it can happen at less than 200 pounds. Some of the things the utility did not consider for re-criticality were a chemical explosion, negligence or sabotage. And I think a fence around Unit 2 is not going to preclude sabotage. Now, it may seem remote, but I think it's an issue that needs to be confronted.

Perhaps the utility can answer this question. I find -- for criticality, they said K effect of 95. Some of the documents I read said K effect of 94. So I think that needs to be clarified, also.

One of the things I'm not sure about, Rebecca stated the radioactivity decayed to the point where they can perform maintenance. Does that mean there can be an unlimited amount of entries into the building or what does that mean, because I think some of the justification for PDMS is worker exposure, which we all want to avoid, if possible.

But at the same time, we have the concern that you'll see that monitoring is phased out after a year-and-a-half, two years, and that the facility is just being left, and they're walking away. If you remember correctly, they're talking about six million per year, down from 36 million, down from a couple hundred million.

That's not a lot. There will not be a senior licensed reactor at the site and there will not be a licensed reactor at the site, and I think that's significant. We have to find out who the dedicated staff is and what exactly they will be doing.

Decommissioning is still in limbo. The utility has to go in front of the Met Ed, which owns 50 percent, and Penn Electric, who owns 25 percent, and has to go before the

PUC this year to receive decommissioning funding. I would encourage everybody to call the Consumer Advocate just to ask him what his position is.

They're getting spilkis, which, in Yiddish, is nothing. Maybe they should get one or two million. The reactor was only operating for three or four months, one 120th of its life span. I think if you read the annual report, you'll notice that the utility acknowledges that they might not get the money.

So I think the money is going to have to come from the utility and I think it's important to note that 216.5 is just a funding level. It's not the actual cost for decommissioning and I think we should be aware of that.

How much time do I have, because I want to be out in ten minutes.

CHAIRMAN MORRIS: You've left about three. Let me find out how many other members of the public would like to give comment tonight?

[Show of hands.]

CHAIRMAN MORRIS: We'll need to hold you to ten minutes, Eric. If there's time left when other people are through --

MR. EPSTEIN: Let me conclude and maybe they can answer the questions I had in the three minutes. That's what I was going to say.

I don't think this is the last chapter in the cleanup. I don't see any light at the end of the tunnel. I think what we're in now is the limbo phase. Look, Unit 1 is going to ask for a license extension. They've got their fuel storage, their capacity extended to the year 2023. You don't have it extended unless you're going to generate electricity.

The fate of PDMS is connected to Unit 1. This is not going to be resolved for a long time, and I'm saying this, that I think you guys have got to get together once a year. It's real important. They're walking away from the site, and that's the reality. They can disguise it and call it anything they want.

So what I'd like to do is invite Bob or somebody besides Chuck to come up here and perhaps answer these questions.

CHAIRMAN MORRIS: One of the questions you had also involved Rebecca on the fuel quantity.

MR. EPSTEIN: Yes.

CHAIRMAN MORRIS: Rebecca, could you speak to that first? Is that possible? Did you hear the question, by the way? Maybe, Eric, if you would stay up here in case there's any --

MR. EPSTEIN: Rebecca, you want to come here?

MS. HARTY: I'm looking for my viewgraphs because

I was going to put that on.

MR. EPSTEIN: Hey, there's a lot of bullets. That bullet thing is a neat concept.

MS. HARTY: No. It is a neat concept.

CHAIRMAN MORRIS: While you're setting that up, why don't we ask if anybody -- while you're getting that chart ready --

MR. EPSTEIN: How much fuel is there now?

CHAIRMAN MORRIS: If GPU could speak to some of the other questions that Eric was raising, if that's possible. If somebody from GPU could, come up and at least try to.

MR. ROGAN: I'm sorry. I didn't hear all the questions, but we can try.

CHAIRMAN MORRIS: He went through quickly. Eric?

MR. EPSTEIN: I was trying to save time. Bob, I was wondering where we're at now. In Becky's report, we said 1,700 pounds of fuel. I think we projected closure to 3,000 pounds and I wonder if you could clarify for the panel how much fuel you think is left.

MR. ROGAN: Pounds kind of confuses me. I've switched over to the metric system. But the latest numbers -- the numbers that were in the SAR were around 609 kilograms in the reactor vessel. Since then, we've had some information from our pas ive neutron measurements data

that's not complete which suggests that number may be higher.

We've also had some independent reviews by a panel of experts on criticality and they have said they thought there might be some programmatic deficiency in the higher numbers and they're really back down close to where we started.

So we're reviewing those numbers right now. What we are reasonably confident about is that none of the numbers are outside the bounds of one another when you look at the error bands, and all of them seem to support the idea of still being assured subcritical.

CHAIRMAN MORRIS: Eric, what I'm hearing said is those numbers are as good as they have now, but there are some questions as to whether they're high or low.

MR. ROGAN: No. These numbers were the last official final numbers published before the SAR, TER were put to press.

CHAIRMAN MORRIS: I understand.

MR. ROGAN: Since that time, we have had a second survey of the plant done using passive neutron measurement techniques, and those numbers look higher than the ones you see on the board today. However, there is also some question about a couple of programmatic errors not in the measurements themselves, but in the calculation of the end

result.

We're trying to reconcile that right now. So the number may turn out to be, for instance, it could conceivably be 900, but it will not be, based on whatever information we've been able to put together at this point, anything that would challenge the idea of subcriticality.

CHAIRMAN MORRIS: That answer will be on the record for you.

MR. EPSTEIN: Could I ask him one question while he's up?

CHAIRMAN MORRIS: Sure.

MR. EPSTEIN: Is it K-94 of K-95?

MR. ROGAN: The matter of fact is K effect of equal .95 is a .05 margin, 94 is .06 margin. K effect of .94 is more subcritical than K effect of .95. It's just a simple notation of how you read the margin of safety in criticality.

MR. EPSTEIN: Well, 94 was used in the document.

MR. ROGAN: It's better than 95, if you want to say it that way.

MR. EPSTEIN: I prefer to.

CHAIRMAN MORRIS: Did you want to ask the question on staffing?

MR. EPSTEIN: Yes. While Bob is up there, I was wondering what kind of staffing will you have at TMI-II in

terms of dedicated personnel, those just with jobs that focus on TMI-II.

MR. ROGAN: My understanding, and I'm probably not the best source of this information, so perhaps you better not quote this as official, but my understanding is there will be about ten dedicated people who will manage the project, and, as I indicated earlier on the funding, they will draw all of their functional support from the site functional divisions, such as radiological controls, engineering, security and so on.

So there will be a management team that is totally dedicated to TMI-II, I believe on the order of ten to 12, and then everything else will be brought in from the site functional organizations.

MR. EPSTEIN: I think that's helpful. Thank you. I appreciate it. Becky, how you doing?

MS. HARTY: Okay.

MR. EPSTEIN: Long flight, huh. What I was wondering, when you said the radiation decayed to the levels where they can perform maintenance, what does that mean. Can they go inside the reactor vessel?

MS. HARTY: I think a better way to say that, and I hope I didn't mislead people, is to provide the maintenance that they feel is necessary during PDMS.

MR. EPSTEIN: Could you quantify how many entries

you think that would be a year?

MS. HARTY: The estimate that we were using in our analysis, I think, was one a month initially and then dropped to one a quarter after a number of years.

MR. EPSTEIN: What's a number of years, just ballpark?

MS. HARTY: Ballpark, four or five, but I'm just guessing. I don't remember.

MR. EPSTEIN: Okay. Those were the questions I just wanted to illuminate for the panel that a lot of the material about PDMS is pure guesswork, it's speculation, it's based on extrapolation, and I don't think they should be fixed in stone.

I think I'm just at ten minutes and I'm going to leave to be in your good graces.

CHAIRMAN MORRIS: Eric, on the funding item, I'm hoping that we can discuss it as a panel, setting up another meeting, say, in June to specifically discuss the funding issue.

MR. EPSTEIN: All right.

CHAIRMAN MORRIS: I know there are other people here from the public. This gentleman here, would you like to come forward, sir? We do ask, for those of you that are new, we do ask you if you didn't call ahead of time, Eric did, that you would limit your comment to five minutes, if

that's possible.

MR. PORTSLINE: My name is Scott Portsline. Is it unusual -- is it fair to say that the storage of the water that's to be evaporated is unique to Three Mile Island, the tanks outside, the auxiliary building?

MR. ROGAN: Was he talking about the process water storage tanks being unique to --

MR. PORTSLINE: Yes.

MR. ROGAN: Yes, in the sense that they are out there. They are out there specifically because of Unit 2.

MR. PORTSLINE: That is my concern that I'd like to address, the potential for sabotage. What is in place right now, what safeguards are in place that would prevent, let's say, a terrorist from Libya or Iraq using a rocket launcher from penetrating that tank and causing contamination tonight? Tonight's a full moon and if the clouds rolled away, they could see pretty well.

DR. MASNIK: Bob, do you want to answer that?

MR. ROGAN: Well, first, we would hope that one of the reasons why that wouldn't happen is because our security program, we think, is pretty good and that is what it's designed to do, among other things, is to prevent the intrusion, unauthorized intrusion, sabotage and that sort of thing.

But beyond that, although it may be of little

comfort, I believe back in the evaporator licensing days, there was an analysis done in which the NRC analyzed the dumping of a full 500,000 gallon tank out onto the ground and the impact of that was insignificant in terms of the radiological consequences for the water that was in the tank.

MR. PORTSLINE: Well, if that were true, you could just dump that into the river and not have the evaporation.

CHAIRMAN MORRIS: There was a significant debate truly on whether an option was to simply discharge over a long period of time the tritiated water into the river.

MR. PORTSLINE: I'm aware of that debate. So I obviously don't buy that that's insignificant.

CHAIRMAN MORRIS: I understand that. That was an option that was looked at and considered.

MR. PORTSLINE: About security, this is a textbook used in colleges all across America, Security and Loss Prevention by Philip P. Topura. It tells what not to do and it gives Three Mile Island as an example that TMI is a paradise island for the saboteur. You're probably familiar with how Three Mile Island made headlines back in 1980 and how the lack of security left people in the plant, how the control room door wasn't even locked.

I personally, on March 28, by coincidence, of 1979, was standing in the radar room, top secret room in the

NORAD Defense Department in Tulle, Greenland. Signs outside, I have pictures, that say Use of Deadly Force is Authorized." People can get wherever they want to go.

Now, you put a fence around there, you have cameras, maybe it's impregnable, but nobody can say a rocket launcher couldn't open up the contaminated water tanks. Why can't we put some type of armor or concrete and make those contained, also, something that's a little safer?

DR. MASNIK: I think -- go ahead.

CHAIRMAN MORRIS: No, Mike. Go ahead.

DR. MASNIK: I was just going to say that what we have done is we've done an analysis and the licensee has done an analysis to show that even if that tank is ruptured, the consequences to the public are insignificant. Therefore, it doesn't justify a large expense to make that tank secure. We're all hoping that this doesn't occur, but even if it did occur, the consequences would be insignificant.

MR. PORTSLINE: How about if you had two 14-inch penetrations in the reactor building? By the way, the ventilators weren't turned on on those examples she gave. That was without the ventilators on.

DR. MASNIK: Again, if you did somehow breach the containment with a rocket like that, the release would take some time and there would have to be a force to force the

contaminated material outside the building.

MR. PORTSLINE: I think an explosion would do that.

MR. THONUS: This is Lee Thonus. I'll handle it. If you did that today, all you need to do is turn on the reactor building purge fans and it would cause the pressure in the building to be lower than the outside air, and air would be drawn in through the hole, out through two sets of HEPA filters in series, which would remove the radioactivity, and it would go out the stack.

If you hit the building sometime during PDMS, the only way the air would be forced in and out of the building is if you caused a pressure differential. Initially, I guess you could do that by shooting multiple rockets at it, but it still wouldn't be anything that would be life-threatening.

I could take one rocket, knock a hole in the building, shoot another rocket through the first hole and maybe cause off-site doses on the order of several millirem, but I would not kill anyone with ten or 15 or even 100 millirem. It would be equivalent to about a fraction to maybe a year's natural background radioactivity.

If I were going to terrorize someone, I would probably want to threaten them directly with the rocket or, for that matter, something like a .45 caliber handgun, or

perhaps buy a radioactive source of several curies and blow it up on the street.

I'd do a better job of contaminating the world that way than I would be going after something like Three Mile Island Unit 2, which has a relatively small source term.

CHAIRMAN MORRIS: I think, Scott, they have attempted to answer the question. It may not be something that you accept, but they've attempted to answer it. I would think that somebody who is going to blow up or rocket a plant, they'd probably cause more trouble if they attacked one that was in operation.

MR. PORTSLINE: I don't think the American government thought that because they had a very high standard of security during the war we had one year ago. So you can wish all you want what may or may not happen, but unless that is considered, the NRC didn't even discuss sabotage until 1977.

CHAIRMAN MORRIS: I understand that you have raised the question and there has been an attempt to answer it, is all I'm saying.

MR. PORTSLINE: Okay.

CHAIRMAN MORRIS: Thank you. Is there somebody else from the public that would like to make comment?

MS. PICKERING: Kay Pickering. A couple questions

that have come up. There was a mention of station blackout, and I'm real curious about that term. I wondered if that could be defined as to whether we're talking about the plant as a station and what kind of blackout or if we're talking about a communications blackout.

In the context of problems at Unit 2, there has been this elaborate evacuation plan set up, whether it's Unit 1 or Unit 2, and there's a lot of time and energy that's been put into -- and money -- into systems and the community and fire houses and all kinds of things.

CHAIRMAN MORRIS: Would you like somebody to --

MS. PICKERING: Yes.

CHAIRMAN MORRIS: He's right up behind you there, Lee Thonus, who has been the person of the hour. So why don't you, Lee, go ahead.

MR. THONUS: I came up because I was the one that mentioned station blackout and I mentioned it in the context that a plant that had a possession-only license -- as a for instance, the regulations would not force them to deal with station blackout.

A station blackout is a loss of off-site power. Every power plant has power lines connected to the grid and under certain circumstances, the grid connections to that particular power plant could be lost. Normally, all the accident mitigation systems, the emergency core cooling

system, pumps, etcetera, are powered from buses that come off the grid.

The station blackout rule was basically show us that your plant will be safe in a total loss of off-site power. Since TMI-II doesn't have any active accident mitigation systems, from an engineering standpoint, it would be logical to require them to have a reliable source of electric power when they have no emergency systems that are electrically powered, and, indeed, this is what a possession-only license will do for them.

So here's a case where our rules and logic are dead in line. That's the part of the question I was --

CHAIRMAN MORRIS: Kay, does that answer your question?

MS. PICKERING: That answers the question. It doesn't make me feel any better because that is a concern certainly that there could be a problem at Unit 2 and that it wouldn't have a backup electric system. But that does answer the question as to what the definition is and what it actually means.

I do have another question. I'd like a little more definition about the EPICOR in the processing of the different waters. I heard when GPU gave their report some talk about what water yet needed to be processed. When they got to the basement water, my ears really perked up because

I've been under the impression for all these years that that's the really highly radioactive water and that's been a real concern and a real problem.

I'd like to know maybe a little bit more about the EPICOR, the system, how it's working right now. I heard about the evaporator and the problems with that. But I'm wondering about what's happening with the filters of EPICOR, where they're being stored.

I wasn't clear about what's being sent off-site and where it's being sent. So those are just some of my questions about the final processing here of the waters, especially with EPICOR.

CHAIRMAN MORRIS: Lee, do you want to try to answer that or do you want to ask GPU to?

MR. THONUS: I'll certainly answer and give her a little historical background. The EPICOR system was originally designed by GPU and those safety analysis submitted to the NRC and we approved it to clean up the water that was in the aux and fuel handling buildings.

It was on the order of tens of microcuries per milliliter. The higher activity water that was in the basement of the reactor building, which was on the order of 600,000 gallons, had approximately 150 microcuries per milliliter of activity, predominantly cesium-137, 134, and the submerged demineralizer system, also called the SDS

system, was used to clean up that water.

The basement was essentially pumped dry, but from time to time, due to various ongoing activities in the reactor building, more water would accumulate in the reactor building basement. It is no longer of that kind of activity that we're talking about. It's not 150 microcuries per milliliter. It would be on the order of probably one microcurie per milliliter.

I'll defer and -- EPICOR is still -- it's original purpose was fulfilled back around the 1980-81 timeframe, but it was -- it operated very, very well. It was very effective at cleaning up water. Since then, GPU has used it for a variety of other purposes and I will let one of them come up here and talk to you.

MR. ROGAN: I'll try it. The basement has about 35,000 gallons in it now, and that water is expected to be able to process through EPICOR in the same fashion as we're processing the spent fuel pool water. That's our expectation this year and I think it's a realistic expectation.

MS. PICKERING: And the filters?

MR. ROGAN: The filters, when they saturate, the EPICOR system has three filters in series. When a filter saturates, the material of media in the filter is removed and it's put in a shipping cask, a shipping container, and

that shipping container is prepared for shipment and is shipped out to Hanford, Washington.

We have been shipping them out periodically to the tune of approximately two per month as a result of the water processing that we're doing.

CHAIRMAN MORRIS: Is that --

MS. PICKERING: Yes.

CHAIRMAN MORRIS: Thank you very much. Go ahead, Ken.

MR. MILLER: Could we get a clarification, because we've seemed to bounce back and forth here this evening as to whether or not there's water in the basement of the reactor facility.

MR. THONUS: Yes, there is. The reactor building -- and I think maybe why there is some confusion, I said at one point there was six to 700,000 gallons. It was pumped dry, but periodically the activities that go on cause more water to accumulate in the reactor building basement, and, from time to time over the years, GPU has pumped it dry and more water gets in there and it gets pumped dry again.

As Ernie said, he's got a better number than I do. It's currently about 35,000 gallons.

MR. SMITHGALL: Is that from decontamination activities that are going on, spraying and such inside the building that causes this to be drained down and then filled

up, or is it seepage in from other --

MR. THONUS: It's mostly due to intentional water transfers by GPU, not necessarily decontamination spraying, but other intentional water transfers.

MR. SMITHGALL: What does that mean? I don't know if I understood what you meant when you said intentional --

MR. THONUS: Jim or which one of you guys -- they're the ones moving the water, so I'll --

MR. SCHYDER: It's partially the result of decontamination activities elsewhere in the building, and it's also partially the result of natural condensation of moisture from the environment within the building, and it does tend to accumulate with the passage of time. So those two general areas are the principal sources of the water.

MR. SMITHGALL: But primarily the decontamination activities. You're not getting thousands of gallons of condensate inside that building, are you? Or are you?

MR. SCHYDER: We are getting condensation. I don't think I could put a number on it, Tom, to be quite frank with you. But we think it is significant.

MR. MILLER: Is this going to be a continuous problem throughout PDMS in terms of getting rid of this condensation water?

MR. SMITHGALL: I thought I heard that there's the breather. Maybe that's the process that they're trying to

get. Can somebody answer that question? Lee, should it be you that answers it? During PDMS, what happens to the -- is there periodic removal of the water?

MR. ROGAN: Yes. There will be some small amount of in-leakage. I think the SAR estimates 5,000 gallons a year, something on that order. That water will be processed and disposed of in accordance with our license and the current effluent limits that are established for the water. It will be sampled and then everything has to be done to it for proper disposal through out liquid rad waste disposal systems.

But we estimate on the order of about 5,000 gallons per year collected.

CHAIRMAN MORRIS: It's being disposed of now by evaporation, the wat .?

MR. ROGAN: The water being disposed of now by evaporation is AGW, accident-generated water, by specific definition. There are other waters and I would have to call on somebody else if you wanted the details. There is other water that doesn't meet the AGW definition and that can be disposed of through the normal liquid rad waste disposal systems, and some of that goes through other processes and other routes.

It does not all go through the evaporator.

CHAIRMAN MORRIS: And that is ultimately what

would happen in the future.

MR. ROGAN: Yes.

CHAIRMAN MORRIS: And the ultimate disposal of that is to the river, is it?

MR. ROGAN: Yes, that's correct. But it has to obviously meet certain release limits and so forth in order to do that.

CHAIRMAN MORRIS: I understand, but that's where it goes.

MR. ROGAN: Yes.

CHAIRMAN MORRIS: Thank you.

MR. SMITHGALL: Is that issue dealt with in the -- I missed that.

MR. ROGAN: Yes. That is in the SAR.

MR. EPSTEIN: But it calls into question the Lancaster agreement, which I hope you'll look at. It should stay in force that this is what's going to happen.

CHAIRMAN MORRIS: You raised that question earlier.

MS. DAVENPORT: Deborah Davenport, and I have several questions. One thing that has concerned me very much is the HEPA filter on the atmospheric breather and what may pass through that filter over time. I do have a question as to whether or not more contaminants won't pile up on that because it's only 24 inches, I guess, in width.

CHAIRMAN MORRIS: Could we do this in order to move forward? If you have a number of questions, maybe, Lee, could you just come up here and sit maybe and relax and --

MR. EPSTEIN: Now, wait a second. Don't I get to keep your sweater?

CHAIRMAN MORRIS: That's a collector's item. Go ahead, Deborah.

MS. DAVENPORT: I'm wondering if the filters will be tested for contamination or pile-up of particles or contaminants beyond what should be there. I think Eric mentioned possible fire in the filters. I have the same concern for the HEPA filter bank in the auxiliary building.

CHAIRMAN MORRIS: Lee, could you?

MR. THONUS: I think Jim Byrne would probably be the best one for this one. There is periodic surveillance on all the HEPA filters. I'm not sure of -- the HEPA filters are changed out based on Delta P. How much -- it's basically a dust loading. As you load dust on a filter, the pressure drop across the filter increases and when it gets to a certain point, you change it out and then you test it.

CHAIRMAN MORRIS: There is a gentleman here that's come forward to maybe help answer this. Do you want to join Lee up here, because I think there may be a couple of questions that maybe both of you can help answer them.

MR. SHAW: Sure. Roger Shaw, Radiological Controls Director for TMI, both Units 1 and 2. The HEPA filter that she's referring to, we do not expect any appreciable buildup of activity on those filters. We will monitor those filters with portable instrumentation to make sure we're not seeing something that is above what we expect. We expect very little.

In fact, we expect so little that the biggest concern that we have in terms of taking the samples, they're going to sample that flow path, is that we don't cross contaminate slightly someone that has a glove maybe that has a little bit of contamination on it and contaminate the filter, because we always expect the sample filter paper to be clean.

So it's really we do not expect anything at all on there, let alone a large buildup that would cause any kind of problem.

CHAIRMAN MORRIS: Thank you. But please don't leave, because as soon as you do, there will be another question. Thanks.

MS. DAVENPORT: Also, it said that the filters can catch up to three microns, I think it was, contaminants, and then I guess smaller than that, something might pass through.

What isotopes, what contaminants might pass

through? Because also mentioned in the document, I think it was the technical evaluation report, I lose track, but whatever, that there is expected plate-out and impaction of contaminants throughout the auxiliary building.

I'm kind of wondering what those might be and if this might be an indication, the smaller micron size.

CHAIRMAN MORRIS: Lee?

MR. THONUS: This might get into a little discussion of the technology behind HEPA filters. There's a large -- there's a number of fibers of different sizes and a particle on the order of .6 to .7 microns can't fit through the grid; in other words, the hole spacing.

The particles that are very, very small tend to sort of vibrate by Brownian motion as they pass through this filter media, so that a tenth of a micron particle is much more likely to be captured than a three-tenths of a micron particle.

The most likely particle to get through that filter is one that is three-tenths of a micron. It is large enough to not vibrate so much and be bounced around by air molecules, and, yet, it's small enough to potentially, if it got lucky enough, make its way through this maze. And the filters are designed to be 99.97 percent efficient for those three-tenth micron particles which are the mostly likely to get through.

Above seven-tenths of a micron, they're all going to get caught just sort of on a mesh size basis, and below three-tenths of a micron, due to the amount of bouncing around it does, they will be captured at a rate greater than 99.97 percent.

CHAIRMAN MORRIS: Okay.

MS. DAVENPORT: Would these be a specific contaminant or particle?

MR. THONUS: The individual radionuclide atoms are typically on particles of dust that are just ordinary garden variety dirt. I don't know how to describe the particle size distribution that you'd find in the air, but, again, the worst case is if it's a three-tenth of a micron particle that happens to have a radioactive cesium atom adherent to it, that particle will be caught with 99.97 percent efficiency.

I don't know if GPU has done any particle size distribution studies with the cascade impactor, but Roger looks eager to --

MR. SHAW: Just real quick. We have done particle size distribution, especially in containment over time. The thing I'd like to just add to this real quickly is that we are also concerned about what particles do make it through the HEPA filter, although it is very, very efficient.

But over time, some particles will make it through

and one of the things that we will be doing as we go in to take surveys is to take smears of contamination in that general area. If we're operating, let's say, we're letting it breathe for three months. We come in every three months to do surveys in the reactor building and also in the aux and fuel handling buildings, we will then check that area again to make sure there's no buildup.

That will be a very good key to answer the question are some particles making it through that should not be and are we having a buildup right in a general area, say, just on the floor, that really doesn't go throughout the entire aux and fuel handling building because the ventilation is not running ordinarily.

So that would be another checkpoint for us to make sure we're not having any kind of buildup or a lot of contamination, let's say, slipping through.

CHAIRMAN MORRIS: Thank you.

MS. DAVENPORT: Will you be checking for alpha contamination, too, on the filters?

MR. SHAW: Yes. Yes, we will. And cesium and strontium are the two that we'd be looking for, and then any alpha, also. But you can't have alpha in Unit 2 without cesium and strontium. If you have an alpha problem, you will see cesium and strontium first very quickly.

CHAIRMAN MORRIS: Deborah, you have one other

question because we --

MS. DAVENPORT: I've got about ten. There are two that were from a report that were sent to the Dauphin County Commissioners on post-defueling monitored storage some time ago that Carol Peters had sent on. Let's see.

One thing that was mentioned, and it was that in the B-loop, there was one fuel rod section, this is in its hot leg, that was sitting there. Has that been removed or is that still there? I'm concerned generally also about contamination in the B generator and wondering of those steam tubes can hold up over time, if the loop pipes can hold.

CHAIRMAN MORRIS: Can somebody answer that question? Deborah, I hate to end it here, but I think we need to. I would remind you, seriously, if you need more than five, we do encourage you just to call us and we'll be happy to give you ten minutes. It's just that we're getting away from even close to the schedule.

Can somebody try to answer that question?

MR. ROGAN: I'm sorry, Mr. Chairman. I'm afraid, first, we don't really understand the question. Second, I can't put it into perspective. There's nobody here tonight that can answer that question. If we could get a little clarification, we could certainly look at it and see if we can provide something.

CHAIRMAN MORRIS: Read it into the transcript again and then maybe GPU can see it and respond to it at some point.

MS. DAVENPORT: There's a document on cleanup of post-defueling monitored storage that GPU had sent on to the Commissioners describing certain things that their Safety Board had discussed with GPU and GPU had responded with answers.

One thing that was mentioned was that the hot leg of the B locp in the primary system contained one fuel rod section and a great deal of fuel in addition to this. I had great concerns about that regarding criticality and checking for criticality in the B loop.

I wanted to know how things were monitored there, how the fuel was found, and is it being left dry or wet.

CHAIRMAN MORRIS: I see people shaking their heads like it's not ringing a bell. Deborah, is it possible that you could get us a better citation for the document?

MS. DAVENPORT: I have it with me.

CHAIRMAN MORRIS: Why don't we look at it when we're done here.

MS. DAVENPORT: Maybe I just didn't understand it right.

CHAIRMAN MORRIS: Okay. Debbie, I can see what you've got there and you probably can go on all night.

MS. DAVENPORT: Yes.

CHAIRMAN MORRIS: I'm sorry we don't have more time than this, but we do have some other things the panel needs to talk directly on.

MS. DAVENPORT: If I ask one very fast, could I ask just one more, because it is important. They mentioned that the breather goes into the auxiliary building and there is uptake into the exhaust and the HEPA filters.

Is there a gap between the place that the HEPA, the pipe on the breather enters the auxiliary building and the exhaust stack or wherever the uptake is? Is it going into the building or into the stack right away?

MR. THONUS: I think either Roger or I could answer this. The opening is on the 328-foot elevation of the auxiliary building, and it's just an open area. There's no exhaust immediately adjacent to where the breather will open on that particular -- of course, during PDMS, the building ventilation for the aux and fuel handling building will be shut down anyway.

CHAIRMAN MORRIS: Thank you, Lee. Thank you, Deborah. Roger, you should come up and answer more questions. You're very direct and helpful. Thank you.

MR. SHAW: Thank you.

CHAIRMAN MORRIS: That brings us to the panel discussion on the PDMS SER-TER. Who wants to start? I

know, Tom, you raised a couple of concerns earlier.

MR SMITHGALL: No. I think we need to talk about the funding issue. I think we've heard that, we've talked around it a little bit. Neil has shared something with us during the break that has only reenforced it to a certain extent, and I think that's an issue that we ought to talk about as a panel maybe exclusively at another meeting.

I don't know that we'll be able to address the technical issues to the extent we could refute or support PDMS one way or the other, except on the margins, if you will. But we certainly can address the funding issue and everybody will understand the pocketbook issues very well.

It's kind of in our purview, since we've done that from the very beginning and the initial funding of the whole cleanup process. We were part and parcel of that process. So I think we ought to donate a meeting to that exclusively, such that we can either say we are going to make a recommendation to the Commissioners in that regard or not, since I don't think staff will deal with the dollars and cents issues.

CHAIRMAN MORRIS: I was hoping that at the end of the meeting and talking about future meetings, that the first item we would discuss is, at least I'd hope we could come to agreement on, and that is that we'd have a meeting maybe in June to discuss the whole funding issue regarding

PDMS and devote the evening specifically to that.

I agree totally with you, Tom. Was there not -- I was trying to think of the issue --

DR. MASNIK: Art, you said funding for PDMS.

CHAIRMAN MORRIS: I'm sorry. Funding for ultimate decommissioning. Thank you for correcting me. I thought, when you were discussing earlier some of your concerns, and I'm trying to think of what it was, I thought there was an item that you may have wanted the panel to consider.

MR. SMITHGALL: Well, maybe Eric was more succinct in bringing some of them to the forefront. I think we're finding discrepancies in the PDMS itself as far as the real number in the fuel. He brought up the Lancaster agreement, which we've fought so long to even see it mentioned tonight.

Other than that, the funding are the ones that I'm concerned about. We did mention some of the citations that were mentioned in this report that were unclear, and I think Mike is going to take care of those for me.

CHAIRMAN MORRIS: Okay. Is there anything else, any other comment that any panel member wants to make regarding the discussion and presentation today?

[No response.]

CHAIRMAN MORRIS: I'm not hearing any.

DR. WALD: I had one small question which hasn't come up and I was hoping it would. I was just puzzling over

the basis in the tech specs for the accident-generated water limits. The basis was indicated as to be determined, but there was a limit.

CHAIRMAN MORRIS: Can you speak up just a little bit?

DR. WALD: Just a question which hasn't come up relating to the accident-generated water, for which the tech specs set a limit on Page 1-3 of the tech specs for accident-generated water. But on Page B3/4.4-1, which gives the basis for the limit, it says to be determined.

I wasn't sure what that meant.

DR. MASNIK: It's really a scheduling problem in that when we prepared this document, we anticipated a period of time to resolve all these issues. Additionally, we have some other license amendments inhouse that we felt that the accident-generated water would likely be gone at the time that they enter PDMS, and, therefore, this tech spec would not be in this document.

So there may be an internal inconsistency there, but it's a question of scheduling more than anything else.

MR. RICE: I've got one question.

CHAIRMAN MORRIS: Yes, Fred.

MR. RICE: It's my understanding that the funding for the PDMS is all set. Is that correct?

CHAIRMAN MORRIS: For the PDMS?

MR. RICE: Yes.

CHAIRMAN MORRIS: We can ask that, but I don't believe it is. It's going to be funded on an annual basis once it's into it at six million a year, I think.

MR. RICE: Well, where did I get my understanding that it was established?

DR. MASNIK: There is funding in place to prepare the facility for PDMS, and that was the topic of the first discussion today. Then there's an additional annual cost of maintaining the facility in PDMS, and that's the $6 million, I believe, that was mentioned.

CHAIRMAN MORRIS: But that is going to be -- it's expected to be funded on an annual basis from annual revenues. It's not something that is set in place ahead of time, right?

DR. MASNIK: Right. The licensee will have to come up with that money.

CHAIRMAN MORRIS: Yes. That's what I understood.

DR. MASNIK: That, to my knowledge, is not in the funds.

CHAIRMAN MORRIS: And the issue regarding the $36 million is the money that was in place as of January 1, 1992 through the end of the third quarter 1993 for preparing it for PDMS.

MR. RICE: Thank you.

CHAIRMAN MORRIS: Sure.

MR. SMITHGALL: You jogged my memory on what my point was when I railed at Lee Thonus over there.

CHAIRMAN MORRIS: I bet you Lee knew what I was talking about when I was wondering what his concern was.

MR. SMITHGALL: I would argue that the panel should take a position or make a recommendation to the Commissioners that as part of the condition of any approval for this proposed procedure, have a drop-dead date; that if it's 2014, then in 2014 they've got to decommission the plant. But you don't leave the door open, as I mentioned earlier.

It's not a question, Lee. You don't have to get up and answer it.

MR. THONUS: If I could make a comment. Those are --

CHAIRMAN MORRIS: But, Lee, as you answer it, could you also indicate what length of time can be given for an extension of time, whether it's 25 year increments or something like that, and how many times something can be extended.

MR. THONUS: The first comment is that the Commissioners are indeed the people that you want to make that comment to. They are the ones that are going to make the rules on extensions, not someone like Mike or I.

Right now the current licensing rules are that each individual licensing action, including one like PDMS, has to be considered on a case-by-case basis, on the facts that are presented at the time. And if they come in in 2014 and they make a solid engineering case, we have to evaluate that on the facts as they are presented at that time.

Those are the current rules. Those are the ones -- and the Commissioners are the ones that can change it to achieve what you want, can say there are no more extensions. The staff does not have that power to say this is it, you're not going to get any more extensions. We can evaluate this particular action as it comes in.

And although Eric doesn't like the term, we have to do it dispassionately.

MR. SMITHGALL: How dispassionately can you get if you just boil it down to the dollars?

MR. THONUS: We don't boil it down to dollars. We boil it down to safety and the environment. We didn't look at necessarily how much this was going to cost you to store it. We looked at man rem savings of PDMS versus immediate dismantlement.

MR. SMITHGALL: Let me take another tact and say why can't the staff take a position that, in fact, you will grant no more extensions and by saying -- and demonstrating to the industry that if these things occur, that they're

going to have a shelf-life of some sort, they're going to have a time when you really have got to come forward.

I know you can say that they'll make a compelling engineering argument for it, but you can just say we're not going to listen to the compelling engineering arguments, we want to have you do it. There's got to be a time when someone says the time is up.

DR. MASNIK: Tom, I think the problem is that we have to regulate within our regulations. Right now our regulations do not allow for us to categorically say that you can't come in with an extension request.

MR. SMITHGALL: You've changed the regulations repeatedly.

DR. MASNIK: Well, the regulations can be changed, but it's a long lengthy process.

MR. SMITHGALL: Absolutely.

MR. THONUS: The best avenue to get where you want to go, Tom, is to bring that up to the Commissioners.

CHAIRMAN MORRIS: Could I do this, because it might be germane to what you're raising. Neil is trying to get in a comment here.

DR. WALD: I'm not sure I agree with my valuable colleague on my left. I generally am in favor of making benefit-risk judgments, which is something I do professionally, on the basis of the evidence at the time.

I'm not sure that it would be beneficial to throw away that opportunity at the time that the issue has to be joined, and I'm not sure that we can be smart enough 20 years in advance to make that benefit-risk judgment for the year 2000, whatever.

MR. SMITHGALL: I will agree with that, but when you are talking about funding something 23 years from now, it gives you so many different avenues of escape to really attack the issue. That's my problem. We can quantifiably show how other industries have escaped their responsibilities over time.

It's very simple and we can go right around the country and put the pins in the map. I just don't want that pin in the map to be at Three Mile Island in the middle of the Susquehanna River. You're going to head right down the same road again and you can hide behind the benefit-risk analysis, you can hide behind the compelling engineering argument, but when you walk away and you don't have any money to do it, everybody throws up their hands and then the taxpayer, the Federal taxpayer ends up bailing it out.

I think people are just getting a little tired of doing that.

DR. WALD: But nobody is giving a moratorium on this requirement for setting aside the funding for decommissioning, which I agree is an important issue and I

was prepared to propose the same thing that you already did on the basis of the material I brought in.

But that is a separate issue from the technical decision which will be made at the time that the issue arises, at the end of the time period where an extension is either to be granted or not granted.

MR. SMITHGALL: I can't fight you on the technical issues. I can't. You've got me hands down on that. I'm a layperson sitting up here, so you've got me on that argument and your benefit-risk arguments and engineering arguments.

I'm trying to make a practical -- I'm trying to approach this in a practical way. I can look out at you and I can see you thinking the same thing. You may not believe it when you go to work in the morning and you sit down with all your technical documents, but you know that industries and the utilities walk away from these problems. I'm just concerned about that and I'm trying to figure out a way for regulators to approach it.

CHAIRMAN MORRIS: Go ahead, Tom.

MR. GERUSKY: The problem is whether or not there's going to be enough money available to do what they're going to do when they do it. That's the issue that we ought to or you ought to, hopefully I'm not going to be involved, discuss with the Commissioners, that if there isn't enough money at the tail end, then put a timeframe on

it, but don't put a timeframe on it just because you want to solve the money problem.

Solve the money problem.

CHAIRMAN MORRIS: You said precisely what I was going to say. I don't think it's so much tail end as putting the money upfront that's going to be there in the tail end. My concern is they say it's going to be 25 years and it's extended and they're allowed to extend funding over the next 25 years or whatever the extension is, and it's been a concern of this panel that money be placed in advance of the final PDMS, before we go into PDMS.

At least a number of people on this panel felt that way, that the money for ultimate cleanup be put away by the time it goes into PDMS so that we don't have to worry about 25 or 50 years worth of putting the money away slowly and will it ever be there.

So that if it gets put away and it's invested, although there are some complications that we will talk about at the next meeting that Neil Wald brought to our attention tonight that indicated that the requirement from the NRC to put money away for ultimate decommissioning does have some serious problems for the utility companies in investing those monies and drawing a reasonable return on them.

So that over time they degrade and there is some

need for a tax change in order to accommodate the ability of the utilities to invest the money and make money on it so it will ultimately be there when it's needed. So there's a big issue on that, as well.

MR. GERUSKY: One of my jobs now is looking at the cost of decontaminating and decommissioning the Department of Energy facilities around the country. When you're talking the dollars that they're talking about are not enough to handle the decommissioning of this facility.

So there is going to have to be a relook at the cost of decommissioning in general. And I will not be attending the next meeting, but I can send you some numbers.

MS. MARSHALL: Is it my understanding that the cost of storage, which is anticipated to be approximately 20 years, would be borne by GPU and that would be approximately six million? That would not be stabilized, though, for 20 years at six million, would it?

Is this going to effect -- another question is is this going to effect the ratepayer, and, if so, to what extent?

MR. ROGAN: In answer to the first question, we are estimating right now $6 million per year as a fixed cost for PDMS, and that obviously may have to be inflated on an annual or several year basis, as all costs must be recalculated.

With regard to the impact on ratepayers, I'm not at liberty to discuss that. Not that I'm not at liberty, I don't know the answer to that question right now, what its impact would be.

MS. MARSHALL: Would that have to be brought before the PUC?

MR. ROGAN: Yes. I would suspect that any recoverable costs, as I understand it, and I am certainly not an expert on this, but my understanding is any recoverable costs from the ratepayers is handled through a rate case with the Public Utilities Commission, and they must consider it and rule on it.

So that if there were a rate case pending, there would be specified certain things for which recoverable funds would be allowed.

MS. MARSHALL: When is this program as far as timing is concerned to bring it before the PUC?

MR. ROGAN: Again, let me just check my notes. I don't have the information here. It's my understanding, based on recollection, that the Metropolitan Edison Company is in the process of developing a rate case now. I do not know the details of it and I do not know the exact timing of it, but I believe it's fairly imminent.

MS. MARSHALL: Wouldn't it be rather important to make sure that the PUC is going to go along with putting the

cost of this storage on the ratepayers exclusively, which is what it would do? And I think also it would be very interesting to know just to what extent it would impact on the rates.

MR. ROGAN: I think obviously it's always advantageous to know what the Public Utilities Commission is going to allow in the way of recoverable costs, but the way you find that out is by filing a rate case. That is what we're in the process of doing now. The Metropolitan Edison Company, which owns 50 percent of Three Mile Island, is in the process of preparing such a filing now.

MS. MARSHALL: Is there any estimate of any kind?

MR. ROGAN: I have no knowledge of that whatsoever.

CHAIRMAN MORRIS: Could I, just because it has gone beyond 10:00 now. We have discussed possibly having a meeting specifically devoted to this purpose. Maybe we could talk about some of the things we'd like to get into that night, whether it's process for approval from PUC or some other matters that we feel we would like to get into that evening, and then decide how we can go about having the right people there.

So, Bob, I appreciate your comments. I think we just really need to get into a panel discussion now as to the date of the next meeting and the subject.

I would like to clarify something with Tom Gerusky, if I may. That is -- do you want to say something?

MR. ROGAN: I was just going to ask, Mr. Chairman. I believe Mr. Schyder has something he'd like to say, if he could have an opportunity before --

CHAIRMAN MORRIS: As soon as we're done, before we conclude, I'll be happy to have him come forward.

MR. ROGAN: Thank you.

CHAIRMAN MORRIS: Tom, you mentioned that one of the things that maybe we should do is make some -- if we're going to do anything, to make a recommendation to the Commissioners, it should be something relating to funding.

Should the panel at the next meeting be very concerned about the funding we may want to consider some consensus, and if you would like to offer some thought, comment on what we should do in regard to making a recommendation to the Commissioners, feel free to do so.

MR. GERUSKY: Yes. My concern is that the Commissioners take another hard look at their funding -- at the regulations to determine whether or not there is indeed -- whether the mechanism they've chosen is indeed proper to assure that adequate funding will be available for this particular facility, and, beyond that, generically for all the facilities that have to be decontaminated and decommissioned.

I think it's -- I think it ought to be an ongoing process and they ought to leave the door open for revisions in this periodically as experience is gained with decontaminating and decommissioning other facilities, and not fix it in time, but change it in time as the need arises.

I'm not sure. I don't know how much money it's going to cost to clean the facility up, but somebody ought to take a harder look at it than just a rule of thumb, which is what was used.

CHAIRMAN MORRIS: Thank you. Ken?

MR. MILLER: I think it should really be clarified. We've discussed this several times in the past. I know we've had some presentations on it, but the decommissioning regulation required basically all licensees to submit a decommissioning plan, as well as a plan for funding.

We've heard on a number of occasions that GPU has done that. The cost of decommissioning that they project for this plant is going to be $215.8 million. So obviously they've already submitted a funding plan to cover that.

I think maybe at our next meeting we could take a look at that. Whether or not we go beyond that and recommend to the Commissioners that they erred in choosing that type of number to force people to plan for, I don't

know. I guess that would depend upon what sort of information we can gain from DOE and these people who are currently undertaking these projects.

CHAIRMAN MORRIS: I think it would be helpful. Some of the things I hope we could discuss is what Ken and Tom have said here, and that is at least hear something about the funding plan that was submitted. If there's anybody else that we could locate from maybe DOE that would have some experience in cost -- I'm trying to think of who it was that came forward here, I guess Bob did, that talked about the two different scenarios and they kind of struck the one in the middle based on past experience.

DR. MASNIK: There has been some update on some of the earlier studies that were done out at PNL, and we certainly can get a hold of that. I think one may be imminent, in fact, as to the cost of decommissioning.

CHAIRMAN MORRIS: I think the issues of, one, the funding plan that was submitted; two, how realistic are those costs, what really might be the true cost of cleanup, when is the money going to be in place. We'd like to try to get into that kind of discussion, I think.

Where is the money going to come from? I think they are -- there may be other questions, but they, in my mind, are items that I think are very significant to us and we'd like to build a meeting around that, with the idea at

the end of the meeting to decide whether we want to make a recommendation to the NRC and subsequently maybe meet with the NRC to present it.

After sending it to them in writing, present it to them and talk with them about it.

DR. WALD: I certainly would want to support that point. Let me ask for a clarification. Is my understanding correct that the NRC, although it required a plan and an estimate of financial costs for decommissioning by July 1990, did not require or does not require the details of the plan for another two years?

DR. MASNIK: My recollection was that we discussed this some time ago, I remember, at a meeting and there was some discussion as to when the money was actually being put into the funds.

Now, when the licensee submitted the decommissioning funding plan, that was essentially a description of the instruments that were going to be used to collect the money.

The question is do these things have to be in place now. I really can't answer what the timing is relative to when those things have to be in place.

CHAIRMAN MORRIS: I think we'd like to obviously get into that. Just so that we can followup, when will we get copies of the transcript? I think this one is important

because at the tail end of this meeting, I'd like to review and make sure we cover these points at the next meeting.

DR. MASNIK: I can't recall. Three-day or two-day turnaround. I should get a copy of it in two days, which means probably Monday. I will make an effort to get it out. It takes me -- there's about 70 copies to distribute. I'll get it out by the end of the week. By the end of the week, I'll have it in the mail to you.

MR. GERUSKY: You might want to request someone from the Public Utility Commission to make a presentation on the legal or on their precedents in this issue. I read a paper today made by a representative of the Public Utility Commission at a meeting on decontamination and decommissioning in the middle 1980s and discussed what happened in their process on Three Mile Island.

So they are very aware of this issue and very concerned about it, and they might be able to provide at least some insight into what their thinking is or their past practice has been on this issue. It's worth investigating and contacting the Chairman and asking someone from the staff to make a presentation.

CHAIRMAN MORRIS: We'll do that.

MR. SMITHGALL: You can see why I'm concerned about this. I can't wait for this transcript, I really can't. Lee, look at this. He asked a question about the

plan. He doesn't know whether or not really -- is it the financial assurance plan, is it the real dollars.

Mr. Gerusky over here is saying now from his experience it's not a drop in the bucket to clean this place up.

MR. GERUSKY: I didn't say that.

CHAIRMAN MORRIS: He didn't say that.

MR. GERUSKY: I didn't say that. It's going to cost a lot of money.

MR. SMITHGALL: It's going to cost a lot of money. Excuse me. But I can't wait for the transcripts. That's my problem. Therein lies my problem, because we really don't know.

DR. MASNIK: You asked me generically. I can't speak for every plant. I do know, for example, that there is a plan in place for TMI-2.

CHAIRMAN MORRIS: We're going to have a whole meeting devoted to this. This is directed to Kay Pickering who sent me a note saying can we have a certain item on the agenda. I don't want to offend her. Is she here still?

MR. EPSTEIN: No, but I can relay the message.

CHAIRMAN MORRIS: We will not add her item to the agenda because, quite frankly, we need to have -- we can bring that up at another meeting and she can ask us at the next meeting, Eric, if we could set another meeting to

discuss that.

But I think this topic is of such substance that we need to have a whole meeting on it.

MR. EPSTEIN: Okay.

CHAIRMAN MORRIS: And maybe another one after that, quite honestly. Can we look at our schedules and decide? I'm thinking of maybe the second or third week in June. If you want it earlier, I guess we can do that. But if we're going to have somebody from the PUC here, we're going to have to take some time to get them.

DR. MASNIK: It appeared at the last meeting that Wednesdays is not a good time for Roth, Smithgall, Trunk and Luetzelschwab. Is that still the case?

CHAIRMAN MORRIS: How about Thursday the 11th or Thursday the 18th?

MR. MILLER: Neither is good for me.

CHAIRMAN MORRIS: Neither is good to you? How about Tuesday the 9th or Tuesday the 16th?

MR. MILLER: Either would be okay.

CHAIRMAN MORRIS: We're going toward Tuesday. What do you prefer, the 9th or 16th?

DR. ROBINSON: I don't know whether I'm going to be on the Committee or not, but I can't make it the 16th. Make it the 9th.

CHAIRMAN MORRIS: June 9th. It's going once,

going twice. Seven o'clock, hopefully here. We'll have to check and see if it's available, but it should be. It will be announced, but, tentatively, the next meeting will be 7:00, June 9, in this building.

I think I had heard that Mr. Schyder might want to make a comment.

DR. MASNIK: Before that, we do have one more piece of panel business, and that is whether or not we should make an effort to replace the two panel members or one-and-a-half panel members that we're losing.

DR. ROBINSON: Thank you.

DR. MASNIK: Gordon seems to be waffling there.

DR. ROBINSON: No, I'm not waffling. I did offer to -- in fact, I have found a replacement.

MR. SMITHGALL: My concern is this. If the panel takes an action that requires a vote, we wouldn't have a quorum. If you two weren't here tonight, would we have a quorum?

MR. GERUSKY: Well, we won't be members officially of the panel.

CHAIRMAN MORRIS: What do we have here tonight, nine of us?

MR. ROTH: Nine out of eleven.

CHAIRMAN MORRIS: Nine out of eleven. We're hearing that Tom will not be here at the next meeting. I'm

hopeful that Gordon will join us at the next meeting. I hope that that will happen, because after that I think we'll have a better idea of the meeting schedule and how painful it might be to us for you to leave, Gordon.

DR. ROBINSON: I can't imagine it would be very painful.

CHAIRMAN MORRIS: Well, we don't want to lose you. We don't want to lose Tom either, but we understand that he is in a situation where he needs to leave us. Can we count on you to be here in June?

DR. ROBINSON: I will try. I can't guarantee it.

CHAIRMAN MORRIS: Well, nobody can. But in relationship to good faith, we'll rely on you being here.

DR. MASNIK: Would we want to approach Tom's replacement in his former job as a possible state representative, which, of course, is what we're losing here.

MR. GERUSKY: I would recommend it.

DR. MASNIK: You would recommend it. Who is that? Bill Dornsife?

MR. GERUSKY: Yes. He's acting, yes.

CHAIRMAN MORRIS: Does it make sense tonight to make that decision or should we wait till the next meeting? I'm just asking only because the next meeting I think we may have a better feeling for future meetings and what have you.

DR. MASNIK: It's up to you.

CHAIRMAN MORRIS: That would be my sense, that we wait till the next meeting and take that up at the end of the meeting, maybe as the last item, as what to do with Mr. Gerusky's slot. It's going to be so hard to replace him.

DR. MASNIK: We'll invite Mr. Dornsife to the meeting.

CHAIRMAN MORRIS: Yes. Please have him come and observe and maybe he won't want to join us.

DR. MASNIK: Maybe that's not a good idea.

CHAIRMAN MORRIS: Maybe it's not. Is there anything else, Mike?

DR. MASNIK: No. Administratively, I think that's fine. I think that's it.

CHAIRMAN MORRIS: Why don't you come up, please, Mr. Schyder.

MR. SCHYDER: Hello, again.

CHAIRMAN MORRIS: Hello.

MR. SCHYDER: Earlier in the meeting, Mr. Rogan indicated that on the question of the details of the budget for the next two years, that he would consult with the senior folks in the company and get a decision on the subject.

I must admit that earlier in the meeting, when the question was first posed by Mr. Roth, I was a bit surprised by the question and may have dealt with it a little harshly.

But in any event, I did take the liberty of calling Mr. Clark subsequent to our prior discussion and that information will be made available in summary form, the breakdown of the major elements of the budget.

I guess the best way to get it to you is via the NRC and we'll try and get that out to you as expeditiously as we can.

CHAIRMAN MORRIS: That would be very helpful. Thank you very much. We appreciate it. Any other items?

DR. MASNIK: I would ask that if you do have your travel filled out, please give it to me so I can --

MR. ROTH: So you can throw them away.

CHAIRMAN MORRIS: The meeting is adjourned.

[Whereupon, at 10:25 p.m., the Committee was recessed, to reconvene at the call of the Chair.]

REPORTER'S CERTIFICATE

This is to certify that the attached proceedings before the United States Nuclear Regulatory Commission

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DOCKET NUMBER:

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were held as herein appears, and that this is the original transcript thereof for the file of the United States Nuclear Regulatory Commission taken by me and thereafter reduced to typewriting by me or under the direction of the court reporting company, and that the transcript is a true and accurate record of the foregoing proceedings.

Marie Mahoney

Official Reporter
Ann Riley & Associates, Ltd.

The Nuclear Regulatory Commission's TMI Decontamination Advisory Panel and Public Stress Mitigation

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INTRODUCTION

Two other presentations at this conference have set for us a Utopian goal, to allay the unnecessary public anxiety about radiation. And they have told us what health physicists and the media can and should do to achieve that goal. On a somewhat more pragmatic level, I will try to provide an overview of what a regulatory agency has done in an organized and ongoing effort to reach that goal with the population around the Three Mile Island (TMI) nuclear power plant. The effort began shortly after the accident in March 1979.

One step in this effort was the establishment of an Advisory Panel for the Decontamination of Three Mile Island, Unit 2, by the Nuclear Regulatory Commission (NRC) in early 1980. This Panel was as unique in its experiences as the TMI accident itself was at the time. I have served on the Panel since 1981 and will discuss its history, some of the issues with which it has dealt, and some of its continuing problems. Finally, I will try to pass on some evaluations of the usefulness of the Panel's activities as we have received them from various groups involved.

BACKGROUND

The TMI accident took place on March 28, 1979, when Unit 2 underwent a malfunction.[1-4] The major consequences were massive fuel damage within the reactor vessel, release of great quantities of radionuclide-contaminated water within the plant facilities, minor offsite releases of radioactivity, and widespread public confusion and fear.

The actual releases of radionuclides were primarily of noble gases with very short half-lives and brief biologic residence times. Among the potentially hazardous fission products, the one of most concern was radioiodine. A maximum of about 15 curies of radioiodine was released, an extremely small quantity when diffused in the outside air. This release resulted in a dose to a person at the site boundary (the theoretical person who spends 24 hours at the fence of the facility throughout the accident) of about 1 mSv (100 mrem). It also produced an average dose of about 0.08 mSv (8 mrem) to the population within 10 miles and of about 0.015 mSv (1.5 mrem) to that within

The Medical Basis for Radiation-Accident Preparedness, III

50 miles.[5] The total population dose estimates ranged from about 16 to 50 person-sieverts (1600 to 5000 person-rem). Very negligible health effects (seven-tenths of one fatal cancer and seven-tenths of one genetic defect in the entire population) were therefore predicted on the basis of our knowledge of radiobiology and radiation medicine.[1] In other words, very little or no biological health effect was expected.

Why then was there widespread public concern and fear? Well, almost everyone who has preceded me at this rostrum has shown some newspaper "true" headlines, and I will be no different. What I want to emphasize is not inaccuracies but rather the conflicts in the statements about what was going on: "State Worried By Health Risk to 13,000" appeared at about the same time that another headline proclaimed "Pitt Expert: N-Plant Danger Over." These stories were followed by "Explosion Worry Hangs Over N-Site," "Hydrogen Bubble In Reactor Poses Biggest Threat," and "Risk of Meltdown Evacuation [illegible] Real." At the same time that one paper quoted "Bubble Disintegrati[illegible] Says," another stated "U.S. Refuses to Affirm Report." A lack of technical understanding and control were indicated by such stories as "Atom Risks Mystery, Congress Told" and "Nuclear Crisis Triggers Alert System Confusion." We end up with banners that observed "At Nearly Empty Churches, Hopeful Prayers Amid Fears" and the assertion that "Life Will Never Be the Same, Nuclear Refugee Says."

The confusion in newspaper headlines as well as TV and radio news reports was well depicted by an editorial cartoonist who labelled the reactor cooling towers as twin Towers of Babel, simultaneously emitting such statements as "No Cause For Alarm," "Be Ready to Evacuate," "Bubble is Shrinking, Bubble is Growing," "Somebody Goofed," "No Error was Made," and so on before a puzzled and frightened bystander. This kind of conflicting information led to the loss of credibility that another cartoonist illustrated by showing a spokesman for the involved company, General Public Utilities (GPU), saying, "I repeat, there is no real cause for alarm" as a melted reactor core laps at his feet. In retrospect, the spokesman may have been correct, but the statement was not appropriate at the time. The impact of the press and video coverage probably contributed to the only health effects found so far by the TMI follow-up studies, the psycho-behavioral responses.[6]

Given the confusion and emotion produced by the original accident, the public's response to the many complex issues concerning the unprecedented reactor cleanup was a matter of concern. An approach to deal with the problem was suggested by a Special Task Force of the Three Mile Island Cleanup.[7] Its report concluded that "without local public understanding and acceptance of the cleanup operation at TMI-2, an orderly and expeditious cleanup will be difficult, if not impossible, to accomplish." It recommended that the NRC "... establish formal means to obtain input from the public Citizen's Advisory Panel for the purpose of consulting and advising the NRC on the decontamination and decommissioning of the Unit 2 reactor." The U.S. Congress's House Committee on Interior and Insular Affairs in April 1980, therefore, amended the NRC authorization for FY 1981 to establish a Citizens Advisory Panel for that purpose.[7]

The Advisory Panel for the Decontamination of TMI-2 was established by the NRC on October 24, 1980, as an independent advisory panel "for the purpose of obtaining input and views from the residents of the Three Mile Island area and affording Pennsylvania government officials an opportunity to participate in the Commission's decisional process regarding clean-up plans for the facility. The panel will consider the comments expressed by the local residents, and make recommendations to the Commission."[6]

The Panel has had periodic meetings with the Commissioners over the years for this purpose. The distribution of membership included three members from agencies of the state government, three from local government, three from scientific fields, and three from the public itself, people who lived in the area.

The Panel's Charter stated that it "consults with and provides advice to the Commission on major activities required to decontaminate and safely clean up the TMI-2 facility."[6] The term of service on the Panel was left indefinite, because the Panel was expected to be used as long as public views on the cleanup issues at TMI were required. The Panel still is in operation. To be accessible to the public, it holds evening meetings with a frequency determined by the stages and problems of the cleanup. Seventy-three meetings have been held since 1980. Although the panel members serve without compensation other than travel costs, a quorum has always been present at these meetings.

ISSUES

Table 1 lists the most important issues that this Committee has confronted. It took the views of the public on these issues and presented them to the NRC Commissioners and vice versa. The issues that bear expansion are detailed below.

Funding of the Cleanup

A topic that was discussed intensively at the beginning of the cleanup period was the funding necessary to carry it out. Initially, other than GPU's

Table 1. Major Issues Addressed by the TMI-2 Advisory Panel

Funding for decontamination
High-level radioactive-waste disposition
TMI-1 Nuclear Plant restart
TMI-area health studies
TMI occupational radiation exposure
TMI "whistle-blower" legal actions
EPA environmental-monitoring reduction
Plant-process-water disposal (evaporation)
Postdefueling monitored storage
Funding for decommissioning

insurer, no organization wanted to be associated with the mishap let alone to pay for that dubious privilege. Even in 1982 when funding continued to be a critical issue, the Panel took a very strong view, albeit not unanimously. It wrote to the NRC Chairman that "the crippled reactor ... constitutes a threat to the public health and safety until it is decontaminated. The rate of progress on the clean-up at this time is inadequate to protect the public health and safety." It felt that "Unit 2 is becoming a *de facto*, long-term storage facility for high-level radioactive wastes ... ."[10]

It pointed out to the Commission that "... given the long-term serious hazards posed by TMI-2, the lack of funding from any source to undertake a serious and expeditious clean-up effort, and the lack of an effective commitment on the part of the NRC, we are forced to conclude that the failure to make sufficient and timely progress toward decontaminati[illegible] constitute [sic] threats to the public health and safety." The Panel expresse[illegible] its belief that "... the Commission has both a moral and a legal duty to act immediately to insure [sic] that the clean-up of TMI-2 proceeds expeditiously in order to eliminate this threat to the public."

The cleanup costs were formidable, about $1 billion as estimated in Pennsylvania Governor Dick Thornburgh's cleanup plan.[11,12] The Governor proposed a combination of national and area funding sources:

Federal government	25%
Nuclear industry	25%
Plant and its insurers	44%
States to which the plant supplied electricity:	
Pennsylvania	4%
New Jersey	2%

It took a long time for this funding to come into being. The budget was always under threat; at the beginning, the cleanup proceeded very slowly. As one might expect, the concept of distribution of a share of the cost to the whole electric industry met with a battle in every state's public utilities commission. The funding issue remained on the agenda into 1984, and the public continued to use the Panel as a means to express its views on this crucial issue to the Commission.

The cleanup budget was finally in place about 1985; GPU, its insurers, and its customers paid the largest shares. By this time, the industry had also contributed through the Edison Electric Institute. The Japanese nuclear industry participated as well, as did the manufacturer, Babcock and Wilcox. Other sources of funding included the states of Pennsylvania and New Jersey and the federal government through the Department of Energy (DOE).

High-Level Radioactive-Waste Disposition

Another early accomplishment in which the Panel was involved was to maintain pressure on DOE and the NRC to agree on the removal of the

high-level radioactive material and to its disposition at DOE sites. DOE could only fund research and development, but this could include analyses of the damaged reactor core. For a long time the two agencies were not communicating effectively with each other on this issue, and the Advisory Panel helped them complete a Memorandum of Understanding in July 1981.

TMI-1 Nuclear Plant Restart

Another psychologically stressful issue for the people in the TMI area was the restart of TMI-1, the other plant in the reactor complex. It happened to be shut down at the time of the accident for routine maintenance, and its restart was indefinitely deferred. The issue of psychological stress went all the way to the Supreme Court, where the justices decided that the NRC did not have to consider emotional stress as a public health hazard in deliberating the restart of the plant. On the other hand, although we were specifically charged to deal with TMI-2 cleanup, the Panel did provide the only extralegal forum that the public had for expressing its concerns, and it entertained a lot of discussions on that issue.

Indeed, the Panel decided to take advantage of the Unit 1 startup issue to move the TMI-2 cleanup funding issue to a successful completion by requesting the NRC to withhold approval for the restart of Unit 1 until the funding of the cleanup of Unit 2 was in place.[13] That approach was not acceptable to the NRC, and Unit 1 was restarted in 1984.

TMI AREA HEALTH STUDIES

Another major area of concern was the various health studies of the TMI area population, workers, and others. The Panel was charged with considering the decontamination problems associated with Unit 2. No public forum existed for a discussion of the health effects of the accident itself. Many studies were carried out, some by the Commonwealth of Pennsylvania and some by universities in the area.

All of the early results showed no health impact, which was in keeping with the estimates of exposure.[14] Unfortunately, the public was very concerned, based on what it was reading in the media, that this might not be true.

Also, the discussion of future health studies or of ongoing studies with results not yet attained had no focus. Our meetings became a forum where the public could talk about its concerns regarding the health impact. At our request, the NRC added to our Charter a cautiously worded statement: "The Panel meetings are intended to provide a means for facilitating the communication of plans and results of studies/reviews deriving from Federal, State, and TMI Public Health Fund efforts regarding the TMI-2 accident. To the extent that government funded generic studies such as those sponsored by the NIH on effects on low-level radiation may be helpful to the public in reviewing the TMI experience, such presentations would not be excluded." Other than the legal route, this panel was the public's sole source of

communication for the public to express its concerns and anxieties about the health impacts of the accident.

Indeed, one of the later studies about the incidence of cancer near TMI in relation to the radiations emissions was published recently in the *American Journal of Epidemiology*.[14] The summary of that article states that "Overall, the pattern of results does not provide convincing evidence that radiation releases from the Three Mile Island nuclear facility influenced cancer risk during the limited period of follow-up." This sentence is very carefully written, and its meaning and implications were not easily accessible to the public whose concern was fueled by local media comments. For that reason, at our next meeting in January 1991, Dr. Maureen C. Hatch, the senior author of this study, has been invited to talk with the Panel and the public about the findings and meaning of her study. This presentation is another of the functions of this Advisory Panel in helping the public deal with its anxieties about radiation and health.

TMI OCCUPATIONAL RADIATION EXPOSURE

Occupational exposure is a large issue in the TMI area, where the workers and their families live. A change in the estimates of radiation exposure precipitated the concern. Initially, the preliminary environmental impact study had suggested a cleanup estimate of worker exposure on the order of 20 to 80 person-seiverts (2,000 to 8,000 person-rem). Then the estimate was changed in 1984 to a much higher range, 130 to 460 person-sieverts (13,000 to 46,000 person-rem).

The basis for this drastic change was that the initial estimate had been made following only five entries into the TMI-2 containment and when very little was known about the status of the reactor. By 1985, when the cleanup work was underway, the extent of the problems became clear and the project was recognized as a complex R&D problem rather than a routine industrial operation.

The public received this information from the media, and the risks suddenly seemed a lot greater to the workers. A newspaper cartoonist expressed the concern with a sketch of Uncle Sam, GPU, and the NRC sitting with, respectively, their eyes, mouth, and ears covered as a naked worker with a mop and bucket passes them and goes in the doorway of TMI-2. At the same time, other newspapers were showing photographs of workers garbed with respirators, protective clothing from head to foot, and airpacks. I do not know which has a more negative impact on the public.

Now that TMI-2's fuel removal has been completed, we can observe that, in fact, the total worker exposure was 60 person-sieverts (6000 person-rem), right in the middle of the initial estimated range that was subsequently thought to be much too conservative. Thus, unusual danger to the workers was not a real problem, no radiation injury occurred, and no worker was exposed above the routine regulatory limits that are in place for all radiation workers.[16] The Advisory Panel had the opportunity to convey this observation to the public in our meetings.

OPEN ISSUES

Some issues remain. One currently preoccupying the people in the area is post-defueling monitored storage (PDMS). PDMS would result from GPU's proposal, now that the fuel is removed and the associated cleanup and decontamination are complete, to defer further cleanup until the decommissioning of the facility. It proposes to perform that cleanup at the same time that it decommissions TMI-1. It therefore wishes to hold TMI-2 in a state of monitored suspended operation. This proposal has aroused concerns on the part of the public, which wants to get the whole cleanup behind it.

The potential benefits include not only reduced dollar costs for the combined decommissioning but also reduced exposure to workers. If the complete cleanup of TMI-2 is carried out now, the exposure will be much higher than if the facility is mothballed until the end of the working lifespan of Unit 1, 2014. The lower exposure would result from the decay of the environmental radioactivity now present as well as from the use of the improved technology that is expected to be available then. This issue is under discussion, and the public has shown great interest in it.

Another issue is the funding for decommissioning. The NRC recently confronted the question of decommissioning costs as a generic problem in the nuclear power industry. By July of 1990, it required (1) estimates of the financial cost for decommissioning all reactors and (2) a plan from each operating utility on how those costs will be met. The plan submitted by GPU for Units 1 and 2 has a funding target of $195,000,000. GPU must submit to the NRC the details on how it will obtain this funding by a deadline about three years hence. However, GPU does not plan to allow any time for public review and comment on the funding plan. This lack of an opportunity to view and consider the plan and to be reassured about its soundness has aroused the public's concern. Again, the public is exerting tremendous pressure to have all these issues resolved, and it is anxious to have this whole business completed as soon as possible.

ADVISORY PANEL EVALUATION.

What value has this Advisory Panel operation had? Well, that value is very hard to measure quantitatively. From the standpoint of the regulatory agency, we do know that under federal law the NRC periodically has to evaluate and take positive measures to continue the operation of each advisory committee. November 1990 was the most recent expiration date for this Panel, and the NRC decided that it needed it for another two years, an accolade received with somewhat mixed emotions by the Panel members.

From the standpoint of the utility, the GPU Safety Advisory Committee said in its decennial summary report[4] that "the NRC Advisory Committee on the Cleanup of TMI-2 gave GPU Nuclear the opportunity to explain its activities during the cleanup and plans for TMI-2 in a public forum available to open debate and scrutiny. As the cleanup comes to an end, GPU Nuclear

would benefit from continuing these discussions with the community." On the other hand, the committee feels that a "decline in newsworthiness and public attention concerning the cleanup a decade after the accident makes the NRC Advisory Committee forum a less effective method and tends to link GPU Nuclear with the events of the accident. However, GPU Nuclear should consider establishing its own mechanisms for regular cooperative interactions with citizen groups including those that have been highly critical of its activities." It appears that the utility has learned something useful from this Advisory Panel process.

Finally, what about the public? At a recent Advisory Panel meeting, a recurring agenda item was the termination of the Panel. The transcript of the meeting[17] quotes members of the public: "... over this past ten years, this forum has been the only one in which the media and the public of this area have really gotten a sense of what is really going on in the cleanup. And we come and we ask sometimes dumb questions, and sometimes we ask smart questions. And with the intercession of this body, I think we have gotten more information than we ever would have gotten about the accident in some cases and about the real activities going on in the cleanup. I think we know ten times as much about the situation because of your existence, and I hope it continues."

At that same meeting, a spokeswoman for Three Mile Island Alert, an organization that began in 1972, long before the accident, and that has served as the mainstay of the citizens' activities related to the facility, said: "You, as the Panel, are there in place. You're there for the company, you're there for the NRC, and you're there for the community, and you are there for the public officials, too. I mean, we're in touch with public officials, both of the city, county levels and the networking, that vehicle of the panel in place and that review process is not just today, tonight. That's a process that is in place that serves a real purpose." She ends, "I would ask ... on behalf of the citizens at large and the people that call our office, that you stay in place for at least another year and look at this again next year at this time and see where we are with PDMS, what's going on with evaporation, and what's going with the funding."[18]

The point was also made that "... another thing this panel provides is historical memory ... . Not all of you have been on this panel all the time, but enough people have ... that you have a historical memory that if there are problems along the way, you can determine whether they are significant or whether they are something which are not significant. And that's important to the public, because the public doesn't have that kind of background, generally, to make those kinds of judgements. So I think it's important that we keep a Panel."[19]

In conclusion, I have tried to show you an ongoing method for helping the public deal with its radiation concerns, neither minimizing nor exaggerating them. On the basis of the qualitative evaluations presented, I would recommend this approach as a useful model for responsible managers of such situations to consider as an effective method for helping the public deal with radiation anxieties.

ACKNOWLEDGEMENTS

The accomplishments of the Advisory Panel for the Decontamination of TMI-2 reported here are the result of the efforts of its past and present members and supporting staff. Presently these include A. Morris, Chairman, J. Roth, T. Smithgall, G. Robinson, K. Miller, J. Lutzelschwab, F. Rice, A. Trunk, E. Marshall, T. Gerusky and N. Wald; and M. Masnick, Designated Federal Official.

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The Medical Basis for Radiation-Accident Preparedness III

The Psychological Perspective

Proceedings of the Third International REAC/TS Conference on The Medical Basis for Radiation-Accident Preparedness held from December 5–7, 1990 in Oak Ridge, Tennessee

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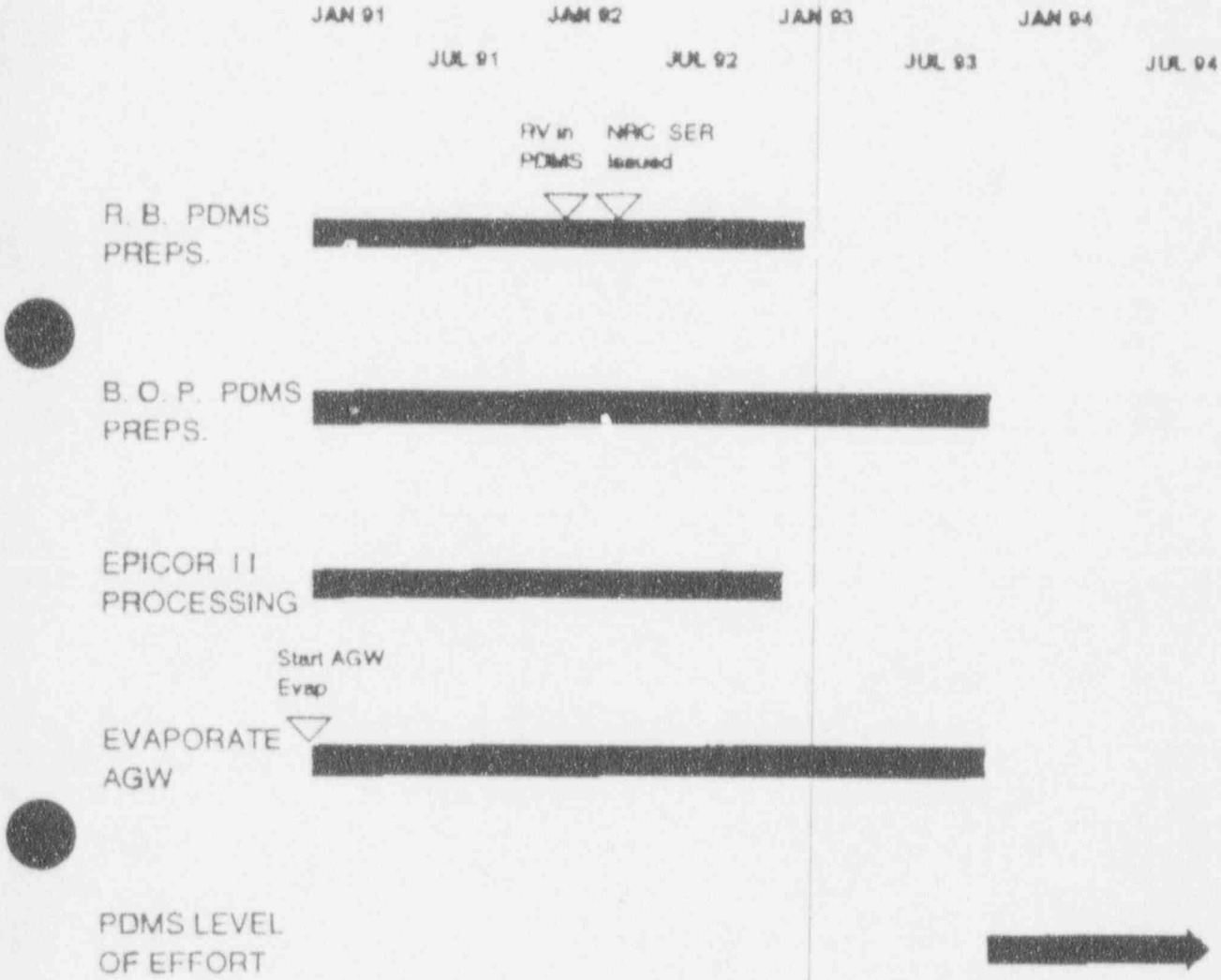
TMI-2 PDMS PREPARATION - SUMMARY SCHEDULE



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TMI NRC RESIDENT OFFICE
F. Young, Senior Resident Inspector
D. Beaulieu, Resident Inspector

SAFETY EVALUATION vs TER

POINT by POINT vs INTEGRATED

- POSSESSION ONLY LICENSE
- APPENDICES A & B CONSOLIDATED
- PDMS SAR REPLACES FSAR
- LANGUAGE UPDATED
- NEW LICENSE CONDITIONS
- TECHNICAL/PLANT CHANGES

CONDITIONS

* VENTILATION STUDY
* CONTAINMENT LEAK TEST
* RADIATION PROTECTION PLAN
* FLOOD PROTECTION PLAN
* ODCM
* FIRE PROTECTION PLAN
* REMP
* QUALITY ASSURANCE PLAN

PRINCIPAL TECHNICAL CHANGES

- CONTAINMENT BREATHER
- 42 Kg FUEL LIMIT
- AFHB VENTILATION
- VENT RADIATION MONITORS
- LOADS OVER RX VESSEL

TECHNICAL EVALUATION OF TMI-2 POST-DEFUELING MONITORED STORAGE

February 20, 1992

Pacific Northwest
Laboratory

PURPOSE OF THE TECHNICAL EVALUATION REPORT

- To evaluate the safety significance of PDMS
- To provide a basis for the requirements and controls to be maintained during PDMS to ensure public health and safety and protection of the environment.

ABBREVIATED TABLE OF CONTENTS

PREREQUISITE NUMBER 1

Defueling of the Facility to the Extent Reasonably Achievable and to Such a Degree that a Nuclear Criticality is Precluded

RESIDUAL FUEL QUANTITIES

Auxiliary and Fuel Handling Building	25.3 pounds
Reactor Building	159.3 pounds
Reactor Coolant System	199.2 pounds
Reactor Vessel	1339.0 pounds
TOTAL	1723.8 pounds

PREREQUISITE NUMBER 2

Removal of Fuel and Core Debris from the Three Mile Island Site

- All remaining defueling canisters containing core debris have been removed from the reactor facility and shipped off site

PREREQUISITE 3

Removal of Accident-Generated Water

- Initiated January 1991
- Will be completed before or shortly after start of PDMS

PREREQUISITE 4

Reduction in the Potential for Release of Radioactive Material

- Minimized by removal of fuel and core debris and by decontamination of reactor building and AFHB surfaces, equipment and piping.

- Both routine and accidental release pathways considered.

RELEASE PATHWAYS

Routine Releases

- Atmospheric
- Liquid

Accidental Releases

- Decontamination Activities (4)
- Fire in Containment (2)
- Containment Penetration Failure
- Release of Makeup and Purification Demineralizer Resins

ROUTINE ATMOSPHERIC RELEASE - ASSUMPTIONS

- Radioactivity in reactor building
- Resuspension factor of 0.000002
- 50 air changes/year
- Credit for double-stage HEPA filters in breather and in building ventilation system

ROUTINE ATMOSPHERIC RELEASES - RESULTS

Calculated Dose	Percent of Annual Background
0.16 mrem to whole body	0.5%
1.6 mrem to bone	0.9%

ROUTINE LIQUID RELEASE - ASSUMPTIONS

- 5000 gallons per year
- Sources
  - groundwater inleakage at cork seal
  - collected precipitation
  - occasional small quantities of fluids used for minor decontamination jobs
- Cesium and strontium concentrations based on EPICOR capabilities

ROUTINE LIQUID RELEASE - RESULTS

Calculated Dose	Percent of Annual Background
0.002 mrem to whole body	0.0007%
0.005 mrem to bone	0.003%

ACCIDENTAL RELEASES - DECONTAMINATION ACTIVITIES

- Failure of a vacuum canister
- Spraying of contamination with a high pressure spray
- Cutting of a contaminated pipe
- Break in a contaminated pipe

ACCIDENTAL RELEASES - RESULTS

	Whole Body Dose (mrem)	Percent of Annual Background	Percent of 10 CFR 100 Guidance
Vacuum	0.00012	0.00004%	0.0000005%
Spray	0.000014	0.00005%	0.00000006%
Cut Pipe	0.000000079	0.00000003%	0.0000000003%
Broken Pipe	0.000000048	0.00000002%	0.0000000002%

ACCIDENTAL RELEASE - FIRE IN CONTAINMENT

Stairwell

- Analyzed in PEIS Supplement 3
- Involved stairwell/elevator structure in reactor building basement
- 19,000 curies cesium-137; 910 curies strontium-90
- Ventilation through purge system/ventilation through breather

ACCIDENTAL RELEASE - FIRE IN CONTAINMENT (contd)

D-Rings

- 17,000 curies of cesium-137; 830 curies strontium-90
- Overpressurization of breather's HEPA filter
- Ventilation through AFHB system/no ventilation

ACCIDENTAL RELEASES - FIRE IN CONTAINMENT - RESULTS

	Whole Body Dose (mrem)	Percent of Annual Background	Percent of 10 CFR 100 Guidance
Stairwell			
Purge system	0.02	0.007%	0.00008%
Breather	1.6	0.5%	0.006%
D-Rings			
AFHB system	0.49	0.2%	0.002%
No ventilation	49	16%	0.02%

ACCIDENTAL RELEASE - PENETRATION FAILURE

Assumptions

- 14-inch diameter penetration - nonmechanistically failed
- Air vented to turbine building and ultimately to atmosphere
- Not observed for 3 months
- No ventilation of reactor building
- Total of 2.5 building volumes of air released

ACCIDENTAL RELEASE - PENETRATION FAILURE - RESULTS

	Whole Body Dose (mrem)	Percent of Annual Background	Percent of 10 CFR 100 Guidance
Total Body	2.6	0.9%	0.01%

ACCIDENTAL RELEASE - DEMINERALIZERS

- Release of resins from makeup and purification demineralizer vessel
- Ruptures nonmechanistically; contents spill onto floor
- 100 curies strontium-90; 530 curies cesium-137; 500 grams fuel
- With AFHB ventilation operating/without AFHB ventilation operating

ACCIDENTAL RELEASE - DEMINERALIZERS - RESULTS

	Whole Body Dose (mrem)	Percent of Annual Background	Percent of 10 CFR 100 Guidance
W/Ventilation	0.2	0.07%	0.0008%
W/O Ventilation	20	7%	0.08%

PREREQUISITE 5

Removal of Radioactive Waste Resulting from Major Decontamination Activities

All the radioactive wastes resulting from the major decontamination activities have been shipped off site or packaged and staged for shipment off site.

PREREQUISITE 6

Reduction of Radiation Levels to Allow Plant Maintenance and Surveillance

Radiation levels have been reduced to the extent that personnel may enter the building to perform maintenance and supervision.

PREREQUISITE 7

Establishment of a Surveillance Program

Licensee is required to conduct surveillance programs to ensure maintenance of environmental protection systems

PREREQUISITE 7 - SYSTEMS

- Reactor vessel and reactor containment building isolation
- Reactor containment building and AFHB ventilation and filtration systems
- Fire protection system
- Electrical systems
- Effluent monitoring systems
- Administrative systems
- Surveillance program

CONCLUSIONS

- Defueling of reactor has been accomplished to extent reasonably achievable
- Fuel and core debris removed from systems have been shipped off site
- No potential for criticality
- Decontamination waste has been shipped off site
- Radiation levels have been reduced to facilitate maintenance and monitoring
- Radiological controls will ensure control of occupational exposure

CONCLUSIONS (contd)

- Surveillance program is adequate to monitor environmental systems
- Environmental monitoring will ensure adequate environmental surveillance and control
- Fire protection will ensure risk of fire is within bounds analyzed
- Facility will be maintained in an environmentally safe condition

CONCLUSION

The TMI-2 facility can safely be placed in long-term monitored storage

The facility configuration during storage under both routine and accident conditions will not result in impacts that exceed those identified in the staff's PEIS Supplement 3.

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FACTS ABOUT RADIOACTIVE WASTE EVAPORATION AT THREE MILE ISLAND

During and after the March, 1979, accident at Three Mile Island (TMI), 2.3 million gallons of radioactive water accumulated at TMI-2. Two citizens groups, TMI-Alert and the Susqhehanna Valley Alliance, intervened to prevent the owner and operators of TMI, General Public Utilities (GPU), from releasing the radioactive water directly into the environment. After several years of litigation, the NRC allowed GPU to begin the evaporation process. The "boil off" will take a couple of years and release the radioisotopes cesium, strontium and tritium into the atmosphere. GPU claims evaporation is a benign and efficient operation. Unfortunately the evaporation process has been wracked with breakdowns, malfunctions and operator "inattentiveness."

On December 12, 1990, Two days after GPU announced it would begin evaporation of 2.3 million gallons of radioactive water, the evaporator was shut down due to mechanical problems. The NRC predicted the evaporator would be back on line in mid-January.

On January 3, 1991, GPU identified "a procedure noncompliance associated with the accident generated evaporator." Three weeks later, the evaporator was "shut down four times due to various mechanical and electrical difficulties."

On February 21, 1991, According to the NRC, An "operator inadvertently flooded the vaporized section of the evaporator." Three days later an "evaporator operator [was discovered] apparently sleeping." The operator was "replaced."

On March 8, 1991, The NRC reported: "A small quantity of accident generated water (AGW) was vaporized without being processed through the evaporator section of the Unit 2 AGW evaporator."

On April 3, 1991, The NRC observed: "During an AGW startup, NUPAC [subcontractor] found several valves closed that should have been opened by the evaporator startup procedure."

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From April 7 to May 11, 1991, The evaporator was "shut down for the majority of the period so the licensee [GPU] could rewrite the main operating procedures."

On April 12, 1991, GPU and NUPAC: "Operated the evaporator with valve V-86 closed, thereby preventing proper collection of the composite sample." This event prompted the NRC to issue a Notice of Violation on May 24, 1991. One month after the violation was issued, GPU and NUPAC once again mispositioned the AGW vaporizer, valve V-86. The evaporator was operating for 15 minutes before the error was detected.

Between August 12-19, 1991: "Low level increases in tritium concentration have been measured at groundwater and special precipitation sampling stations at the station. According to licensee personnel, these increases were at least partially attributable to the operation of the Unit II evaporator and had been anticipated

In October, 1991, GPU asked the DER for permission to "reduce the frequency of two of the analyses conducted on the [water] samples." The analyses are for strontium-90 and carbon-14.)

This method of radioactive waste "dispersal" is obviously an unwelcome development for the communities surrounding Three Mile Island. With a premium on radioactive waste site space, other utilities may seek to duplicate this method of disposal for radioactive sludge and effluents.

August 10, 1990 - An "antimony source was received at TMI-2 with a hot spot of 1800 mr/hr on contact and a transportation index (mr/hr at 1 meter) of 22. The limit for this mixed lading shipment was 200mr/hr on contact and a transportation index of 10 (NRC inspections 50-289/90-15 and 50-320/90-8, p.3.)

September 24, 1990 - A fire occurred in the Unit-2 Turbine Building. (NRC inspections 50-289/90-18 and 50-320/90-09, p.3.)

October 5, 1990 - An NRC inspection of the spent fuel pool's truck bay "found that housekeeping in this area was poor" (NRC inspections 50-289/90-18 and 50-320/90-09, p.4.)

December 12, 1990 - Two days after GPU announced it would begin evaporation of 2.3 million gallons of radioactive water, the evaporator was shut down due to mechanical problems. The NRC predicted the evaporator would be back on line in mid-January.

January 3, 1991 - GPU identified "a procedure non-compliance associated with the accident generated water evaporator" (NRC inspections 50-289/90-21 and 50-320/90-12, p.3.)

January 24, 1991 - The evaporator was "shut down four times due to various mechanical and electrical difficulties" (NRC inspections 50-289/91-02 and 50-320/91-01.)

April 3, 1991 - The NRC observed: "During an AGW startup, NUPAC [subcontractor] found several valves closed that should ahve been opened by the evaporator startup procedure" (NRC inspections 50-289/91-05 and 50-320/91-04.)

April,7 to May 11, 1991 - The evaporator was "shut down for the majority of the reporting period so the licensee could rewrite the main operating procedure" (NRC inspections 50-289/91-08 and 50-320/91-05.)

April 12, 1991 - The NRC issued a Notice of Violation related to the evaporator. GPU and NUPAC "operated the evaporator with valve V-86 closed, thereby preventing proper collection of the composite sample" (NRC inspections 50-289/91-08 and 50-320/91-05.)

One month after the violation was issued, GPU and NUPAC once again mispositioned the AGW vaporizer, valve V-86. The evaporator was operating for 15 minutes before the error was detected.

July 17, 1991, to August 30, 1991 - GPU was "filtering moisture-separator drain water to determine the concentration of iron in the condensate/feedwater system. The licensee determined that several contaminated filters were sent to a Reading, Pa. laboratory for analysis, and had been treated as non-radioactive." This issue is under "review." (NRC inspections 50-289/91-21 and 50-320/91-15.)

August 18, 1991 - GPU "inadvetently released the "B" Waste Evaporator Storage Tank (WECST) rather than the "A" WECST. Both tanks had similar radioactive contents." The release occurred for 37 minutes. The NRC normally considers this type of an event a violation.(NRC inspections 50-289/91-21 and 50/320/91-15.)

October, 1991 - GPU is asking DER "for permission to reduce the frequency of two of the anylses conducted on the [water] samples" (The analyses for strontium-90 and carbon-14.) (TMI Media File, October, 1991.)