ORIGINAL

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the matter of:

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

Docket No.

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NUCLEAR REGULATORY COMMISSION

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ADVISORY PANEL FOR THE DECONTAMINATION :

OF THREE MILE ISLAND, UNIT NUMBER 2 :

Holiday Inn
23 South Second Street
Harrisburg, Pennsylvania

Thursday, January 12, 1984

The meeting of the Advisory Panel for the Decontamination of Three Mile Island, Unit Number 2, commenced at 7:02 p.m., the Honorable Arthur Morris presiding as the Chairman.

APPEARANCES:

Members of the Advisory Panel:

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APPEARANCES:

On behalf of the NRC:

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Three Mile Island Program Office
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Washington, D.C. 20555

P R O C E E D I N G S

MR. MORRIS: Good evening, everybody. I would like to call this meeting to order. And I would like to begin by welcoming a member to the Panel, Kenneth Miller, who will replace Jack Minnich, who was the Chairman who resigned back a few months ago.

Let me just read very briefly the most recent experience of Mr. Miller. He is the Director of the Division of Health Physics and Associate Professor of Radiology, Assistant Professor, I believe in 1978, at the Milton S. Hershey Medical Center, Penn State University, Hershey, Pennsylvania. So, I would certainly like to welcome Ken to this Panel, and I know you will be a good member of it.

I would like to say that I sent out, as Chairman, a notice to all Panel members of tonight's meeting, and also about a dinner meeting for this evening. And this is probably addressed to tne Panel members that aren't here but I would urge you, please, to let me know when you can't come to a meeting. I think it's the least we can expect of you. And I do feel that -- there were only nine individuals of the twelve Panel members that even took the time to call my office to say they could or could not be here. And there were three people who did not even contact us.

And I am suggesting publicly that you try to be

a little bit more diligent with that in the future. We did have a dinner meeting, and we were told at the last meeting, I believe by our friend Bernie Snyder, that if we held such a meeting and kept copious notes and reported those notes to you that that would probably be okay.

What took place at the meeting -- and it was from 5 o'clock to 7 o'clock tonight -- was a discussion regarding the meeting that will take place with the NRC Commissioners on February the 3rd. The time will either be 11 a.m., I believe, or 2 p.m., and that has not yet been decided. We were asked to provide the Commissioners ahead of time with some of the items that we will discuss. And they will include such things as the action taken by the Panel at the last meeting regarding the -- not considering the restart of TMI-1 until firm funding is in place for the cleanup of TMI-2.

Another item would be the radiation exposure to workers. We plan on discussing that more tonight so that we will have a better flavor of what it will be we will discuss with the Commissioners. But that will be an item.

Another one will be water disposal options. I note through the years we have talked about the potential options for the disposal of water that is stored on the Island. I think we will be asking the Commissioners to try to get updates for us on that, as to what any new options

may be.

We will probably also be asking for an updated schedule for the cleanup. They were all items that we discussed at the previous meeting.

We also discussed the fact that we would like to change the time of these meetings from 6:30 p.m. to 9 p.m. And we would be interested in hearing any comment from the public at that portion of the program, as to whether you feel that is something you would have a problem with or not.

(A conversation ensues between Mr. Morris and Dr. Cochran.)

Apparently it wasn't clear on what I said. We will be meeting in the future, hopefully starting at 6:30 p.m. to 9 p.m. And we will be setting up a regular schedule of meetings for the second Thursday of the month for each month of the year, and only if we want to cancel one of those meetings will we do that. It will make it easier for us to plan ahead.

We probably, however, will not hold the March meeting but rather would schedule a tour of the Island, hopefully if we can do that, in lieu of the March meeting on the same day, maybe not in the evening, maybe in the afternoon, but probably would not hold a March meeting.

We also discussed the future direction of the Panel, whether we wanted to form sub-committees. We

decided that is something we do not want to do. But I think there was general consensus that we do want to be more active. And I suggested that I would like to see the Panel lobby a little bit more on issues on which we have acted, and that there is good consensus on, and I feel there was an agreement on that.

And basically what we are saying is I think we would like to be more active in the future on speaking out on certain issues and trying to focus attention on certain issues, so that we can speed the cleanup along, obviously in a safe fashion, but speed it along and draw attention to certain issues.

That concludes my, obviously well taken, notes from the previous dinner meeting here this evening.

(A conversation ensues between Mr. Morris and Dr. Cochran.)

I was asked whether I was going to ask the audience whether you agree with the 6:30 to 9. I think I already did do that, and Mr. Cochran missed that. But I would suggest those individuals out in the audience, if you do have a problem with that, or would like to comment on it, if you will wait for a little bit later in the program and then at the time for public input, please get up and speak to it.

If there is no disagreement with it, we will

probably be scheduling our meetings around that time in the future.

That concludes my rambling initial presentation here tonight, and I would like at this time to go right to the updates. And I would suggest -- I know Bernie Snyder has asked for time on the agenda to discuss the PEIS update, and I would like that part of your comments tonight to be held until the end, as is on the agenda, and just have you update us on anything else you want to talk to regarding the cleanup, if you have anything.

MR. SNYDER: Yes, that's right. We don't have anything other than that. We were just going to mention it's available, and mention when the comments were due. We didn't intend to get into a big discussion with it.

MR. MORRIS: That's fine. How about EPA? Did they have anything, Mr. Kirk?

MR. KIRK: Other than the receipt of your letter to Mr. Sjoblom, and his intent to be here on the 9th of February, I believe, which is the date tentatively set.

MR. MORRIS: Right, the next meeting is the 9th right here at 6:30 p.m. again, if we decide to confirm that time. And I did send a letter out to EPA, because we had been told at the last meeting that EPA was considering the termination of off-site monitoring at TMI-2. So, we have asked EPA to make a presentation at the February 9th

meeting. So, is there any problem with that at this particular time?

MR. KIRK: He is planning on being here. I've been directed to put together some visual material and answer some of the questions you pose.

MR. MORRIS: Okay. And that's it for EPA?

MR. KIRK: Right.

MR. MORRIS: DOE?

MR. BIXBY: No, not to my knowledge.

MR. MORRIS: We may have a very short meeting tonight. How about GPU, any update other than on funding? Any update?

MR. KANGA: I had -- at the last meeting, I had promised to respond to two questions. I sent a letter to you and members of the committee here.

MR. MORRIS: I received that, but I think there were some Panel members who did not receive that.

DR. ROBINSON: I did not.

MR. KANGA: My apologies if you did not receive it. And I have some copies.

MR. MORRIS: Is that it, as far as you are concerned?

MR. KANGA: Yes.

MR. MORRIS: Well, moving right along.

MR. GERUSKY: Mr. Chairman, there was another

issue. That was location of the meetings. If you did mention it, I didn't pick it up.

MR. MORRIS: I did not. I wasn't sure how firm we were on that. But there was at least a feeling expressed at least that maybe we should attempt to go back to the old way of doing things, and that is rotate the meetings to different locations, at least hold a meeting or meetings at Middletown or the Host that is close to the airport so that those who fly in would at least be able to catch a plane at night.

So it would probably be around the Middletown Host -- what's the name of that? Host Resort?

MR. GERUSKY: Americana.

MR. MORRIS: Are you talking about -- or, is it suggested we might even want to do that at the next meeting?

MR. GERUSKY: Yes. My concern is the number of public -- the members of the public not being able to get into downtown Harrisburg, where they may be able to get to something that's closer to their communities.

And monitoring is a subject that I'm sure that the people in the greater Middletown area and also the West Shore area are interested in. And it may be just as easy for the people to come across the turnpike bridge from the West Shore to get to the location, as it would be to

come in downtown. So --

MR. MORRIS: Do you want to make a suggestion as to --

MR. GERUSKY: If possible, yes. One of the major -- either the Middletown High School or at one of the major hotels in the greater Middletown area, between Middletown and Harrisburg.

MR. MORRIS: Mike, did you get that?

MR. MASNIK: I have --

MR. MORRIS: Does anybody have any suggestions to that? Does that create any problems? I know, Mike, I think you have this area reserved for the 9th, don't you?

MR. MASNIK: That's correct. That could be changed.

MR. MORRIS: Why don't we try to set something up for the 9th?

MR. GERUSKY: Why don't we later ask the audience to comment on whether or not they feel that additional audience participation would take place if we held it away from downtown Harrisburg?

MR. MORRIS: I think we can do that. Although when I was mentioning audience comment before, I'm not sure how many members of the public are out there tonight. I think that most of the people represent one of the agencies. There may be one or two citizens unrelated to

any other activity.

MR. GERUSKY: That's why I wanted to hold it away from here.

MR. MORRIS: Well, why don't we agree that we will try to find a location around the parameters that you set for the next meeting. And if we can't, then we will be back here and we will let everybody know either way, okay?

Right. On to funding. And the first is from the Governor's Office on policy and planning. They could not be here, but I understand, Tom, that you would be willing to report to us on what the Governor's plan was all about and any other comments that you would like to make on behalf of the Governor's Office.

MR. GERUSKY: I have some comments I received late this afternoon from the Governor's Office about Banko, who is Director of the Office of Policy Analysis, I guess it's called now, in the Governor's Office, has been working with the utility industry with the other states, and I guess is the point man in the Governor's Office on the funding program.

There were a couple of things that happened over the last two or three -- well, one happened yesterday, and the other happened within the last week, that have brightened the spirits of people working on this proposal,

on Governor Thornburg's proposal.

The first is the decision by the Internal Revenue Service that the utilities could indeed deduct any contributions to the TMI cleanup fund from their profits. And as a result of that decision, and since the utility industry is meeting today and tomorrow in the west, a telegram was sent from the Governor to them reemphasizing the need for their support. And I believe most of the people in the audience have received a copy of that telegram.

I don't necessarily want to repeat the telegram. I will give it to the Staff here to include it in the Minutes.

The breakdown of Governor Thornburg's target of seven hundred and sixty million dollars initially was to have the EEI come up with a hundred and ninety million dollars, the utility industry, have DOE come up with a hundred and ninety million, GPU, two hundred and forty-five million, Pennsylvania, thirty, New Jersey, fifteen, insurance company, ninety. And that comes up to seven hundred and sixty.

At present, the total of all the funding is about five hundred and eighty-one million. EEI, sixty-five; DOE, a hundred and fifty-nine million; GPU, a hundred and seventy million; Pennsylvania, thirty; New Jersey, twelve; insurance, ninety; B&W lawsuit, thirty-seven; and, Japan,

eighteen.

There is still some funds needed, but I think that -- and the Governor's Office feels -- that this EEI decision this week can greatly change that sixty-five million to well over a hundred million and get the funding going. This was a six-year funding program and everything has been slid back a little bit. So, the actual amounts needed are questionable.

But as the funds come aboard, I think things can start moving forward. I hope that GPU is going to discuss what they have requested the Public Utility Commission to do, so I won't have to get into that issue. That will help also.

We -- just because EEI is meeting today and tomorrow does not mean they are going to make any decisions and the utilities are going to rush to donate funds. But I think that we will know probably within a month whether there has been an increase or proposed increase in funding for this, any additional support.

And at that point, we will find out how -- where we are. We just don't know at this point. And I don't think we can even judge whether they will use the -- what affect the ruling will have on the issue.

MR. MORRIS: And, in fact, Tom, if they don't meet a minimum of a hundred million, that sixty-five is not

firm.

MR. GERUSKY: That's correct.

MR. MORRIS: So, you are saying, I guess, six major categories of funding that the -- of the six major categories of funding that the only two that have met, or exceeded the goal set for them, is the State of Pennsylvania that is going to fund thirty million, and that was the original proposal --

MR. GERUSKY: And the insurance.

MR. MORRIS: -- and the insurance proposed to be ninety, and that's ninety. New Jersey is going to be short, and even if EEI reaches their new pledge of a hundred and fifty -- and they already have some no's on that -- they will be forty or fifty million short, even if the most optimistic happens.

MR. GERUSKY: I think optimistically you can get about ninety percent of the seven hundred and sixty. And that's enough to carry forward for quite a while. And a lot of the times you get the rest of the ten percent needed. That's including a positive action by the Public Utility Commission on GPU's proposal.

MR. MORRIS: Anything else, Tom?

MR. GERUSKY: No. And I have no idea what this Panel can do to try to get EEI members to support this. I have been trying to figure out a way for the Panel to do

something, and I don't know what the Panel can do.

MR. MORRIS: Does anybody else have any ideas or questions of Tom regarding what update he has?

MR. GERUSKY: After I get back to the office, I will put these numbers in a memo to everybody so that they are aware of what is available on this date, because it could change tomorrow.

MR. MORRIS: All right.

MR. ROTH: Tom, I direct this to you. In speaking to John Banko, he mentioned to me, in fact, that perhaps that hundred million doesn't necessarily have to be firm. In other words, perhaps an agreement could come in at ninety million if they reach that, or ninety-three million.

Do you have anything further on that?

MR. GERUSKY: No, I don't.

DR. WALD: Tom, what was the federal figure?

MR. GERUSKY: DOE's proposed share was a hundred and ninety million. And they have committed to about a hundred and fifty-nine million. I think that again depends upon -- now, most of this money, or all of this money, is relegated to research activities. And if there is an area that, as progress develops, as the decontamination proceeds, where there is seen a need for some R&D work, there can be some additional monies allocated. But, it's difficult to predict what they might need right now.

MR. SMITHGALL: Or withdrew.

MR. GERUSKY: Yeah. If the program slows down, that money slows down also.

MR. MORRIS: In fact, that's one of the items that really caused us to be really concerned at a meeting a couple of months ago, that the funding may not be in place from DOE if the cleanup slowed down much more.

And to answer your question, Joel, I requested a copy of the Resolution from John. I was told it's not Kierney, it's Carney. It sounds like a combination of both, Tom, from Edison Electric Institute, and it's fairly clear, at least in that Resolution, that a hundred million is the minimum amount. And I'm sure they could go to ninety, but it would take another passage of a Resolution.

Because what I have here is a pretty in depth program based on kilowatt hours and all kinds of different ways of arriving at the one hundred fifty million dollars from the membership. And I know that, because I was told that on an update this week, they do have I think seven utilities that have said no to this.

If everybody else would say yes, they would still reach ninety plus percent of the hundred and fifty million dollars.

MR. GERUSKY: I think there is another issue. The utilities that have said no, I believe are the ones in

which the Public Utility Commissions in their states have said: No, you cannot use ratepayer's money to spend on the cleanup.

I believe, however, you don't have to spend ratepayer's money. You can spend profits, and you can take the money out of another -- you know, you don't have to increase the rates to give money to GPU. And I think that that may be addressed a little more at this meeting in Arizona.

MS. MARSHALL: Could I ask about the GPU request to the PUC? Is this something that's new?

MR. GERUSKY: Yes.

MS. MARSHALL: I see. And that's going to be explained to us?

MR. GERUSKY: Yes.

MR. MORRIS: We are hoping. Anything else from Tom?

If not, I guess GPU is on to hopefully provide some update on the funding. If you could, come up, please.

MR. CLARK: Mr. Chairman, and members of the Advisory Panel, I am Philip Clark. I am the President of GPU Nuclear, the subsidiary of the GPU System, which is responsible for the nuclear activities, including TMI.

I am pleased to have the opportunity to appear before the Panel. While I have not appeared befcre you

before, I have been with the GPU Nuclear, or its predecessor, for about four years this month. I have been generally familiar with and following the activities at TMI-2, although within GPU Nuclear Mr. Arnold, who I know has appeared before you, had taken the lead relative to TMI-2. And I had taken the lead with regard to some of the other nuclear activities, Oyster Creek, TMI-1 and some of the support activities.

So I am pleased to have this chance to meet with you and to provide an update on the funding.

MR. MORRIS: Mr. Clark, just let me say on behalf of the Panel that we appreciate your accepting our invitation and taking the time out to give us this update. Thank you.

MR. CLARK: With me is Mr. Edwin Kintner. He is the Executive Vice-President of GPU Nuclear. With me, I make up, with him I make up the office of the President of GPU Nuclear. Within that office, we tend to share the responsibilities with one or the other of us taking the lead in a particular activity, just as Mr. Arnold and I had done.

Our plan at this point, for the immediate future, is that Mr. Kintner will be taking the lead within the office of the President for TMI-2. We have available tonight some biographies of me and Mr. Kintner, which we

thought might be of interest to the Panel. And I think you will find that Mr. Kintner is very highly qualified, a long career in energy, technical, management with the Department of Energy and elsewhere. He came to GPU Nuclear in June of 1983. I think he is a great asset to us. And I think he is going to be very effective in overseeing the TMI-2 activities.

In starting to present the update on the funding, which you had asked for, I should note that GPU Nuclear does not own the plants, does not collect revenues, and in the sense is not the financial manager of the nuclear activities. We operate under an agreement with the owners of the plants, Metropolitan Edison, Jersey Central Power and Light and Pennsylvania Electric.

The financial matters are run by those companies and the GPU Service Company. The most knowledgeable people on the finance, whom we would have liked to have brought before you tonight, such as Mr. Cherry, are in fact out at the EEI meeting, trying to raise money for the cleanup.

And it's unfortunate that the scheduling of this and your desire to hear about the funding didn't allow us to bring Mr. Cherry. I have talked to him today, and I can tell you a short sense of what has gone on out there.

I have made preparation to give you a funding update, and think I can do it. If we unfortunately reach

a point where I have to say I don't know, I'm sorry. I will get the information and provide it to you. I am, you know, just not that intimately involved in some of the funding activities.

However, I think the base point we ought to use for discussing the funding is the budget that had been established for 1984. That is the budget which is described in this -- Mr. Kanga's letter to you and members of the Panel on December 15th, which many of you have. And I guess if there are some here who don't have it -- do you have copies?

MR. KANGA: I have made copies.

MR. CLARK: As described there, the budget for 1984 is seventy-five million dollars. We have just gotten the actual cost or actual expenditures for 1983, and they are essentially seventy-five million dollars as well.

The letter provides the breakdown of the sources of the funding which the Panel has asked us for. Those are: Customer Revenues and GPU, thirty-seven million; Commonwealth of Pennsylvania, five million; State of New Jersey, two million; Insurance Proceeds, fourteen million; and, our anticipation on Rebates from B&W, two million, providing a total of sixty million in which we have added an estimated DOE and EPRI receipt, or funding for the year, of fifteen million, to get the total of seventy-five.

The Commonwealth of Pennsylvania numbers are -- well, all of those numbers we feel are solid and in hand. And I would like to move them to talk about possibilities of additional funding and where we stand on those possibilities, and some of the activities that have taken place.

The customer revenues and GPU of thirty-seven million does not reach the Thornburg plan level of fifty million a year. The Company, on Tuesday -- or, the companies, Metropolitan Edison and Pennsylvania Electric, here in Pennsylvania, formally requested the PUC to make available an additional fifteen million dollars a year. That's actually fifteen point eight million dollars a year for the cleanup.

That request would involve no additional cost to the customers, would not change the rates but would involve what is essentially a change in the accounting, or the way they allow us to use funds. So, the funds now being collected and provided to write-off the cost of the investment in TMI-2, some portion of that, the fifteen point eight million a year, would be allowed to be applied to the cleanup.

If that request is approved, that would bring the customer-side of the Thornburg proposal essentially to the Thornburg level of about fifty million dollars a year. We are hopeful, in submitting that request and our sense of

what the issues are involved in dealing with that request. We are hopeful that the PUC will grant that, which would be a sizeable increase in the funding available and would bring that element of the plant to the full funding level.

I say that was just filed on Tuesday, and it's going to be some time for the PUC to deal with that. But that was one initiative the Company felt we should, and did, take in order to get additional funding in place.

The IRS ruling was mentioned, I think. That is an important step. There were many of the utilities who had said that they needed that ruling before they could decide whether to participate. The ruling itself applies only to the companies that submitted requests. IRS rulings, when they issued them -- and I've read the rulings -- says this is not a precedent. This only applies to you. And as I recall, it was Duke Power, and I forget the other. It was a private utility and a public utility.

However, I think the strong belief of everyone is that given that ruling, the basis for it, and the facts, that anybody else who asked would also receive a favorable ruling. So I think, you know, it is a favorable outlook for all the utilities. But the actual ruling is limited to those who had requested it.

MR. MORRIS: Is there anything unusual about those two utilities that you would know that would cause --

MR. CLARK: No, it is not. In talking with people who know better than I, nobody believes that there is anything unusual. And I've read the ruling, and the rationale they apply basically says: We think it will be helpful to your customers to have the cleanup completed, because it will help the financial status of all utilities, the rates at which they can borrow money, those kinds of arguments which I'm told, and believe, would be applicable to other utilities.

But, in fact, the rulings themselves only apply to the two people who had submitted their request.

Now with regard to the EEI itself, there is a meeting, the last two or three days in Scottsdale, Arizona. Bud Cherry and Chairman Bill Kuhns are there. The major purpose of their being there is to press again for action by the utilities to support the EEI commitment. The subject was discussed today.

The telephone report I have is that it was a productive discussion, that there had been no expectation that people would today sign up on the pledge, and nobody did. But we understand a number of the companies will try to move forward within the next several weeks and we think we will, in that time period, get a good indication to know how much progress is going to be made. And we remain hopeful, and I guess more hopeful at this point than we had

been in the recent past, that in fact the pledges will reach the one hundred million dollar kind of threshold.

I think those are the major new developments, if you will. I would like to go back for just a minute to the seventy-five million which is in hand and which we are planning to use. It is our belief that we can make significant, useful progress at that level of funding.

And as we look back over the activities in '83, there were disruptions. I'm sure you are familiar with, with the over crane delays, the whistle blowers, a lot of effort of our people and others devoted to that.

As we lay out the program for '84 at the seventy-five million dollar level, we are looking very hard at whether there are ways to make perhaps somewhat more progress in '84 than the schedules had shown. And, you know, bend our best efforts to use all of that money effectively. We think we can make significant real progress at that level, and any addition funds that become available would allow us to make additional progress.

That is, you know, the status as I was prepared to present it. We would be glad to respond to questions or comment further in any area that you would want.

MR. ROTH: Yes, Mr. Clark, I would like a better definition of significant, you know, in terms of seventy-five million dollars and still make significant

progress in cleanup which is approximately half of what your proposed, or projected, expenditures would be. Now, would that be half as much work now that would be accomplished?

MR. CLARK: I don't recognize the half in terms of being half of some number that we had forecast recently.

MR. MORRIS: This would have been a letter that went to Mr. Roth back in October of '81 that really spoke to the whole funding question of seven hundred and sixty million dollars around the Governor's plan and said this is how we expect to spend it, '82, '83, '84, '85, '86, whatever. And it shows in 1984 that the funding level was one hundred fifty-one million. It also showed in 1983 the proposed funding level to be a hundred and ninety-six million dollars.

MR. CLARK: I think that that is not the most useful reference to use. In late 1982, after we had been able to get into the containment building we had a much better handle on what the job was. It was a total project re-estimate for TMI-2, which as I recall was issued in December of 1982. That laid out the entire schedule cost. It confirmed the overall cost of the billion dollars and, therefore, in effect confirmed that the seven hundred and sixty million dollars identified in '81 was enough to finish.

As I recall, the '84 funding level projected then, with our better understanding of the job, was about one hundred million. I don't know --

MR. KANGA: That's -- yes.

MR. CLARK: I think the one hundred fifty million comes from a much earlier look at the job, before we had the understanding which we had gained in the time between then and the end of 1982.

MR. MORRIS: Okay. Joel, did you --

MR. ROTH: Yes. I would like to follow up, because I'm still confused. If that one hundred million funding -- was that going to remain a standard for each year approximately, you know, give and take? I'm trying to figure out, again, your use of the term significant as compared to the lay-offs that you've had down there on cleanup, the particular standstill on cleanup.

Now, to be told a significant gain at this point and still -- let's use your figure, we are still twenty-five million short. I guess I just question that word significant and really what it does mean.

MR. CLARK: Well, I did not intend to say significant gain in terms of being greater than some reference level. What I intended to say, and hope I did say, but let me say now was we could make significant progress in carrying out the cleanup. In other words, it's not just

stay there and get nothing done. It's a level which enables us to, in fact, get cleanup work done.

MR. ROTH: Will you be bringing back some of the people that you laid off, then, for cleanup?

MR. CLARK: I think we likely will. I said we are reexamining the plans for '84 to see whether we can better use the seventy-five million, make progress in perhaps more meaningful areas. And I think we do expect to bring back some of the people.

I might talk about what we will do in '84, which I think maybe gets at your question. You know, what is the significant progress. A major part of the progress will be on the design and the preparations of the tooling to remove the core. Now, that work is not done at the Island but is necessary to get ready to do the core removal. That is critical in terms of being able to be able to get the core out, and doing the design work on those tools is significant progress.

I think we expect to do work on decon in some of the systems, cleanup in the building, reduction of dose rates. That is significant progress.

We expect to finish the polar crane work, do the testing and remove the head in 1984. I think that is significant progress.

We expect to continue to be able to process and

ship off the Island some of the radioactive waste. I think that is significant progress.

And if you look back on 1983, with all of the problems, which were many, nonetheless we did get a great deal of the waste shipped off the Island. And I think that is real progress from a public health and safety standpoint.

And I think we are on the path in '84 to continue to remove waste from the Island, as we are able to clean up areas, concentrate the waste and send it off.

MR. MORRIS: Mr. Clark, though, I think to -- I think what Joel was saying, if I could, more specifically you are talking about a head lift, I believe for 1984, September, October, something around that time frame --

MR. CLARK: I think one of the schedules that have been furnished, I frankly am not sure I know exactly what is the latest information you have seen. There were schedules which showed head lift in September. When I talked about trying to see whether we can make more progress, one of the things we are looking at is whether it's possible to pull that back a month, or a little more. In other words, advance that earlier.

A month may not seem overwhelming, but this is January. And if there are only eight months left, moving it back a month is, you know, not trivial.

MR. MORRIS: I understand. But the second part

of the question, even if it's August, when you had the updated figures that called for a hundred million dollars in 1984 and they were generated, I think you said in late '82 --

MR. CLARK: Yes.

MR. MORRIS: Do you know when those figures were generated when you were proposing to do the head lift as of late 1982?

MR. CLARK: I'm sure it was significantly earlier. I would guess it would have been the summer of '83.

MR. MORRIS: I guess the point being, there has been a year slippage since '82. And it seems that is related to the lower funds in '83 and lower funds in '84.

And is there, you know, what --

MR. CLARK: Well, first, a good part of the slippage in the head lift is not funding related. It has to do with the polar crane issue, with the fact there was at least the six months delay in ability to go ahead with the polar crane program as a result of the, I guess, King, Parks whistle blower allegations. As a result of those allegations, NRC, in effect, did not act on our request to do the polar crane test until they could investigate them.

We and they put a great deal of effort into

those investigations. And there was a direct delay. My recollection is our estimates say it was at least a six months direct delay in the head lift because of that much delay in the polar crane test.

MR. MORRIS: If you would not have had that delay, you are saying you would have had the money available to do all of the work by the end of '83, early '84?

Is that what I hear you are saying?

MR. CLARK: I will ask Mr. Kanga to confirm, but my recollection is that our total estimate at the end of 1982 called for seventy-five million, or about that in '83, and that is what we, in fact, did spend. And that if it had not been for the polar crane delay, we would have completed in '83 essentially the planned work in '83. We would have had the head lift in some time in 1983.

Is that --

MR. KANGA: That is correct.

MR. CLARK: I want to make sure I speak to you on this --

MR. KANGA: The estimate that we had prepared at the end of '82 showed that we would be removing the head in the summer of 1983. We were basically on schedule for that work, including the polar crane test when we started experiencing the delay due to the approval of the polar crane procedure and the whistle blower incidents.

MR. MORRIS: Let me ask you something more pointed. Are you saying there has been no real delay as a result of lack of funding?

MR. KANGA: No, I did not say that.

MR. MORRIS: Well, let me ask that, then. Has there been any real delay because of lack of funding; and, if so, what has the slippage been since 1982?

Has it been a month, six months, a year?

MR. KANGA: That's really what the questions are aimed at. May I answer?

Basically, in 1983, we experienced delay due to lack of ability to use the polar crane. Since we were stalled in that activity, we had to perform other activities under the head which we had scheduled at that time, which was to investigate the conditions under the head, which we talked to you about at the last meeting.

We were proceeding on performing that activity on the basis of the use of polar crane. And when the polar crane was not available, we had to change the direction, change the procedures and the methods by which we were going to perform that work.

So, in effect, what we did in '83 was to perform the work but change the methods by which we could perform it. And, therefore, we had essentially double work to perform and perform it under adverse conditions when we

were not able to remove the shield locks.

So, in '82 we expended more money for performing some of the work than we had anticipated.

MR. MORRIS: Excuse me, sir, one second. I think maybe you are causing a little bit of distraction for some of the Panel members. And you've had a pretty good opportunity to take pictures. If you want to still take them, can you kind of move back a little bit and not be right here in everybody's face, please? Thank you.

PHOTOGRAPHER: Yeah, I've got plenty. Thank you.

MR. MORRIS: Thank you very much. But, again, because of that little distraction I was reading this note. I heard most of what you said, but did you say -- again, I'm just asking, was there any slippage time-wise because of lack of funding?

I heard you explain that you changed your methods, your ideas on --

MR. KANGA: We expended more money in certain of the activities; therefore, there was an additional delay in other activities due to the funding.

MR. CLARK: I think it is clear that if in the beginning of '83 there had been more money available than seventy-five million dollars, we could have planned and carried out more work.

If there were money to become available in '84, and if it becomes available not on December 1st but in time to plan to use it, we could do more work in '84. So, to say it is the lack of funding that has caused the delay, I think the answer in that sense is yes. If there had been more money available to us, we could have made more progress.

MR. MORRIS: That is the question, because I have heard a lot of times -- a lot, meaning several times -- that the delays have been caused by engineering problems, unforeseen problems, problems with the polar crane, problems with certain allegations, and very rarely have I heard anybody say but they have also been caused, if we had had more money we could go a lot quicker.

MR. KANGA: I might say something on that. In the program that we had outlined end of '82, we did consider a number of alternative cases which indicated that if additional funding was available in certain years we could improve on the progress of the job and some of the milestones such as removal of the fuel could be improved, and we demonstrated that in that particular report.

So, we did look at the --

MR. MORRIS: I recall.

MR. CLARK: Whether you say more money would let you go faster or less money is a delay, I mean that's

the case. And we think we've said that before; at least, we've tried to.

Now, let me just describe what Mr. Kanga said maybe just a little differently. The effect of the polar crane problems was twofold -- no, probably threefold.

First, there was a direct delay in doing the polar crane test and our ability to get on with head lift. Second, in order to do other work which we planned to do, using the polar crane because that was the most effective way to do it, in order to get on with that work without the polar crane, we replanned it, did a little different tooling, new procedures, and did that work less efficiently.

But we wanted to do it rather than to not do it. The third is that there was a large drain on the resources of our people and particularly our management in dealing with the allegations. I think you people are familiar with what we call the Stier report, a report that we commissioned by an independent investigator. That cost over a half million dollars in payments to him and the people working with him. It had a significant cost in the time of our people to whom those investigators had to be talking. And there was also a parallel NRC investigation.

So, it was just a major effect of those allegations on our whole effort in 1983 which, as you know, may ve hard to describe. But it was major.

MR. MORRIS: But it's fair to say that the quicker the money comes in, the quicker the job can get done, and the least likelihood you would have of losing money such as DOEs or at least delaying the use of those monies?

MR. CLARK: I think the quicker, up to some point.

MR. MORRIS: I understand that.

MR. CLARK: If we had seven hundred million in '84 we couldn't do -- you know, we couldn't deal with it.

MR. MORRIS: I know that. But, instead of waiting five or six years in getting the job done, you may get it done in four years.

MR. CLARK: Right. And I think you can get an approximation of that if you look at this December '82 project re-estimate where we did the base case on the funding we thought was reasonably expected, and that was seventy-five in '83, a hundred in '84, as I recall it, and about a hundred escalated each year, if I remember the case.

Then we looked at, suppose you get twenty million more in this year and the changes in schedule were on the order of fifteen percent. Maybe twenty percent on the total schedule.

MR. MORRIS: Does anybody else --

DR. ROBINSON: Mr. Clark, at the present funding levels, when do you project that the core, the removal of the core, will be completed?

MR. CLARK: Well, we are just re-estimating the schedule and trying to see from where we are now, which is different from where we thought we would be, and with the status of the work on the tooling, on cleaning up the fuel core, the various elements that control the schedule, what is the best schedule we can get. And we do not have a complete new schedule estimate. The estimate we have goes through '84.

It showed the head lift in I think September. We decided we wanted to try to do better than that, so we are reexamining the front end of that schedule. And as I -- I think maybe the best thing we can say is that the schedule we had in December of '82 is probably delayed about a year.

DR. ROBINSON: I don't remember when the latest schedule --

MR. CLARK: I don't either. Maybe that's my problem.

MR. KANGA: Yeah, the December '82 estimate showed the head removal, I believe, in June of 1983. We are now estimating that the head removal would be in August of 1984.

MR. CLARK: The core removal.

MR. KANGA: Okay. We have not projected presently scheduled in detail beyond the end of 1984, because it is difficult at this stage to estimate that, not knowing what the funding level will be, and not in 1985.

And instead of spending sources of the project on estimates and schedules for out-years based on strictly guess work of what the funding would be, we would rather wait for a few months to at least have a better estimate of what the funding levels will be than to have that type of a schedule.

We are hoping that the funding levels would be stabilized, we would know what those levels would be, and would be able to identify it more better with an estimate of the total project in the schedule.

DR. ROBINSON: Are you suggesting I bring the question up in June or July?

MR. KANGA: Yes. I would be able to give you a much better answer.

DR. ROBINSON: Okay.

MR. CLARK: The fundings and other things, you know, really change month to month. And re-estimating the whole schedule with any validity is a good bit of work.

So, you know we try to do it not too often except for the short-term schedule we need to proceed with

the work.

MR. MORRIS: Does anybody else have any questions?

I would like to pursue a little bit on still the funding. A couple of questions. Updated cost projections, do you still feel that within five percent, plus or minus, that the seven hundred sixty million as of the beginning of '82 is sufficient to complete cleanup; and, if not, when do you expect to do a projection on cost again?

MR. KANGA: I would say that other than some of the expenditures that we, in fact, wasted in 1983, there is no significant change in terms of the cost estimates for the activities that we are projecting at the present time.

MR. MORRIS: Okay. So if you would still use basically the seven hundred and sixty million dollar amount beginning in '82, and look at the Thornburg plan, could we get maybe by the next meeting some kind of look at where the short falls are projected to be?

You've already got a feeling now. Maybe by the next meeting you could have a pretty good feeling on whether EEI is going to meet the hundred million dollar amount. You know that, at best, they are going to get to a hundred and thirty, a hundred and forty, and the projection was to get a hundred and ninety from that particular

fund-raising effort.

According to my information from DOE, they are at a hundred and fifty-nine. And the Thornburg plan called for a hundred and ninety. You are saying that with your efforts with the PUC, if you get favorable funding that part of the plan would be in place.

I guess I think it would be helpful to get some kind of look at where you stand funding-wise, what your hopes are, and what the apparent short fall is right now; with certain assumptions on the EEI, I realize that. But --

MR. CLARK: I think we certainly can give you a status of, you know, pretty well assured funding versus the Thornburg plan. We will be glad to do that.

I think one thing that it's helpful to keep in mind -- at least, I find it helpful -- you know, nobody can see to the end of the tunnel. It's the question of whether there is enough money available now and next year to keep going, and whether in 1984, in fact, that seven hundred and sixty million signed up, it would be very nice to have it. I would love it. But if you don't have it, and there is enough money signed up so you can keep the program moving at a good level through '84 and '85, there is a fair bit of time to go and find the rest of the money.

I think that is the gist of what Tom Gerusky said a little earlier in talking about some of the short

falls. So, yes, we can and we will provide you some kind of a status versus the Thornburg plan.

But, you know, I don't think that in three months we are going to have all the money in hand.

MR. MORRIS: You would not have it anyway, because much of this money is going to be given to you over a period of four, five or six years. I understand that.

But if there is a short fall -- if there, in fact, turns out to be a significant short fall, I think it would be helpful to the Panel to find out where are you going to look for that money, not do you have it. But where are your hopes to raise the money coming from.

MR. CLARK: We will give you a status. You know, I think that is a legitimate question. Let me just make one comment on the DOE funds.

When we try to rack up funds against the Thornburg plan, the seven hundred and sixty million dollars went against the certain defined work scope basically here at TMI, or cleaning up TMI. The one hundred fifty-nine million, or whatever it is, from DOE goes against the somewhat different work scope. Some of that money is for, you know, waste disposal, off-site, very useful and necessary activities, but not activities that were within the seven hundred and sixty million dollars.

So my recollection is, of the one hundred and

fifty-nine million of DOE money, eighty-five or something like that, goes against what the Thornburg plan was intended to cover. Now the rest of the money is real money. It is helpful to TMI. It is doing things.

But when you start racking up against the Thornburg plan, you should not rack up a hundred and fifty-nine at DOE. You rack up on the order of what I said.

MR. MORRIS: Which highlights even more of a reason why it would be good to have a feeling for a short fall.

MR. ROTH: Just bear with me for a minute. Let us fantasize for the next one minute. Maybe we have been fantasizing the last half hour. If this Panel had the power -- and I mean this very seriously, because I'm still having problems coming to grip with percentages because of lack of funds versus engineering problems, if this Panel had the ultimate power to give you money, how much money would you ask for for 1984 and 1985?

MR. CLARK: I think -- you know, I think that question really deserves some reflection and careful looking, because the money goes to a variety of places, designing the tools, so it would really be -- the question is, how fast can the tool designers be expected to go, cleaning up what we call the fuel core at TMI-2, getting out what is in there, preparing to move the spent fuel.

The question is, how realistically can you do the engineering and the actual work without funding constraints on that.

And there probably are four or five main activities which we have to look at carefully in order to see realistically how fast could you go with them if money were no limit, which I understand to be your question.

MR. ROTH: What I'm coming back to is, I'm saying -- perhaps I'm not grasping it, but we are almost five years from the accident. And basically what I'm hearing you saying is that there are still design factors that haven't been, you know, dealt with or you haven't gotten to yet, and there are all these factors, and we keep on seeing the slippage.

And I guess I'm trying to point to you and saying, fantasizing, what amount, without having to say reflect upon it, or anything of that nature, I guess I'm a little tired of, after five years, having that.

And all I'm simply saying to you is, I still want to know what money you would like, if we had the power to give it to you for '84, what do you want?

MR. CLARK: Okay. What I'm saying is that I can't answer you tonight.

MR. ROTH: When could you answer?

MR. CLARK: I think that depends on how good an

answer we want, and on the decision of whether the likelihood of getting that is worth putting resources on answering the question. And I don't say that to be offensive.

The first estimate that the Company made on the cleanup -- and it's a major effort. You know, you've got dozens of people estimating hundreds. The first estimate assumed funding was no limit. There -- that was a big effort. We came out with it -- I forget the schedule, and it's academic. We soon discovered after a year or so, that that was not a realistic assumption. So, we did it all over again.

And we laid out the plan again on the assumption that we get what we thought was a reasonable amount of money. Seventy-five in '83, a hundred a year. We thought that was realistic. We also looked at, as I recall, three other cases at the same time, so as to give an idea to people of how much more money could be used and what it would do to the schedule.

And if the Panel does not have that before it, you know, I would suggest that we provide it to you, because I think it's helpful to get an idea. As I recall, we did not think it would be worthwhile even then to ever go over a hundred and forty million a year, or something like that.

MR. KANGA: We looked at certain cases -- and

I'm quoting from memory, when in 1985 and '86 we used numbers like a hundred and twenty, a hundred and thirty million dollars in those years.

MR. CLARK: And I think, for thinking about it, those numbers are probably as good as what we generate today, absent, you know, a very detailed effort which, you know, I suggest is probably not worth the resources which otherwise would be working on getting ahead with some of the work.

MR. ROTH: So, basically, to end this point, you could probably agree and say that perhaps the one hundred thirty or a hundred and forty, or somewhere in that, would be the money that you would like to have, to be able to continue -- to use your word -- significant gains.

MR. CLARK: And it would go faster. All right. Now, I think I also need to be sure I leave you with the understanding that there is a lead time in this, so that getting a lot of money suddenly doesn't help me in the next X months. You know, you have to get the contractors, organize the people, change the plan.

And that's the reason why changes are so disruptive, because there is a lot of planning. You throw that away and replan a new one. I really hope I'm not coming up as non-responsive to your concern. I don't

intend to be.

MR. ROTH: All right. We will forget the fantasy.

MR. MORRIS: Tom, did you have --

MR. SMITHGALL: Just a comment. I guess we were fantasizing over dinner. We were wondering whether or not there is a pension plan for these people on the Panel. (Laughter.) And I just do some quick arithmetic -- I see Tom Cochran's out there, and he did this before -- and I see funding levels of seventy-five million dollars a year, needing seven hundred and sixty million dollars to do the full cleanup, it's going to take us ten years. That's if you get seventy-five million dollars. So we are not even halfway along. And we will be here January of '89.

MR. MORRIS: That's from 1982 as well. So you are talking about 1992.

MR. CLARK: We are not satisfied with the seventy-five million dollars a year. There is no question about it. That's why we have made the request to the PUC. That's why we have been actively involved with EEI.

The Company put a lot of effort in trying to get national legislation for industry contributions.

MR. MORRIS: We understand that. But, see we are not asking you to say, if you got money today can't you

spend it tomorrow. We understand the lead time. We understand the engineering. We are just looking for a simple answer that says, you know, basically if you got the money that you needed, what would that ten years go to? Five, six or seven.

Agreed, maybe we need to go back and review the document that was put together in '82.

MR. CLARK: As I recall, on the '82 estimate, it had the cleanup completed in '88.

MR. KANGA: That's correct.

MR. CLARK: In '88. So, if you wanted to do fantasy here, or ball park, you know, kind of rough numbers, let's assume you are a year behind that and if you could get to the funding levels in that plan, then it would be '89.

I've told you exactly how I got the numbers.

MR. MORRIS: Okay. I understand.

MR. CLARK: I think that's the kind of thing we will be talking about.

MR. MORRIS: Okay. Tom.

DR. COCHRAN: I'm still -- I've sort of lost track of what the objectives are in the cleanup. And -- is it to get back a working reactor? To simply remove the debris out of the core? Is it to have a facility that you don't call it an interim storage place facility?

Is it to minimize worker exposure at this point?

MR. CLARK: Okay. It is not to get what we call recover the plant, i.e., get it back working. It is not to recover the plant.

DR. COCHRAN: Was it in the earlier estimates?

MR. CLARK: No. No. The earlier estimate in there was one probably the summer of '81, December of '82. It is not recovery.

Cleanup is defined roughly as removing the core, including the fuel which may not be in the reactor vessel, and cleaning up the plant to the point it does not pose a particular threat to the environment. You might make a rough analogy to cleaning it up to what might be considered a decommissioned plant. All right.

Do you want to elaborate on that?

MR. KANGA: Yes. And included in that is shipping --

MR. CLARK: Shipping the waste off-site, yes.

DR. COCHRAN: Is that -- has that goal changed any? Have you relaxed that?

MR. CLARK: No.

DR. COCHRAN: It's not worth considering sort of leaving it a little bit more contaminated for the sake of reducing the exposures to the people?

MR. CLARK: Well, I think our sense is you have

to get it decontaminated someday. And that the -- on balance, some amount of additional worker exposure now in order to cut the threat, leads you to conclude you ought to proceed with the cleanup now and not defer parts of the cleanup.

MR. MORRIS: Let me just cut in here and say that we knew that Tom Cochran has missed a meeting or two, but we knew as soon as that PEIS came out on radiation exposure to workers that Cochran, if nobody else was here, Cochran would be.

And really, if we are going to get into a discussion on radiation and curtailing certain activities of the plant, that is something that we are going to get into tonight. And I'm sure Tom is going to proceed along whatever line of questioning he wants to on that, but unless it relates -- the question is relating specifically to the funding, Tom, that is an item that really -- I know you are going to try to get into this any time you can, but tonight it should be brought up in the next item on the agenda.

DR. COCHRAN: I think it bears directly on funding.

MR. MORRIS: Well, if it's strictly a funding question, fine. I thought you were saying because of radiation exposure, should we not curtail certain activities

at the plant. If you are saying, in order to save money, and forget the radiation and don't discuss that, then we can get into that.

But it sounds to me like your concern is coming from the radiation aspect.

DR. COCHRAN: Well, that's obviously my concern.

MR. MORRIS: Well, I understand and you are going to get plenty of time tonight, I think, to talk about that. I just want to make sure we stay on the funding issue first, if we could.

Does anybody else have any comments or questions on funding?

MS. MARSHALL: I have a question in regard to the contemplated cleanup, and the fact I gather that this entails leaving the reactor building on-site; is that right?

MR. CLARK: Yes.

MS. MARSHALL: We had heard at one meeting that the walls, the inner walls, of the reactor building had absorbed some radioactivity. And is it contemplated that that would be -- that the reactor building would be free of radioactivity at the time the cleanup is considered to be done?

MR. CLARK: No. When you say free of radioactivity,

no. The cleanup would take you to a point that the radioactivity there would be much reduced. And it would be -- I guess maybe the right term is fixed. I mean, radioactivity which is embedded in concrete is not going to come over into Middletown or wherever. So, it's not correct to say it would be clean. But it is correct to say the total would be way, way reduced, and that the form in which the activity existed would be stable, fixed. You know, not airborne, not in liquids that could get off the Island.

MS. MARSHALL: Thank you.

MR. MORRIS: Any other questions? Is there anything else you wanted to say on funding? I assume not.

MR. CLARK: No. We just repeat we are not satisfied not having more funding available, and we are doing everything we can to get it.

MR. MORRIS: Okay. Thank you very much for making a presentation, Mr. Clark.

While Mr. Kintner was very quiet, we certainly appreciate your appearance and look forward to seeing you again.

The next item on the agenda, and actually the last item, other than public comment, is the -- an NRC comment on the PEIS. Bernie, what's your pleasure? Do you want to keep going at this point and forget about a

break and see how things go?

Cochran wants to take a break. He's going to ask a lot of questions. Do you want to take a break?

We will take a five minute break.

(Whereupon, a recess is taken at 8:18 p.m., and the meeting was resumed at 8:30 p.m., this same day.)

MR. MORRIS: If we could call the meeting back to order and go right back into comments by your friend and mine, everybody's friend, Bernie Snyder, and, of course, Lake Barrett.

Bernie.

MR. SNYDER: I sure hope the Reporter got that down. I will point to that some day when I need it.

Our only purpose here was really to call to both the Panel's and the public's attention the fact we did issue in the last few weeks a supplement to our Environmental Impact Statement in the form of a draft document.

There are copies on the table to my right, to your left, near the entrance. I would urge anyone in the audience -- the Panel has all received copies I believe, I hope -- I would urge anyone who has an interest in the audience to pick up a copy. And I also want to say there are a number of other things sitting on that table that are relevant to the supplement.

First of all, there is a little blue book that we put together called "Answers to Questions About Updated Estimates of Occupational Radiation Doses at TMI-2." This was written in an attempt to provide in laymen's language a little more of an explanation.

MR. ROTH: For us, right?

MR. SNYDER: Well, actually I found it very educational myself. You know, it's for those who find the EPA-type document a little ponderous. I think they will find the Q&A document to be helpful.

I want to mention that this was put together in our office by a very capable gentleman, Walt Oliu, who is in the back behind us, waving his hand now. I mention that now, because it has been an important part of our office's function to mention that we do our best to communicate, and I recognize we don't always succeed but we really do make an effort.

Walt is a technical writer, and he is the only literate one among us because he is an English major, not an engineering major. And, in addition he is also the author of a couple of books, the title of which I won't tell you because I can't give a commercial, but they are English textbooks.

He has done what I think is an excellent job in putting this thing into good English, targeted really

for a high school graduate basically.

There is also on the table there a copy of a Reg Guide, that's Regulatory Guide Number 8.29, which is a general discussion of radiation effects. And it's generally made available to workers at a reactor site. And all GPU people who do work in radiation areas and have received the radiation training do get a copy of this by GPU; they provide it.

And, let's see, do we have the press release over there or not? Yes. There is a press release which we used for the press conference last week. And in there it gives a little more detail as to when the comments are requested. We are required to provide a minimum of forty-five days, a comment period of forty-five days long. And we have actually provided somewhat longer than that.

The comments are due from the public, and from all interested people, to us by February 29th. There is a February 29th this year, by the way. We actually picked it to intentionally make use of that day for something.

In any case, we are happy to receive written comments. We plan to have at least one public meeting in the evening in the Middletown area. It is tentatively scheduled for February 15th, and to be held at the Middletown High School. We will firm all that up and let people know, and give plenty of advanced warning so they can

extend the time.

What we will do at that meeting is something we have done in the past, and it has worked out well. We will have a transcript made, as is being made of this meeting, and we will take comments from the public, respond to them at the meeting, but also consider the oral comments that we received as recorded by the Reporter to be the same as if the individual had written the comments down and gone to the trouble to put a stamp on it and mail it into us. We will try to make it as easy as possible for people to communicate with us, because we are very interested in that.

In addition, Lake has provided to the workers at the site a short letter that explains the availability of the document and gives a little bit of background. That is attached and over on that pile there, too.

Finally, in an attempt to communicate with the workers, because clearly this is a worker issue, letters have been sent again by Lake, in my absence just after Christmas, to eight union officials at the local, regional and national level. These are the unions that have workers on the site.

I would suggest that the Panel consider having a detailed discussion on the PEIS at the next meeting. I would be happy to answer questions now but very frankly it

wasn't my understanding that was the intent of this meeting, and for that fact I did not bring one key individual that I would offer to bring at the next meeting. That's Dr. Frank Congel, who is the Chief of our Radiological Assessment Branch, and is our -- he is expert on the question of health effects. Okay.

And with that, I would urge the Panel to consider that for the next meeting, and we look forward to receiving your comments either as a Panel or as individuals, or however you choose to do it, orally or written.

MR. MORRIS: Okay. Bernie, I do feel -- and I'm pretty sure that Tom Cochran, and maybe some other people, want to at least address parts of the PEIS tonight. Where you could answer the questions, if Tom has any, we certainly would appreciate it. But we understand that you don't necessarily have the people present to answer questions.

And if you don't, at least it will give you a chance to know what some of the questions may be at the meeting on February 9th. Because we agree that we probably do want to get more into it on that evening.

Tom, do you want to --

DR. COCHRAN: Well, I don't have but a few questions. And it would probably be preferable to me if we discuss it at the next meeting rather than this one

to get some more information.

One of the problems I found in going through the PEIS is, it's impossible from the data in here to do any sort of double checks on your -- on the numbers. You have given us some aggregate numbers of estimates of exposure for various operations. And I'm looking particularly at Table 3.1 on Page 3.2 where it's --

MR. SNYDER: That's the summary table.

DR. COCHRAN: Right. Well, there's no -- what I would like to see is for a particular entry in the summary table, for example, under current cleanup plan for the, let's say, reactor disassembly and defueling, I understand these numbers are generated by some computer model or at least aggregated through some computer model which is more detailed than I would want.

But on the other hand, I don't have any feel for how many people are involved in the operation and what the average time they spend at the working level is, how much dose they are getting.

MR. SNYDER: We can -- let me, just very briefly -- and I don't have the data with me. First, let me say that we did utilize the services of a consultant under contract to us, people who are expert in this field, Pacific Northwest Labs, Health Physics group out there.

And basically what we did, and this was

independent of a similar exercise that GPU went through, and their contractor went through, we -- for that activity, we took a look at the work breakdown, how the job was broken down, made estimates of the hours that it would take to do it in terms of man-hours, and took a look at what the radiation field were expected to be in those areas, assuming good ALARA practices applied, which we discuss at some length in there.

And basically it's a straight multiplication. Now it's obviously not as simple as all that. And if you like, we do have the data that was used to build up to these numbers, which I think is what you are asking for, Tom. And I would be happy to provide that to you.

DR. COCHRAN: That's what I'm asking for. Also, it scares me that I will get it in a lot more detail than I want. I mean, I don't want to spend the rest of my life studying --

MR. SNYDER: No. We have it taken and reduced down the data. There are a number of sheets that go into building up such a number. But as far as computer model goes, it really isn't a computer model. The computers are used, in this case, just to add the things, multiply and add the things up. You know, it's strictly an accounting tool.

It was based on what we felt were reasonable

target numbers to shoot for in terms of what the exposures would be. That's the key thing. And then it's just engineering judgments as to how long does it take to do a particular job and just multiply and add them up.

We can talk in more detail about that at the next meeting, if you would like.

DR. COCHRAN: Well, I would like to do that. And I would also -- I also think that level of detail should have been in the draft so you can comment on something substantively other than just the aggregates. I mean, it's hard to --

MR. SNYDER: This is about the same level of detail -- well, it's slightly more detailed, I guess, than what we had in the original document back in March of '81. And we felt -- in fact, I can't recall anyone criticizing us for not providing that kind of detail.

DR. COCHRAN: Well, let me just remind you, I criticized you because I thought your dose numbers were too low. And maybe if we had had the detail, it would have been more obvious.

MR. SNYDER: Well, we intend, at the next meeting, to provide that.

DR. COCHRAN: Now, the other side of it is -- and this is basically nothing that I did not say the first time around -- I don't agree with your cancer risk

coefficients. And you discuss -- in the back of the report, Appendix B, and the problem I have is -- or, one of the problems I have is the Staff does not take into account anything that has happened after the BEIR 3 report vis-a-vis the cancer risk coefficients. And I'm specifically referring to the -- start with BEIR 3, the controversy over whether the relative risks model, linear model, is more or less appropriate than the linear quadratic model for some of the coefficients.

Subsequent to that, it was a reevaluation commenced of the Nagasaki neutron data, which some people believe -- for example, Ed Bradford and myself and several others -- that basically knocks out the argument of Rossi and the majority opinion in the BEIR 3 report; and that, therefore, the Bradford opinion in that report is now the only really valid one. And that is, it ought to be looking more to relative risk, linear model, than lower numbers that came out of the linear quadratic.

So that, in a nutshell, at least in my view, puts you up at the higher end of these numbers that appear in Table B.10. And I would argue that you should also have put in for the report not just the fatal cancer risk estimates, but the cancer incidents which you do do, I see, in this Regulatory Guide, Table 1, Page 8.29-6, which the cancer incidents is higher, a good bit higher than the

cancer mortality numbers, because everyone doesn't die of cancer.

Nevertheless, I think people are sufficiently concerned of getting cancer that they ought to be told about what the cancer dose numbers are. And the numbers I personally come out with are more like one cancer per thousand man-rems, which happens to be about seven times the number you actually used in your basis for your calculations So, instead of two to six, I would multiply your number by about seven if my own personal estimate is correct, which puts it up, in my opinion, in a range where I worry a lot more than the Mayor of Lancaster does, and would start looking a lot harder at how to get these man-rem numbers down.

It would also be nice to know at the next meeting whether GPU agrees with these latest -- I guess these are NRC estimates.

MR. SNYDER: Yes, they are. They have a comment, like everybody else, and we haven't talked to them about it since we published it. Although, the earlier estimates were lower. The latest high number that I saw, which is some time ago, was twenty-eight thousand versus forty-six thousand.

MR. BARRETT: They were sixteen to twenty-eight, I believe. We bracket their estimates.

MR. SNYDER: On the health effects thing, I'm not the right person, as you know, Tom. I would like --

DR. COCHRAN: I understand.

MR. SNYDER: -- to get your input and provide a response at the next meeting, as well as the input of any other members of the Panel who have some expertise in this matter.

DR. COCHRAN: Well, I think the more important thing -- because even at the lower cancer risk coefficient estimates, the numbers are still sufficiently high that everybody should have the same objective to get these man-rem numbers down and sort of walk this through and explain why you can't get those numbers down.

MR. BARRETT: Regardless of what the estimators are, everybody here is concerned about the man-rem. We are concerned about it. And so is GPU.

DR. COCHRAN: So is the Mayor. I was just --

MR. BARRETT: Everybody is. And, you know, millions of dollars, I'm sure it's at least that, millions of dollars are spent by GPU to cut that man-rem number down. And a lot of work and energy goes into that area. And it is millions of dollars to do that.

MR. SNYDER: We have taken a very careful look with a panel of outsiders at their rad protection program. I think that has been discussed here with the Panel in the

past. And the consensus of opinion was that they needed this -- going back many years now -- they needed to make improvements. They made those improvements. We re-looked at it and concluded that they are doing a good job with the intention of always improving. And, you know, it's probably our most important function on the site, is to make sure they are doing absolutely the best job they can.

MR. MORRIS: Tom, you did ask a question earlier regarding if the cleanup could stop shorter than it presently is contemplated, what kind of effects would that have on radiation doses.

Again, I'm not sure that you are the people to answer that, but you did raise that point on the funding.

DR. COCHRAN: Well, they explained, I think, what their estimate is, what would happen in terms of dosages.

Presumably, looking at your robotics scenario --

MR. SNYDER: That's why we put in that option, because it's not out of the question but it's not today's technology either.

DR. COCHRAN: I guess the question I would have would be more, what are the funding implications of that scenario, which is why I brought it up earlier.

MR. MORRIS: Well, why don't you pursue that?

DR. COCHRAN: Well, what are the funding --

MR. SNYDER: The funding implications? I'm not the right person to answer on funding.

DR. COCHRAN: Well, you know there is no cost data in this --

MR. SNYDER: No, there isn't.

DR. COCHRAN: -- which I think --

MR. SNYDER: We didn't attempt for each alternative, except for the robotics, there was statistically no difference in terms of man-rem, which is the question being addressed here. So, there is no point in taking a look at whether there is a great financial advantage of one versus the other, because they got you to the same end point in terms of exposure basically.

The robotics, I don't think anybody could put a cost on that, because it's not a technology that's available. So --

DR. COCHRAN: Well, there is another alternative. I mean, there are three alternatives. You can walk away from the plant right now, which nobody likes. Or, you can take the fuel out and seal it up and, in effect, treat it as a clean plant which may or may not meet whatever your requirements are in the plants.

MR. SNYDER: We have discussed this before, and I think you know my views on that.

DR. COCHRAN: The third alternative is you

double the worker exposure to get it down to where you want it. It's not clear to me that reducing the cleanup exposure by two is not the right solution if it turns out -- I mean, you might have a better idea of that, whether you are at the upper or lower end of your dose estimates in three years from now. You don't have to make that decision now.

MR. SNYDER: In any case, we agree that the fuel needs to come out and that future activities could be subject to some trade-offs, like you suggest.

DR. COCHRAN: Would it be useful to -- when you provide the data next time -- provide it at a level of detail sufficiently that, over the course of the next year, people that track the dosages could find out, you know, how one is doing relative to what today's prediction is?

MR. BARRETT: You can track them. I think after the fuel is out, the big man-rem component is dealing with the basement of the reactor building, the area that was flooded with the eight and a half feet of water and the cesium in the concrete, the unsealed inner walls. That is probably the larger man-rem component.

Within the next few years, GPU will be concentrating on the defueling. I'm not sure how much data -- there will be some data obtained from the basement levels. But as far as enough data to accurately, or better, project,

we don't know how much that will be yet. And we will go into, you know, the details on it for you next time and you can see that.

DR. COCHRAN: That's what you call reactor building and equipment cleanup, or is that what you call reactor disassembly --

MR. BARRETT: The reactor building, first row on Table 3.1 --

DR. COCHRAN: That's the dose --

MR. BARRETT: Well, that's the reactor building and equipment cleanup, that is the cleanup of the building, per se, not the removal of the fuel. The second line is the removal of the fuel from the reactor.

The actual cleanup of the building, that's the chipping of the concrete and that sort of thing.

DR. COCHRAN: But you don't have to get down on to that lower --

MR. BARRETT: You don't have to get down there to do the defueling.

DR. COCHRAN: -- level, do you?

MR. BARRETT: No. To do the reactor defueling where the concentration of the work will be over the next few years does not do much in the basement at all. They basically are bypassing the basement. There is some work in the basement. They do have -- DOE and GPU together are

working on developing some of the robotics. So is the Ben Franklin Institute. And work is proceeding in that area, but it is not, you know, first priority work. First priority has been toward more of getting the fuel.

MR. SNYDER: The basement can be ignored for purposes of getting the fuel out. That's the bottom line.

DR. COCHRAN: Is that what is going to be done?

MR. SNYDOR: There is some work that will go on in parallel, but by far the majority of the effort will be on the defueling.

MR. BARRETT: And the dose reduction you need to do to do the defueling.

DR. COCHRAN: Am I correct that the only place you can enter the containment building is at 305 level?

MR. BARRETT: That's correct. That's where the hatches are.

DR. COCHRAN: And it doesn't buy you anything to try to cut a hole somewhere else?

MR. SNYDER: The 305 level is not that large a contributor to the source. And with the temporary -- not temporary, but with the shielding that's been put in place, I think that part of the dose reduction program that was discussed at one of the meetings -- I guess you weren't at that meeting, I don't know if it was the last meeting or the one before that -- the transit dose that the workers

are getting as they come in through that route is really very insignificant.

MR. BARRETT: GPU has -- I don't have the exact number, but I would say it's tens of tons of lead in water shields on the 305 elevation to shield radiation from the basement. That's the 282 foot level, from coming up to where the workers have to transit up to the 347 elevation, which is the operating floor where they will do most of their defueling work.

MR. MORRIS: Okay. I believe Mike Masnik did indicate if we could provide him with at least an idea of what questions you may be raising at the next meeting, of course, that any Panel members may raise, it would help him in expediting answers. So, I guess if you can get the information to Tom that he has requested as quickly as possible, that would allow him to review it, and maybe Tom and Mike can talk a little bit on the phone before the meeting to give you a feeling for at least some of the questions.

MR. SNYDER: We will provide all the members of the Panel the information, of course, not just to Tom. You know, there may be interest by others as well.

MR. MORRIS: Are there any other Panel members that want to speak to this question? I'm sure that most of us are really not -- we are more making observations of

the discussions and listening to what is going on rather than knowledgeable of this kind of detail.

Are there any members here that want to get into it?

DR. WALD: Just a question. It says -- the data base for the table that you are going to provide us, does that include a more detailed breakdown of the age of the work force?

MR. BARRETT: No, it does not.

DR. WALD: Is that easily available?

MR. SNYDER: We made an assumption -- the numbers are in there -- but as to what the typical experience has been so far, I think we will follow -- I don't remember what the ages were.

DR. COCHRAN: I think age distribution is in here.

DR. WALD: There is a range and an average, but I'm talking about a distribution.

MR. BARRETT: We do not -- NRC does not have age distribution for the workers. The Company may have it by age. Generally the Company may not have that. As far as you can correlate exposure to age, when you fill out your age, you don't write down: My age is 24, 35, 45.

That statistic is not easy to come by.

MR. MORRIS: You do have an age, an average age,

of 42.

MR. BARRETT: Right. I think as far as which ages are getting what doses, I don't have that. I'm not sure the Company has that.

R. COCHRAN: Let me just respond to the Mayor's remark that, the implication being that this is too technical for a lay person to follow. I don't think that is the case, because I think it's a fairly simple issue and that is how can you do the work to lower these numbers.

And I think people on the Panel ought to look into how that might be done.

MR. MORRIS: I have no question as to the bottom line, that's right. But as to talking about linear versus quadratic and explanations of radiation, I think that I'm certainly not qualified or that knowledgeable to discuss that, but when it comes down to the bottom line of whether the numbers are one-sixth of what they should be, obviously as a Panel member I have great interest in that, and that's what I'm trying to say.

And that is at this particular time, I'm listening more with interest in what you may raise as deficiencies in the way this is calculated rather than offer that as a comment myself, because I'm not qualified to offer that as a comment, Mr. Cochran.

MR. BARRETT: Where we put most of our resources

is not in estimates in the future; it's, is GPU applying the ALARA principles in their design of future systems, in the work they do, that they are going about it to minimize those dosages as much as practicable. That's where we focus most of our resources.

MR. MORRIS: It sounds like Mr. Cochran is raising a question on not only what are they putting their resources into, but are you even basically calculating the dosages properly or the estimates properly. And then based on what is an agreement on dosage levels, how can they be minimized.

And I understand that's the type of thing he wants to get into. And certainly we have interest in that as a Panel. But, you know, I want to hear what -- if he raises some question that your numbers are inaccurate, I guess as an interested Panel member I would like to hear your comment back to that, from whoever it is that is your expert.

MR. SNYDER: We will have the right people here to discuss that in as much detail as you choose.

MR. MORRIS: But obviously if there is any indication here that I don't have interest in that as a Panel member, that's unfair.

MR. SNYDER: I would like to call your attention, though, to one interesting piece of past data. While

everything from here on is, of course, a forecast, on Page 1.5, that Figure 1.1, there is a comparison of the annual collective dose per reactor in person-rem versus years. And it's quite evident that for the data we have shown for the cleanup periods starting in 1980, for example, '81, '82, '83, that the site has been a good performer in that regard and has accomplished cleanup work while keeping the doses lower than the average or the median doses for other operating pressurized water reactors.

In other words, they are lower here, under these conditions, so far at least than if that plant had been successfully operated. And I think it's a fairly good measure of the success of the program.

DR. COCHRAN: Well, now, let me just question you about that. Suppose your number of forty-six thousand is right? And suppose you are thinking in terms of finishing this job in seven years, that's seven thousand man-rems per year or six thousand man-rems per year. That puts you off this chart.

So, the implications I would draw from these low numbers down here is you hadn't started yet. The big numbers are real. Now --

MR. SNYDER: But you have to recognize, Tom, how the forty-six thousand was calculated. And it's the worst case scenario, the worse conditions, the highest

dose, the longest possible time a given job would take.

DR. COCHRAN: I understand that.

MR. SNYDER: So, it's a high number. There is no question. And we wanted to make sure that we bounded the problem.

DR. COCHRAN: That's what you told me last time when you were bounding it between two and twelve.

MR. SNYDER: That was three years ago and, of course, we are much smarter today.

DR. COCHRAN: Okay. Let's suppose -- all right, let's take something more realistic today, that you say is more realistic, and let's say it turns out that it's twelve thousand over a six year period, which is two thousand man-rems a year, which still makes my same point, that because these numbers today are down here around three hundred man-rems per year, and they are going to be two thousand, it means you really hadn't started the dirty work yet.

And with regard to these other plants, these big error bars say -- to me, they say that you've got problems at the other plants.

MR. SNYDER: What they reflect is steam generator replacement.

DR. COCHRAN: That's right. And when you start getting a steam generator job and exposing a work

force to thirty-five hundred man-rems of exposure in one year at the plant, I think that's -- I think it's excessive, but that's in part because I think the cancer risk is higher than what most people in the NRC would say it is.

I would say the risk, that perhaps you are going to see an incidence of three cancers in that work force in that one year's work.

MR. KINTNER: Mr. Chairman, I wonder if Dr. Cochran would give us the references on which he bases that estimate?

DR. COCHRAN: Well, I will provide those for you the next time.

MR. KINTNER: Next time?

DR. COCHRAN: Well, I went through this earlier. You start with the BEIR 2 and BEIR 3 and take them collectively, and you read the minority report in BEIR 3, which is the report that essentially Ed Bradford wrote, we argued against the use of the linear-quadratic model, argued for the linear model and relative risk model.

Now, I say that the re-evaluation of the Nagasaki data and, you know, there are a number of articles floating around on that, but I can't give you by name -- there is also a DOE conference report that addresses that, and there are some letters in science that address that, will argue that you can no longer support the quadratic models.

And there is greater support for using the upper limit numbers in the BEIR committee. Now, that gets you -- if you will look on Table 1 in Reg Guide 8.29, these are set out for cancer incidence, that gets you the BEIR 1980 number, is a hundred and sixty to four hundred and fifty, cancers per million man-rem. The four fifty would be the relative risk linear model number.

MR. KINTNER: Total.

DR. COCHRAN: That's right, incidence. And I made the point earlier I think you ought to use incidence rather than mortalities, because I think some people are fairly concerned about getting cancer in the first place.

I would argue that you can double that number again on the basis of some more recent work on the incidence of cancers that are coming out in the ABCC data. It's basically newer data on Japanese deaths since the BEIR '83 report.

Now, when you get up around -- that puts you up around one incidence per thousand man-rems. That happens to be sort of -- in that range, you are not too far from the Mancusso -- you know, his is even higher.

MR. KINTNER: Could I just ask one other question? You've answered my question.

DR. COCHRAN: You don't have to use the Mancusso data.

MR. KINTNER: One other question. Tom, are these data in any way related to four-rem per year incidence?

DR. COCHRAN: Excuse me?

MR. KINTNER: Are these data related in any way to the four-rem per year incidence?

DR. COCHRAN: What is --

MR. KINTNER: What I mean by that is if the Nagasaki data, or some data which people are taking a hundred rem or fifty rem at a time -- in other words, do they relate specifically --

DR. COCHRAN: Can you take the ABCC data and extrapolate it down, or do you have to? The answer is, yes, you have to. If you are talking about the Hiroshima-Nagasaki data, you have to extrapolate down from much higher dosage.

MR. KINTNER: You've answered the question. Thank you.

DR. COCHRAN: All right. There is no question that some people believe that the right risk number in these dose ranges may be zero. I don't happen to hold to that.

But I will acknowledge that there are other people that buy that. I would argue from a public health standpoint it is prudent to use the upper-limit numbers

in terms of protecting public health. If you are going to take a risk, you ought to take a risk on the side of public health.

We could go into a long argument about how low you see the cancer incidence, what dosage for thyroid cancerns. I think that the only data is up around the dosages of the Nagasaki-Hircshima data, but on the other hand is this big extrapolation and a lot of uncertainties associated with it.

DR. WALD: Certainly in a population with an average age of 42, that six to nine-rems are really -- is not the pertinent reference that pediatrics --

DR. COCHRAN: It's pertinent to the question of whether it's reasonable to extrapolate down from high dose to low dose using the same cancer risk coefficient. So, it's certainly pertinent to the argument of whether the risk -- if you see an incidence in children at six rems it's hard to argue you wouldn't see a risk in adults at six rems. And if you see it at six rems, it's not too hard -- you know, you are not too far away from extrapolating down to a worker who gets three rems per quarter, or one rem per year or something like that.

DR. WALD: On the other hand, the zero to nine or the one to nine rad dose group, the actual ones at Hiroshima and Nagasaki has not shown an increase in cancer.

DR. COCHRAN: No, the one to nine rem dose in Nagasaki was taken as the control because they didn't have enough -- that was the base from which you estimated the cancer risk at the higher exposure levels. That's not a statement that the zero risk -- it was zero excess cancer.

MR. MORRIS: Can everybody hear this discussion? All right, if you are going to discuss it, try to raise your voices a little bit so we can all hear what is going on.

MR. SMITHGALL: I will raise my voice and just say, if we've gone from two thousand to eight thousand person-rems to thirteen to forty-six, I kind of agree with Tom, not getting into the detail, not understanding a lot of what has been said. I would opt for the higher risk as well.

Bernie, you said that was three years ago, and we are a lot smarter now. I certainly would not buy that if I was affected by these person-rems, that three years from now you are going to say it's forty-six to ninety-two, and you say you are a lot smarter now.

To me, that's too simplistic. And I think maybe what Tom has got to say, that maybe if we work with the upper limits, that's maybe what ALARA is all about.

MR. SNYDER: Let me comment first on the -- your statement that, you know, it will be worse later.

Our point is that we are smarter now. When the estimates were made in '81 there had been essentially no entries into the containment building. Nobody knew what the condition of the core was, and no one knew how bad the basement was. Okay. So, we made an incremental increase, a significant increase in knowledge by having over three hundred entries in the containment building, an extensive decon experiment, extensive surveys made. I mean, this is really hard data versus guesses before.

So we knew nothing versus we know a lot more now. So, whether you think that's a simplistic approach or not, the fact is that those are the facts, the situation, and our estimates now are based on knowledge as opposed to projections, actual hard physical data.

DR. COCHRAN: Do you believe thirteen -- is it your gut feeling that thirteen is closer to what it's going to be than forty-six?

MR. SNYDER: Tom, I really -- I don't think anybody can answer that question. I -- the estimates were made on a worse case-best case kind of scenario. The best case, in our estimates, would -- and we could be wrong; we could be too high -- be about thirteen thousand person-rem.

I would think unless there are just great surprises or tremendous delays in the cleanup to exceed the

forty-six thousand, the probability of exceeding the forty-six thousand is extremely low.

MR. SMITHGALL: When has anything been the best case since March of 1979 that you can remember?

MR. SNYDER: Well, I would say the water processing was a very successful program. And the shipping of the waste off-site was much lower estimates in terms of man-rems now than were made by either us or the Company before it started. So, it's not always as black as some people would like to paint it. It's not as good as some people would like it, too.

In fact, it's not as good as --

MR. SMITHGALL: I guess my concern is not understanding the technical aspects, being a lay person here, I guess I would have to opt for the worse case or on the higher end of the worse case, not assuming that you would treat the best case.

MR. SNYDER: What do you do differently if you assume one versus the other? I don't know.

MR. SMITHGALL: I certainly don't.

MR. SNYDER: Well, I don't either. But my point is, on an individual worker basis the regulations are very strict in this area. And the Company has chosen for most of their work to reduce our limits by a factor of three and apply those as their limits to make darn sure

they never exceed our limits. Okay.

And, in addition, there are extensive reviews done to make sure that the radiation work areas and the work to be done in those areas are the best that you can do under the conditions.

DR. COCHRAN: I don't dispute that.

MR. SNYDER: I'm trying to put it in ALARA terms. That's the ALARA principle, and that's the worker individual exposure limits that apply.

DR. COCHRAN: I don't dispute that. I certainly have no basis to do that.

The questions I have is whether the program is designed to decontaminate beyond what one might do if one had -- if one's highest priority was, say, getting the big pieces out of the reactor, the majority of the fuel out of the reactor and minimizing the worker exposure, would you do less chipping of the concrete and cleaning up down in the bottom of the reactor and so forth?

Or, does it mean because you really think you are going to have to do that anyway, and you would rather do it sooner rather than later. It isn't going to make any difference.

MR. SNYDER: Well, time is not an element, because of the materials you are talking about. It's only an element in terms of what might escape with degradation

of the plant over very long periods of time and, therefore, become a potential public risk.

Lake wanted to make some comments.

MR. BARRETT: In Table 3.1, the summary table on 3.2, we intentionally split out the reactor building, equipment cleanup, that first row, and separated that out from the reactor disassembly and defueling and the dose reduction which is necessary to support the reactor disassembly and defueling.

So, if one would say: Let's get the fuel and lock the door, okay, you can separate out the numbers here if you want to do that. Okay. It was intentionally done. That's why we split them up so people could analyze them that way.

Now, the GPU course, you know, the current cleanup plan is basically to get that fuel first and do the dose reduction efforts necessary to support defueling. If it turns out, we go down the path X years and the fuel is gone, we can revisit the question and say: Is it best to leave that basement and drain the water out and maybe leave the basement or not? That can be revisited at that time.

But what we have done in the PEIS, as we did back in '81, was we looked at the cleanup job, what is the total cleanup job? If time goes on later when you want to cut it off at some point, you can do that. And when the

cleanup is done and GPU wants to go ahead and evaluate things on restoring, they can go do that, too, at that time.

But this is basically -- we looked at the clean-up.

DR. COCHRAN: If I understand you, you are saying, take Item 4 first, this is on Table 3.1, called Dose Reduction, the GPU plan is to do that item first --

MR. BARRETT: It goes along with -- in parallel under dose reduction with the reactor disassembly and defueling.

DR. COCHRAN: Now, that item second --

MR. BARRETT: They will go together. We will have a breakdown at the next meeting for you. We will send it to you, and you can see that a little better.

But the dose reduction is the support for defueling. Dose reduction was not a concept that was there in our 1981 PEIS at that time, because there it was clean the building, then go get the fuel. That's the Alternative One we have there.

MR. MORRIS: At the next meeting, would you also have -- since Tom has raised the question on this BEIR report and talking about a minority report as one of the basis for his questioning the projections, will somebody be able to speak to us on whether that is something

you agree with, his interpretation, or not?

I think we need to hear that. Again, not being technical people, I think we need to know where you are coming from and where Tom Cochran is coming from so that we, as a group, can at least get a feeling for what -- how accurate we feel these projections are.

MR. SNYDER: We will certainly do that. And Frank Congel will be particularly appropriate to address that question.

MR. MORRIS: Could you also -- when you talk about a minority report, could we get a feeling for who all was involved in the majority report and what's the minority report? Is it a three to two thing, or just give us a feeling for what that means. I don't -- I don't know, and I would like to get a feeling.

MR. SNYDER: Certainly.

MR. MORRIS: Are there any other questions from Panel members on this? Obviously we are going to have a chance to do this at the next meeting. But if you have things you want to raise now to give NRC a flavor for it, please take the time. Niel?

DR. WALD: Will Frank Congel be able to speak to the current degree of completion of the review of the Hiroshima-Nagasaki dosimetry?

MR. BARRETT: I don't know. I'm going to tell

him that's the subject, though.

DR. WALD: Yeah, because as far as I know, people are still in the process of reviewing, revisions --

MR. SNYDER: I believe that Dr. Congel is reasonably up-to-date. He should be, because that's what he gets paid to do. And he is, I believe, well recognized in the field as well.

So we will make sure we have the right people here to be able to address that kind of question.

MR. MORRIS: Tell him to bring his saber along. It may be a little bit of fencing.

DR. COCHRAN: I'm just asking to call Morgan and Ed Bradford to get their views as to what has happened since BEIR 3 and present that side as well as the official NRC decision. And you will get a flavor for sort of the spectrum, and I would say Ed Bradford and Morgan and people of that view are in a minority.

But, you know, I've been in a minority a lot of times. Don't mind it a bit.

MR. MORRIS: I think you enjoy it.

DR. COCHRAN: It's sometimes right.

MR. MORRIS: But I think we are looking for -- I am looking for a balanced understanding of what has been and is being discussed here, and then we can decide which end we, as a Panel, feel we want to accept. I think I would

be looking at some kind of balance approach to that that would reflect reasonably all points.

DR. COCHRAN: Let me say that I agree with the Mayor. I did not object at all in NRC presenting the view that they've presented in this document as to the health effects, because that's a view shared by some or many scientists who are considered experts in this field. But, the problem I've always had is there are other experts in this field who take a very different view, and there is an unwillingness on the part of the NRC and it's not the TMI project's fault, it occurs in all of these PEISs, an unwillingness to lay out sort of the full spectrum of views in the health physics community on these cancer risk coefficients.

Instead, they just present the one that is shared by the people in the NRC, at the NRC.

MR. MORRIS: Another voice?

DR. ROBINSON: Not really. My interests, because of my background, are more in how the NRC intends to -- what mechanisms they use, and actually the procedure that you go through, to see that the ALARA principle is promoted at all times and followed at all times.

I would like to -- because I feel that's where something can be done in a more practical manner. I can't see the -- whether you use the upper or the lower range

doesn't really make any difference to what's happening at TMI. I agree with Tom Cochran, which I many times don't, that perhaps when the fuel is gotten out that perhaps then the decision where to go should be made and that's based on radiation estimates at that time.

But, right now it's -- you've got to get the fuel out as far as I'm concerned. You can't leave it there. And you do have to accept whatever minimum amount that you are going to get, you have to accept that.

And so the object, as far as I can see, is to keep that amount to a minimum, and that's the best way to protect the worker and also get the job done. And I would be interested, personally, in hearing how that is done to give us a balanced view of what's going on.

MR. BARRETT: All right. That's a large program within GPU, and it's probably the largest single part of my office where we constantly watch that. It's done many, many ways.

GPU has followed various regulatory guides, commitments in ALARA programs, separation of health physics control point. Management people, for example, health physics does not come under operations. They apply ALARA principles in the earliest design phases as to which ways we get the fuel, right down to -- that's what I might call microscopical ALARA, and if a man wants to go

in with a wrench and turn a valve in a high dose field, he has to get a radiological in here to sign off on it, and that sort of thing. And there are written procedures on this.

It's a very large program. There are mock-ups built, people are practiced, training, respiratory protection. It's a tremendous program, the biggest program in GPU because they are the ones that do it.

DR. ROBINSON: Are you suggesting that perhaps it shouldn't be done next time but at a separate meeting?

MR. BARRETT: You can easily fill up an evening with that. Maybe what you might want to have is maybe for GPU to give you, let's say, maybe a twenty minute or half an hour presentation as to what is their ALARA program and how do they assure that the doses that are received are the minimum doses. And then maybe we could explain to you, in a shorter time frame, what our program is that we check that they are doing their right job.

You may wish to have that.

MR. SNYDER: Recognizing that the ultimate responsibility is clearly the Company's. And we do an audit over-sight kind of function.

But I think it might be interesting for you to hear that from GPU, and also some measure of it is, how much money is spent on this sort of thing. I know it's

significant. I don't know the numbers myself. That's one measure. And, you know, what has been their track record so far. That's a measure of success as well.

DR. COCHRAN: How long does the dose reduction and reactor disassembly and defueling take? Over what period of time?

MR. SNYDER: It's about three years, I guess.

MR. BARRETT: That again gets back to the earlier discussion on funding. Let me take the 1982 base estimate that GPU had, which is now spreading out. But the defueling then was scheduled to start in mid-'84 and basically it would run twelve to eighteen months, twelve months if they had more funds. They could do it in twelve, they could run two shifts. If they had less funds, it would be a single shift and would be eighteen months.

That's not shipping. That's the defueling. Once you have it in a canister in the pool, then you would ship it. The actual shipping is not a high man-rem operation. The higher man-rem work is the defueling with the hands-on, people working inside that reactor building.

DR. COCHRAN: The two thousand six hundred to fifteen thousand number, that will occur --

MR. BARRETT: That --

DR. COCHRAN: -- without funding constraints over an eighteen month period?

MR. BARRETT: That is the defueling part of that, would be the twelve to eighteen months. The reactor disassembly is like now, for example, the efforts to remove the reactor head, that is considered by GPU accounting to be part of the first phases of reactor disassembly.

The main milestones are: remove the head, flood the canal and install special defueling equipment, remove the plenum and then the actual operation of removing the fuel and canisterizing the fuel. That's what would be called defueling.

So, it would include defueling plus the preparations for defueling. The polar crane actually I think was considered first steps to reactor disassembly because you needed to have the polar crane fixed to remove the missile shields to allow you to move the head.

DR. COCHRAN: If that were the case, then why wouldn't the seventeen hundred figure you have for dose received to date in cleanup be --

MR. SNYDER: Some of it is. Some of it could be counted that way.

MR. BARRETT: A small part is. The polar crane is the only they've really done, I think, under that category and it has been less than a hundred man-rem on the polar crane.

MR. MORRIS: Any more discussion on this?

MR. BARRETT: Would you like to hear the ALARA discussions next meeting?

MR. MORRIS: I'm expecting the next item on the agenda would be to talk about what we are doing, and depending upon the EPA monitoring and this discussion on the PEIS, I would be interested, if you want to hang in there for a minute, to let us know what you think, if we would sufficient time to get into this thing after that.

MR. SNYDER: We can allow the time. It logically fits I think. That's the reason I made the suggestion.

DR. COCHRAN: One thing I didn't think about. When does the comment period expire?

MR. SNYDER: February 29th.

DR. COCHRAN: Okay.

MR. MORRIS: Okay. As to the next meeting, is there anybody here that wants to comment in a negative fashion on us going to a 6:30 start and conclude at 9 o'clock? Hearing none, that's when we will start the next meeting then, which is scheduled for February 9th at a location to be determined.

And at this particular time on the agenda, this would be the presentation by EPA regarding their monitoring and possibility of their removing it from the

area. And the other major item would be a discussion regarding the radiation dosage, as discussed in the PEIS. And that should be quite a discussion.

Now, regarding your request, Gordon, do you feel we are going to have enough time? If so, should we allot a half hour?

DR. ROBINSON: Let's see, we are now talking two and a half hours?

MR. SNYDER: I don't think it would take a half an hour.

DR. ROBINSON: Could we leave it on a tentative basis, that if we have enough time? I have a strong feeling that the discussion and interplay on the more technical aspects of the cancer incidence is going to consume a fair amount of time.

DR. COCHRAN: I think that's the least important discussion to have. I mean, if you agreed with me earlier that the problem is to have to reduce the dosages, we ought to work on the man-rems side of things. I mean, this other issue is just a ten-year running battle I would have with the NRC.

And since a lot of people are not going to follow it, and it's not the kind of discussion you can fight out in an open forum with any sort of meaning --

MR. MORRIS: But, truly, if you are going to

bring them up, Tom, as an objection to it, I think we should -- in order to get balance and understanding it so that we are not accused of not considering it important, that I personally want to hear -- if you are going to raise it, I want to hear what the NRC will respond to in regards to that.

MR. SMITHGALL: We will do it like the olympics, only give you three rounds.

MR. MORRIS: I do feel like it's necessary, but I do agree with you wholeheartedly that when everything is said and done on that, the object, until the core is removed, is to see how that can be done with the least amount of exposure to workers.

And we need to discuss that as well. So, maybe we will try to squeeze it all in and plan on doing that.

MR. BARRETT: What may be helpful to you is sort of a description of what is in that reactor building, show you some photographs of shielding and things like that, and what the task is, to try to sandwich that down into maybe a fifteen minute or so walk through quickly to understand that.

And I think GPU would be best geared to do that for you, to see what is in there, what the task really is, because it is a monumental task.

MR. MORRIS: Okay. Is there anything else that

we want to bring up for the good of the Panel tonight?

MR. MASNIK: I would request that the Minutes of the pre-meeting dinner be passed on to me so that I may distribute them.

MR. MORRIS: They should be in the Minutes of this meeting, because I went through my notes at the beginning of this as to what all we discussed. So, maybe -- I don't know if you were doing something else or not, but you might want to review the transcript, because I think that should be pretty complete on all the items we discussed.

If there was something that was missed, please bring it up now so we can get it on the record.

DR. WALD: I guess we did discuss a concern by some of the members of the Panel about the fact that a substantive action was taken at a meeting to which some of us did not receive notification of the meeting directly, nor did we know in advance what was to be discussed, nor was the full compliment of the membership present, and there was some concern expressed about the rapid action on the part of the Panel, which ordinarily -- which has not over the years taken specific action very often. In fact, I think we can remember three times altogether.

And I think I would express my feeling that it is unwise for us to take substantive, important action

without the members having an opportunity to know that an issue is coming up and, at least, to be present if they can, or express their opinions one way or another in order to have further discussions before such actions are taken.

I don't think we want to diminish what credibility this Panel has in taking seriously the mission of furthering the solution of the problems of the decontamination of TMI-2 and serving as an advisory panel on the subject to the NRC.

And I think the concern was discussed and some resolution brought forward in our further operations because of this issue. So, I think that deserves at least some comment in the Minutes.

I should add that I'm one of the members who was not aware directly of the meeting or of the subject and would have discussed in a negative way, and voted in the negative, on the action that was taken.

MR. MORRIS: Well, I'm glad you raised the question, because we did discuss that item. And I mentioned at the last meeting, for those that were present, that there was not a notice that went out. I think I was the one that raised that point. And I had picked it up through the weekly reports that go out that mentioned, Niel, that a meeting was coming up.

And I assumed that if people followed those

that they would have picked it up. But I understand why you may have missed it.

DR. WALD: If I don't get the travel voucher blank to pay for that airplane trip, I don't consider that a meeting is taking place.

MR. MORRIS: Okay. Well, we had quite a discussion on what the Panel can and can't do regarding action at a meeting. I think it was agreed that Niel would attempt to develop some guidelines around how we might structure agenda and the likes so that all members know what's coming up at the next meeting.

But we also made the point that Panel members have a responsibility if they are not going to be make it to a meeting to call the Chairman or the person scheduling the agenda, tell them they will not be there and ask them what may be coming up at the meeting. And, quite frankly, in the past that has not happened very often.

I hope we do not proceed in that fashion while I am the Chairman, because I think it's unfair to have a Panel member to presume anything different. I think they should contact the Chairman if they can't make it and find out what's on the agenda.

So, I think maybe there is a difference of opinion. But hopefully in the future we can work closer to understand fully what's on the agenda and try to avoid

any surprises, because I don't think we want that.

And it's better if we get everybody attending and discussing issues, knowing ahead of time what those issues will be. And we are going to work towards that. So, Niel, we are certainly going to hope you have something for us maybe by the next meeting that we can review and discuss.

DR. WALD: Barring my teaching conflicts, which I pointed out, I'm going to work on it.

MR. MORRIS: But that would come after the next meeting.

DR. WALD: I think so. I'm not quite certain, but I think so.

MR. MORRIS: Is there anything else that we missed? And I really do want to make sure we have a full accounting of that.

I went through, Mike, for your information the topics that we will be discussing with the NRC on the 3rd of February. I outlined what we expected those to be.

I mentioned the change in the date, the scheduling every month on the second Thursday of the month, changing of the time. I mentioned that we discussed the direction of the Panel, and that we thought maybe subcommittees were not necessary but that we wanted to be more aggressive.

And I think that unless there is something that somebody else wants to add, that pretty well summarizes what happened.

DR. ROBINSON: I just want to go on record that if I had been here at the last meeting, I would have voted negative towards that resolution that was passed. That was also discussed quite adequately earlier.

DR. COCHRAN: I would have cancelled one of the two. (Laughter.)

MR. MORRIS: Mr. Cochran would have cancelled it, so it would have been a -- it was five-one-one, apparently it would have been at least a five -- a six-three-one is what I'm hearing unless discussion would have happened, which Niel made the point that if we would have been able to use our persuasive powers maybe the vote --

DR. WALD: Two professors, you know. We can talk a lot.

MR. MORRIS: So, we understand what you are saying. Again, we can discuss this for hours, because I don't know if we have agreement that a topic can't suddenly come up that we might want to discuss. But that's been already discussed in the past.

Is there anything different that anybody wants to bring up? Public comment on anything that took place tonight? I do see somebody from the public there. Was

there something you would like to address to us this evening?

AUDIENCE: Yes. I'm concerned that in addition to the information that the Panel would be receiving on the agenda and preparing for the agenda, that the public receive information. I'm concerned about the monitoring question coming up and the possible removal of the monitoring. Being part of the public that worked over the years to get adequate monitoring in place, certain monitoring programs and proposals, I think this is a major concern to the public.

And I know that many people don't come to these meetings. They find them highly technical, and I don't think the place nor the time is the problem. I think the format and the highly technical nature, and that they don't have any interchange is really the problem, why we don't have any more people here.

But I would hope there would be a lot of advance notice to the general public that this will be a topic at the next meeting and some information as to what will be discussed so that people will come. Because it is of great importance and a great concern to many of the public.

I also understand that the time is 6:30. And that is a problem to most people who work or prepare meals. Seven o'clock is even a problem with me. I prepare meals,

plus I work, so I rarely get here at 7. I usually get here between 7:30 and 8. And 6:30 is a serious problem.

MR. MORRIS: What am I going to do about that now?

Let's answer the first one first. What can we do about getting more publicity on this meeting, since it does involve two pretty major issues, one of which obviously is the monitoring. One of the reasons it was suggested we change was in deference to what you are saying, is that a different location may help with attendance. But obviously the major item would be to get good publicity on it.

Mike, is there anything you can offer on that?

MR. MASNIK: Whenever we have a meeting, there is a press release that is released, and it is published in the Federal Register, and Lake notices it in his -- (Laughter.) Surprisingly, I have gotten phone calls from people that have read it in the Federal Register.

MR. MORRIS: But the press release goes out, Mike, when?

MR. MASNIK: It has to be -- I time that at the same time that it goes into the Federal Register, which is approximately two weeks in advance, two weeks or greater.

MR. MORRIS: Who does it go to? Who does it go to, the press release, Mike?

MR. SNYDER: We have somewhere here from our Public Affairs.

MR. MORRIS: I'm trying to find out. There is a Harrisburg Patriot.

MR. NORRIS: We have a distribution list.

MR. MORRIS: Why don't you come up here?

MR. NORRIS: I'm Bryan Norris. I'm a Public Affairs Officer with the NRC in King of Prussia, Pennsylvania.

And, like Mike said, we put out a news release between two weeks and ten days before all meetings. And we have a distribution list in the Harrisburg area. I think it goes to something like fifty or so to the media, television, radio stations, daily newspapers.

MR. MORRIS: That's fifty or so in the Harrisburg area?

AUDIENCE: Maybe I wasn't clear on what I was saying. It's not the problem that the press release does not go out. The problem is there is not a full discussion of what's going to be presented.

If you are talking about EPA taking away the monitoring, there should be some discussion that the public understands the ramifications of what the material is that is being presented, so what our input can be --

MR. SMITHGALL: One of our discussions tonight at the pre-meeting here was to do exactly that, to be able

to get more information as to what our agenda will be. That's some of the complaints of the Panel members, as well as I hear from you.

AUDIENCE: I think that the press announcement or the press advising does go out. It's well done, but it just is absolute facts. There is nothing that goes to the public that gives any indication as to what will the approach be, how the public will be involved, and what some of the discussions or decisions may be.

MR. MORRIS: On this particular meeting, is it possible to have you put in something in detail in the release you send out on these particular topics?

I would think we should be able to work with your press on that to make sure it happens for this meeting, because it's very important it happens.

MR. MASNIK: The level of detail I get from Joel on the agenda will be reflected in the press release, so the more information I'm given as to what's going on, that's transmitted.

MR. MORRIS: The problem we have here is that if we want to meet every quarter, which we can do that, we could have a real good agenda for that quarterly meeting. We don't have -- Joel is involved with helping put together an agenda. He has other job responsibilities, trying to get hold of people -- we have to know if people

are going to be able to speak to an issue before we can put it on the agenda. We have problems in timing if we meet every month. And that may be something we will have to discuss at the next meeting.

I would like to see us meet often, but if it means we can't get an agenda together because that's too frequent, then we are going to have to give up a chance for a regular public comment so that we can have a good agenda published so the people will know what we are talking about. We are going to have to get a balance for that.

MR. GERUSKY: Mr. Chairman, I will commit to having an agenda done and down to NRC next week.

MR. MORRIS: Thank you.

MR. GERUSKY: And I think this meeting -- the purpose for this meeting is to get the public's input into the decision-making process, that EPA is going -- it's not only our input, but I want to make sure that the public has adequate input into that decision.

MR. MORRIS: And I think the reason you brought it up at the last meeting, to make sure the public had a full knowledge. We knew what the monitoring impact may have on this.

Yes, could you come up, please, and give your name?

MS. MITCHELL: My name is Susan Mitchell. And I just wanted to add a comment, that I think in addition to the press release which only goes to the news room and may never be announced, public service announcements at a few radio stations in the Harrisburg area, I think, would be very effective in communicating this meeting, because not everybody reads the paper. And the news on the radio and television may not pick up on it.

I also would like to state my preference for a 7 p.m. meeting time rather than 6:30, and my hopes that you continue to meet frequently and reserve time for public comment.

My thanks to Thomas Cochran for the work he has brought here and the information he has shared with us tonight.

MR. MORRIS: Thank you.

DR. COCHRAN: Well, let's make it 7 o'clock.

MR. MORRIS: It looks like we have two people that don't want to meet at 6:30.

MR. SMITHGALL: Three, Tom Cochran.

DR. COCHRAN: I don't care.

MR. MORRIS: What is it, do you want to go back to 7.

DR. COCHRAN: I will vote any way you don't vote. (Laughter.)

MR. MORRIS: Well, I'm for 7 o'clock, Tom.

DR. COCHRAN: It's 7. I don't care.

MS. MARSHALL: I would just like to add, it seems significant that the person who raised this question on the Advisory Panel about the desirability of not meeting at 6:30 but leaving it at 7 happened to be a woman, because we know how hectic it can be between getting home from work and getting a meal on the table.

MR. MORRIS: I appreciate that. The problem is that come 9 o'clock I see people leaving, and we have another hour to go. And I was trying to get an earlier ending and a little earlier beginning. But we will start -- we will continue from 7 to 10.

And when your friends start leaving at 9, please tell them that it could have been over by then.

But, in any event, we are back from 7 to 10. I don't know what to do about the public service announcements. I can't do that. I don't think Joel can. We spend a lot of time on the subject matter so we can meet on a regular basis. If the NRC can get public service announcements for us, fine.

MR. GERUSKY: We will try also.

MR. MORRIS: Fine. On this particular issue, you will attempt to do that. Can you do that, at your office at the TMI, can you not encourage public service

announcements? Can't you do that?

It seems to me they could do that very easily.

AUDIENCE: I think we would be hesitant to do that.

MR. MORRIS: Well, Tom, if you could --

MR. GERUSKY: I think we could.

MR. MORRIS: -- it would be appreciated. Any other matter that anybody wants to bring up at this meeting?

If not, we stand adjourned. Thank you.

(Whereupon, at 9:56 p.m. the meeting was adjourned, this same day.)

CERTIFICATE OF PROCEEDINGS

This is to certify that the attached proceedings before the Advisory Panel for the Decontamination of Three Mile Island, Unit Number 2

In the matter of: The Meeting of the Panel for the month of January

Date of Proceeding: January 12, 1984

Place of Proceeding: Holiday Inn, 23 South Second Street, Harrisburg, Pennsylvania

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

MYRTLE H. TRAYLOR
Official Reporter - Typed

Myrtle H. Traylor
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December 15, 1983

Mr. Arthur E. Morris, Chairman
The Advisory Panel for the
Decontamination of TMI Unit 2
Post Office Box 1559
120 North Duke Street
Lancaster, Pennsylvania 17603

Dear Mr. Morris:

During a meeting of the Advisory Panel on December 8, 1983, I was asked two questions to which I could not respond. This letter is to provide you with responses to the two questions:

Question #1 - What is the breakdown of the sources of funding for the $60.0MM budgeted by GPUN for 1984?

Response - The following list provides the various sources for for 1984:

Customer Revenues and GPU	$ 37.0MM
Commonwealth of Pennsylvania	$ 5.0MM
State of New Jersey	$ 2.0MM
Insurance Proceeds	$ 14.0MM
Anticipated Rebates from B&W	$ 2.0MM
TOTAL	$ 60.0MM

As I indicated at the meeting, in addition to the above $60.0MM funding, we anticipate that DOE and EPRI will contribute approximately $15.0MM. Therefore, the total budget for the project is estimated to be $75.0MM.

Question #2 - Will the customer bills increase or decrease with the restart of Unit 1?

Response - TMI Unit 1 will be put in the rate base when the unit is operated at 35% full power for at least 100 consecutive hours. Depending upon the load factor of the unit, it is anticipated that there will be a rate reduction to GPU customers of about $80.0MM of which about $65.0MM will be to Pennsylvania customers.

When TMI Unit 1 returns to the rate base, Metropolitan Edison Company and Pennsylvania Electric Company will collect about $15.0MM per year additional money for the cleanup of Unit 2.

The major economic benefit of TMI Unit 1 restart occurs over the long term period. It is estimated that the life time operation of TMI Unit 1 will save the GPU customers more than a billion dollars over alternate sources of energy.

I believe the above information provides satisfactory responses to the two questions which were asked during the meeting of December 8, 1983.

Yours truly,

B. K. Kanga

B. K. Kanga
Director, TMI-2

BKK:ms

cc: Advisory Panel Members
B. J. Snyder, NRC
L. H. Barrett, NRC

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GPU Nuclear

January 1984

BIOGRAPHY OF EDWIN E. KINTNER

Edwin E. Kintner was named executive vice president of GPU Nuclear Corporation in November 1983. He had served as vice president, administration, for GPU Nuclear since June 1983. Before joining GPU Nuclear, he was assistant to the vice president for advanced technologies, TITAN Systems, Inc., La Jolla, California.

Kintner was director of the U.S. Magnetic Fusion Program under the U.S. Department of Energy and the former U.S. Energy Research and Development Administration from 1977-82. He was deputy director of the program from 1976-77. During his tenure, the program gained worldwide recognition in fusion technology.

Kinter worked from 1966-76 for the former Atomic Energy Commission, serving as chief of fuel procurement, assistant director for reactor engineering and deputy director of reactor development.

Kintner served as project officer on the USS Nautilus, the first nuclear-powered ship, and held positions of increasing respsonsibility during a 21-year naval career and the development of the U.S. nuclear navy. He retired in 1963 from the Navy with the rank of captain and went on to serve as president and general manager of a Maine engineering and manufacturing company.

Kintner received a bachelor of science degree in 1942 from the U.S. Naval Academy and a master's degree in naval architecture and marine engineering in 1946 from Massachussetts Institute of Technology (MIT) and a master's degree in nuclear physics and engineering in 1950, also from MIT.

Kintner has received the Navy Commendation Medal and the MIT Distinguished Alumnus award. He has served with various international organizatons for the development of fusion power.

Kintner is married and has four children. He resides at Montville, New Jersey.

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GPU Nuclear

January 1984

BIOGRAPHY OF PHILIP R. CLARK SR.

Philip R. Clark Sr. was named president of GPU Nuclear Corporation in November 1983. GPU Nuclear operates the nuclear power stations at Three Mile Island and Oyster Creek, New Jersey.

He had served as GPU Nuclear executive vice president since January 1982 and as vice president for nuclear activities for the former GPU Nuclear Group from late 1979 to January 1982. GPU Nuclear Group was a corporate predecessor of GPU Nuclear Corporation.

Before retiring as a U.S. government employee in August 1979, Clark worked as associate director, reactors, Naval Reactor Division, U.S. Department of Energy, and as chief, Reactor Engineering Division, Nuclear Power Directorate, Naval Sea Systems Command, Department of the Navy. In these positions, Clark directed a major element of the U.S. Naval Nuclear Propulsion Program.

Clark received a bachelor's degree in civil engineering in 1951 from Polytechnic Institute of Brooklyn, where he did graduate study in 1951-53. He attended Oak Ridge School of Reactor Technology in 1953-54.

Clark received a Navy Distinguished Civilian Service Award in 1972 and the U.S. Energy Research and Development Administration Special Achievement Award in 1976.

Clark is married and has seven children. He resides at Mountain Lakes, New Jersey.

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GOVERNOR'S PRESS OFFICE
COMMONWEALTH OF PENNSYLVANIA
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Deputy Press Secretary
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HARRISBUPG (Jan. 12) -- Gov. Dick Thornburgh sent the following telegram to be delivered today in conjunction with a meeting of the Board of Directors of Edison Electric Institute (EEI) scheduled for Jan. 12 and 13 in Paradise Valley, Arizona (EEI is the trade association representing the the nation's investor-owned electric utility companies):

Mr. Charles J. Dougherty, Chairman
Edison Electric Institute
Red Lion La Posada Hotel
4949 East Lincoln Drive
Paradise Valley, Arizona 85253

Dear Mr. Dougherty:

More than two years ago, your board of directors joined me in recognizing that the radiation cleanup at Three Mile Island was a national problem and a national opportunity, that the safety of virtually all Americans was being enhanced by the lessons learned and yet to be learned there, and that the electric utility industry nationwide had a clear and obvious stake in demonstrating that it could responsibly react to the worst commercial nuclear accident in history. For these reasons, the EEI board committed to full industry participation in the national cost-sharing plan I had proposed for funding the TMI cleanup.

In view of the recent Internal Revenue Service finding that utility company contributions to the cleanup are tax deductible, in view of the industry's status as the only major partner in the cost-sharing plan who has yet to deliver even a portion of its share, in view of your own observation that some of EEI's members had been awaiting the now accomplished IRS finding on tax treatment before acting on this commitment, in view of the news that even EEI's Japanese counterparts now have decided to invest $18 million in the cleanup in consideration of the lessons to be learned from it, and in view of the recent NRC warning that cleanup delays will substantially increase the radiation threat to the health of clean-

up workers, I submit that the time clearly has come for EEI and the industry to make good on the commitment made to this effort in 1981.

I urge you to impress on your assembled members the importance of responsible, positive, tangible and timely action on EEI's longstanding cleanup funding commitment.

It is in their interest, the nation's interest, and the interest of those who live with the legacy of radiation that continues to haunt TMI.

Sincerely,

Dick Thornburgh
Governor
Commonwealth of Pennsylvania

(This telegram also was sent to EEI headquarters in Washington, D.C.)

# # #

Mr Roth , I hope that the Panel will consider the significance of this item and the fuel failures at Prairie Island to the cleanup and restart.

M. I. LEWIS
6504 BRADFORD TERR
PHILA., PA 19149

Letters to the Editor
Phila Inquirer
400 N. Broad St.
Phila PA 19106

Dear Sir:

A lot has happened to the commercial nuclear power industry last week:
cracks closed a New England plant ,
PA PUC disapproved a PECo 1.1 Billion dollar loan for Limerick 2,
Senator Spector wound up admitting that he didn't understand what TMI witnesses were talking about,
and a small item appeared in a little read NRC document (TMI/2 Weekly Status Report P2.)
Of all the above stories of great significance , this little read item may well have the greatest significance: "The cavity volume in the damaged core (of TMI#2) is 26 1/2% of the original volume." Finally there is an admission on the part of the NRC and the operators of how very much of the core really was damaged in the TMI/2 accident. It took 5 years to get this little glimmering of knowledge.
Now the significance of this 26 1/2% is staggering. Originally, the NRC and the operators of TMI/2 were announcing damage estimates of 2, 3, or 5%. Few industry or Government experts suggested that the damage would be more extensive. Much of the NRC evaluations and reports assumed that the damage would be minor. Few assumed that over a quarter of the core would be damaged. Almost nobody of any notoriety suggested that over a quarter of the core had been damamged during the accident.
Suddenly this very significant number , 26 1/2% , slips into a little read NRC document without any notice by the media or experts.
26 1/2% means we were over a quarter of the way to losing the whole core.
26 1/2% means that we have to clean up 10 or more times as much debris as originally assumed.
26 1/2% means that we were 26 1/2 % of the way to the accident described in the China Syndrome of "losing an area the size of Pennsylvania." (AEC Wash 1400)

Very truly yours,

Marvin Lewis

M. I. LEWIS
6504 BRADFORD TERR
PHILA., PA 19149

P.S.: Please feel free to edit , but try not to change basic points.

TMI-2 Weekly Status
12/4/83

Other decontamination activities in the auxiliary and fuel handling buildings consisted of some surface scabbling and preparation for remote cubicle flush decontamination. Tests to evaluate chemical foam decontamination systems are scheduled for next week. Generally, decontamination activities continue to occur at a reduced pace due to funding limitations.

WASTE MANAGEMENT ACTIVITIES:

During the week EPICOR demineralizers F-36, F-42, F-43, F-26, F-40, 2K-2, 2K-6, F-46, K-8 and 2K-9 were shipped from TMI to Hanford, Washington. GPUN had proposed to make a shipment of EPICOR II liners F-42, F-43, 2K-9 and K-9 as unshielded LSA on Thursday, December 8, 1983, however, NRC inspection of the shipment revealed that one liner, K-9, had contact radiation levels in excess of allowable transportation limits. GPUN removed the liner from the shipment and NRC will follow up with appropriate enforcement action.

SONIC CORE TOPOGRAPHICAL MODEL:

A computer generated map of the core void has been completed from sonic measurements which were obtained inside the reactor vessel in August and September 1983. A scale, plastic model of the damaged core was also constructed from the sonic data. Based on the sonic measurements, the cavity volume in the damaged area of the core is 330 cubic feet or 26½ percent of the original core volume. The irregular cavity bottom is generally 5 feet below the top of the core region, with the deepest point, a narrow channel, being 6½ feet deep. Laterally, the cavity extends to the core forming walls in several areas. (See Appendix 6)

Of the 177 fuel assemblies in the reactor, 42 assemblies around the core perimeter exhibit some continuous vertical development through the void region. The cross sections of 23 of these standing assemblies were less than 50% of the original, 19 assemblies appear to have retained more than 50% of their fuel pins, and 2 assemblies appear to be relatively intact. The sonic plot showed that fuel assembly segments, typically 2 to 10 inches long are routinely attached to the underside of the plenum. The top 2 to 4 feet of several assemblies on the west side of the core overhang the void. In several areas where the core forming wall was exposed, the sonic device mapped the 3/4 inch thick stainless steel plates which form the perimeter of the core. On the east side of the core, one area of the core forming wall appears to be bowed outward by 2½ inches.

The sonic topographical data is being evaluated and will be useful in planning for plenum and fuel removal. The data supplements the previously obtained closed circuit television tapes of the void and at the present stage of disassembly and defueling planning does not alter the existing concepts for future work.

PUBLIC MEETINGS:

Past Meetings:

1. On December 5, 1983, Lake Barrett and Richard Conte, TMI-1 Senior Resident Inspector, met with the Concerned Mothers of Middletown, Robert Pollard of the Union of Concerned Scientists, Ms. Wiggins of State Senator Shumaker's staff and a reporter from a local newspaper to discuss cleanup operations

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