ORIGINAL

UNITED STATES
NUCLEAR REGULATORY COMMISSION

In the Matter of:)
)
ADVISORY PANEL FOR THE)
DECONTAMINATION OF THREE MILE)
ISLAND UNIT 2)
)
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Pages: 1 through 79

Place: Harrisburg, Pennsylvania

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Thursday,
April 13, 1989

Holiday Inn
23 South Second Street
Ballroom C
Harrisburg, PA

The above-entitled matter came on for hearing, pursuant to notice, at 7:13 p.m.

APPEARANCES:

JOEL ROTH

ARTHUR MORRIS

THOMAS GERUSKY

GORDON ROBINSON

NIEL WALD

FREDRICK RICE

KENNETH MILLER

ANN TRUNK

APPEARANCES: (Continued)

JOHN LUETZELSCHWAB

ELIZABETH MARSHALL

MICHAEL MASNIK

MIKE ROACHE

DEBORAH BAKER'

P R O C E E D I N G S

MR. MORRIS: Good evening, I would like to welcome everybody to this panel meeting. Tom Smithgall had contacted my office and said that he could not be here this evening. The only other remarks that I have is to mention that I received two letters in the mail. One -- well actually both were from GPU. The one was in regard to the questions related to the funding that were raised at the last meeting.

The second letter I received was in regard to several questions that were raised at the last meeting, and I would just mention the nature of those questions. One was regarding the use of the SDS to treat water that would go to the evaporated. A question was asked whether that was originally proposed, that the water would go through SDS before it be evaporated.

The answer from GPU was that -- and I am summarizing here, was that that commitment was never made. There were two other questions concerning water evaporation. It requested a range of concentrations of isotopes in implications of detergent in the process water storage tank.

They have responded to those questions, and if anybody from the public wants to see the responses, you can see this letter on the break that we have. I would be happy to share it with you. There was a concern raised to the

advisory panel also as to whether GPU Nuclear could make money from royalties on the evaporator.

The simple answer is, and I'm going to summarize here, was no, they could not do that. Depending upon how it was used, however, by a third party, it is possible that they could reduce the cost, but they would never be able to reduce the cost since it didn't cost them anything.

So they said that an individual also raised the concern as to increased number of skin contaminations reported in August 1988. They go on to explain that. They answer a question regarding a concern that was raised concerning free inattentive duty cases that were noted in NRC inspection report 88-12, dated September 6th, 1988.

Again, they go on to explain that, and with regard to a question concerning krypton gas, krypton 85 has been released from the reactor vessel. Whenever plasma or cuts are made with core debris in the proximity of the torch, they go on to explain in more detail on that as well.

They respond also to a question raised -- or a concern raised by an individual concerning the cavity beneath the reactor vessel, and the conditions within this cavity. What I'm going to do is give a copy of this to the person that is transcribing the meeting so that they can be added to the minutes, and again, just to repeat, if anybody from the public would like to see these responses at the

break, please come forward and I will be happy to share the letter with you.

With that as background, I would like to first and very quickly go to Mick Masnik, who has asked for a few minutes to make a comment at this point, and then we go to the NRC update on the PDMS. Mike?

MR. MASNIK: I am Mike Masnik. Mr. Chairman, members of the panel, I would like to give you a quick update on the disposal activities associated with the process accident water. As you are aware on February 2nd, the licencing board issued an initial decision authorizing an operating licence amendment, deleting the prohibition for the disposal of the accident generated water.

The joint intervenors filed on February 20th, 1989, an application for a stay before the Atomic Safety and Licencing Appeals Board. The stay, if granted by the Appeals Board would have prohibited disposal of the water during the appeals procedure.

The Atomic Safety and Licencing Appeals Board ruled on April 4th that a stay was not warranted, and that the intervenors had not demonstrated irreparable injury for a virtual certainty, that the licencing board's initial decision would be reversed.

The joint intervenors filed on April 6, their appeal. The staff has until the end of May to respond to

this motion for appeal, and then the appeals board will determine if an appeal is appropriate.

As a number of you have probably already heard, today the Nuclear Regulatory Commission ruled in an affirmation vote that the Licencing Board's decision should become immediately effective. Essentially they have agreed with the Licencing Board, and now the staff can issue an amendment authorizing disposal of the water.

The Commission's vote today has no bearing on the appeals procedure, which will progress on its own merits. As we discussed at the last meeting, there is still a number of remaining actions on the part of the NRC before the licensee can go forward and evaporate the water.

The most important is a safety evaluation associated with the licencing amendment to determine whether or not the evaporator can operate within the limits specified by the environmental impact statement, and as further defined by the licencing board.

If that is accomplished, then the licencing amendment -- or the amendment to the license will be issued, and the last remaining hurdle would be the approval and review of the procedures associated with the operation of the evaporator. These are the detailed procedures. We are required by the technical specifications to review these procedures. Are there any questions?

MR. ROTH: Mike, what was the vote -- numerically, do you know?

MR. MASNIK: My understanding is that it was four to nothing.

MR. ROTH: Who wasn't there?

MR. MASNIK: I do not know.

MS. MARSHALL: Mike, what is the time frame for all of this that has to be done before it is evaporated?

MR. MASNIK: Right now we are awaiting responses to some questions that we have put forth to the utility on the specifics of the evaporator. Once the staff receives those responses, it can continue its review.

It may result in an issuance of the amendment within a matter of weeks, or if we have some additional questions or find that the responses are inadequate in certain areas, it may generate some additional questions which may result in another round of questions and answers.

We expect that if the answers are satisfactory, we could conceivably issue the amendment within about a month, and then we would have to wait the detailed procedures of operation before we could review those.

It would essentially be up the licensee to move at that point. I suspect that in all likelihood, would not be until the summer time before it actually begins operations. Any other questions?

MR. MORRIS: No, thank you. Mike, if you would now, I think you have an update on the PDMS, environmental evaluation.

MR. MASNIK: Yes. I would like to present a short update or status on supplement three to the PEIS, dealing with post defueling monitored storage. Last week I was out at Richland, Washington, and I met for three days with our contractor, Ms. Becky Hardy. She appeared before the panel at least two occasions.

She had sent me two weeks earlier a draft of the final supplement. The draft was reasonably complete. However, the comparison of the alternatives had not been completed. The numerical analysis for the worker and offsite exposure had not been done.

The descriptive portions, however, of the statement, were fairly complete. The reason for that was basically more a scheduler that anything else. There was a problem lining up the necessary computer time and experts to do the calculations.

I did get to review the responses to the comments, and section three, which was a description of the alternatives considered. As you remember, there was considerable discussion on the staff's choices of alternatives in draft supplement three.

I thought it might be helpful tonight to go over

this suite of alternatives that we are considering for the final impact statement.

As you remember in draft supplement three, we only considered the licensee proposal, which was called "delayed cleanup", and the staff identified alternative called, "immediate cleanup".

You can see on this overhead that I have indicated two of them that was quantitatively evaluated. We also evaluated five other alternatives to the immediate cleanup and delayed cleanup.

These were, immediate cleanup with a reduced level of effort; additional cleanup prior to PDMS; and, delayed cleanup with storage less that 20 years; delayed storage longer than 20 years; and, no further clean up following defueling, or the no action alternatives.

These five additional alternatives were really not evaluated quantitatively, but were determined to either fall within the bounds of delayed or immediate cleanup options, or to be not applicable -- or, I'm sorry, not acceptable.

Now after reviewing the comments from the licensee, from the advisory panel, and other federal and state agencies as well as members of the public, we concluded that our list of alternatives should be expanded and be more realistic.

As a result, we have identified six alternatives

to the licensee's proposal, which is now termed delayed decommissioning instead of delayed cleanup. Can I have the next slide?

Number one would be the licensee's proposal which was delayed decommissioning, and we had six alternatives that we have identified. Basically they follow fairly closely to the original additional -- the six alternatives that we had considered in the draft, however, there are some changes.

Delayed cleanup is essentially the same as what was considered delayed cleanup in the draft. Immediate cleanup was also the same. Immediate cleanup with reduced effort is basically the same. Immediate decommissioning -- this is a new alternative, and that has basically is placing the unit in a decommissioned status on completion of defueling, or within roughly one year of that time frame.

Incomplete defueling was one that we had looked at. We assume that approximately 15 percent of the fuel would remain in the reactor building. This was more or less a bounding analysis and we thought a reasonable alternative.

The last one is not further cleanup following defueling, and this is the no action alternative. Basically this is where they complete defueling and do nothing more. The only one that is not considered now and that was considered before was additional cleanup prior to PDMS. Are

there any questions up to this point?

MR. GERUSKY: Yes, why didn't you consider it? I am confused as to why you made the changes?

MR. MASNIK: Starting from the top, I think the first one, the delayed decommissioning was clearly more like the licensee's proposal as they envision it. We felt that it was necessary to consider that as the licensee's proposal.

As far as the additional cleanup prior to PDMS, we felt that the analysis would be bounding for that particular alternative. Therefore, we didn't consider it any further.

MR. MORRIS: Can you define what you mean by that? What do you mean that the analysis would be bounding?

MR. MASNIK: Essentially we looked at all of the alternatives, and we looked at a number of subsets to all of these, and we determine whether or not any of the particular alternatives fell outside of a natural grouping of those alternatives. If they did, then they became one of the alternatives that was included in the analysis.

For example, we looked at a number of periods of time for the delayed decommissioning. We looked at less than 17 years, up to a total of 33 years. So within number one there is a subset of four or five other alternatives.

MR. MORRIS: You may have by doing that have left out the most practical solution. I mean if it is practical

to further remove some of the radioactivity from the reactor, and then go into PDMS.

MR. MASNIK: Well, you are correct, except that the immediate cleanup with reduced effort would essentially bound that particular analysis. In other words, it would include that particular alternative.

MR. MORRIS: Well as long as you haven't put enough cleanup in there as to render it a useless option, because it would almost impossible to do that, then you are right.

MR. MASNIK: That is correct.

MR. MORRIS: Okay. As long as it is a practical option is what I'm saying, then I would agree with you.

MR. MORRIS: Mike, if you could explain -- I am looking for the option which was -- okay -- the 15 percent -- leaving 15 percent of the fuel. Which one is that, number six? Oh, incomplete defueling.

MR. MASNIK: Incomplete defueling. Essentially we assume that for technical reasons, they were unable to remove some portion of the fuel. At the present time they are estimating removal of greater than 99 percent of the fuel, but it is quite likely, although, at the present time we don't think this is the case, that something greater than one percent of the fuel might be left.

We looked at the environmental impact associated

with leaving more than one percent of the fuel. If, for example, they can only remove 97 percent of the fuel, then there may be an incremental impact associated with that, and we want to make sure we evaluate that at this time.

MR. MORRIS: But you are really not looking at three percent, you are looking at 15 percent?

MR. MASNIK: That's right. That was an upper limit. That's correct. That is basically, I believe, there are about 75 percent at the present time, so that would be an additional ten percent removing.

MR. MORRIS: If you recall our whole discussion at the last meeting on funding, and whether they might get to a point where they don't have enough money to remove the remaining "X", whether it's 15 percent, or whatever, what might happen. So I hope this is not a foreshadowing.

MR. MASNIK: No, certainly not. I don't think this allows them to feel comfortable with leaving more than one percent of the fuel. I think as part of the need for review, we are required to look at all reasonable alternatives, and this is an alternative. Whether we find it a good alternative or a bad alternative, is not so much as important as whether or not it's a viable alternative, and it clearly is.

MR. GERUSKY: Mike, could you explain what you mean by immediate decommissioning. I am confused as to how

you can decommission in a year.

MR. MASNIK: Well under our present -- well the immediate decommissioning is just that. They come in and request -- they notify us that they have permanently ceased operations, and they go forward with compliance with the decommissioning rule.

They would then select one of the decommissioning options, and either begin to dismantle the plant, or put the plant in long term storage -- the safe store concept of decommissioning.

MR. MORRIS: I still have problems with the 15 percent. I just for the record think that all you will do with that, is if you find it to be an appropriate thing to do is give the licensee cause to consider that as an option. At this point they have made a commitment that they are going to go way beyond that.

NRC's position has been all along that you get all the fuel off the island. So I don't know why you are looking at an option that nobody else is even considering, and I think the general public would not be supportive of. I think we are kind of asking for a problem here. It is just an observation.

MR. MASNIK: I understand. As I have mentioned, it is not that we subscribe to that option, or that we are looking in that direction. It is what I would consider a

viable option, and that is what is required underneath them.

MR. MORRIS: I don't see why it's a viable option, given the position of the operator and the adversee.

MR. MASNIK: Well for example, if there is no physical way that they can remove the last two or three percent of the fuel, because it is actually fused to the bottom of the reactor vessel, and you would require removal of a portion of the reactor vessel. The worker exposure associated with that may not be in the best interest of the public.

MR. MORRIS: I just --

MR. MASNIK: That is certainly the possibility. Again, no one is stating that is a fact, but I think underneath, we are required to look at alternatives.

MR. MORRIS: It is an interesting alternative. I guess we wait and see what kind of assumptions you make regarding the leaving it in, why it is going to be that difficult to remove. How are you going to assume what kind of radiation exposure to workers would take place should they remove it versus leaving it in. You will be looking at both of those? The option of removing versus leaving it there?

MR. MASNIK: Yes. Well -- I mean I can't postulate what the problems would be in removing at this point. I don't know really what the percentage is. I am

just assuming that 15 percent is left there. Again, that kind of a question would be addressed at that time, if there is ever a time, that the licensee would request more than one percent left. Any other questions?

(No response.)

MR. MASNIK: As I mentioned earlier, we have not completed our evaluation of these alternatives. We expect to have a final draft by the middle of May, and publish the final version some time in June of this year. That is all I have.

MR. ROTH: Mike?

MR. MASNIK: Yes?

MR. ROTH: Just for the record so to speak, is define final version of the draft, what briefly would that include?

MR. MASNIK: I don't -- well I have a final draft. I said a final draft and the final version.

MR. ROTH: Right.

MR. MASNIK: The final draft is a draft of the final statement given to me to review. The final version is the final environmental impact statement dealing with post defueling monitored storage.

MR. ROTH: When the --

MR. MASNIK: It would be the equivalent to the final statement issued on the water.

MR. ROTH: Okay, would that be the NRC staff's evaluation plus any determination on your part which method you are recommending?

MR. MASNIK: It would embody the commissions -- well the staff's environmental evaluation of the proposal. We may or may not make a recommendation.

MR. ROTH: All right, in the case that you don't make a recommendation, what would the next step be?

MR. MASNIK: Well I think we will either find that the various alternatives or some of the alternatives were environmentally acceptable, or were not.

MR. ROTH: Yes.

MR. MASNIK: That is basically what we will find.

MR. ROTH: I guess I am just trying --

MR. MASNIK: And then as in the water, there is also a safety evaluation that is associated with this. So the environmental evaluation, again, kind of defines the envelope, and then there is a safety evaluation which has begun that will look at the plant system by system, very similar to the way that we are looking at the evaporator system by system.

MR. ROTH: Okay. That is what I am trying to do is just get an overall picture of this, bouncing it off the fact that the panel had an eight to two vote on no compelling reason, you know, at this time, than adding

John's vote, which would have been nine to two as he had said.

I am just trying to get a picture then of where the utility comes forth and proves what it wants to do. I am just trying to bring it back to what the panel itself has done, to see if the panel's voice has ever really been heard down there. Do you follow where I am at?

MR. MASNIK: Well I guess I do, Joel, and I would say that certainly in the statement we do take the panel's comments very seriously, and we have addressed the comment of compelling reason. I think in great detail in this final version. We talked very much about the worker exposure issue which was not covered in any great depth in the draft.

MR. ROTH: Okay. Thank you.

MR. MORRIS: Thank you Mr. Masnik. The next item is the status of the cleanup activities by GPU staff. I would like to thank your, Mr. Roache, for providing the information on the costs of cleanup -- funding for cleanup.

MR. ROACHE: Good evening. I am Mike Roache, Director of TMI-2 . First, I will give you a status of where we are on the defueling and the cleanup. We will have transparencies. Each person on the panel will nave a copy, I think, of the transparencies.

At the outset, I would like to say that we have achieved another milestone in the cleanup. It went by

fairly quietly, but you have heard us in a number of meetings and the company has described the plasma arc torch. Sometimes you have heard to as the Swiss watch that we try to use in the reactor vessel to cut up the internals.

Two days ago we have finished the work with the plasma arc torch. I think we are going to bronze the torch and dedicate it to the Smithsonian Museum. The torch was initially -- the initial plan was to use the torch for a short period of time to cut a small hole in the center of the lower core support assembly.

We ended up cutting a seven foot hole through the five horizontal plates. So we finished that work, and then we were also going to cut the baffle plates. They are the plates -- the vertical plates that surrounded the original core.

Just yesterday we finished that cut -- those cuts, eight vertical cuts. Let me quickly go through the defueling status. As we said today, we have about 229 thousand pounds of fuel material to remove from the vessel and outside the vessel. That translates to approximately 77 percent of the original number of 297,000 pounds.

We have shipped 211,000 pounds, that is approximately 71 percent. As I have mentioned, we have cut the five lower core support assembly plates. The fifth plate, which is the elliptical plate is in pieces at the

bottom of the vessel.

By so cutting these plates, we have achieved the necessary acces' tc the bottom of the vessel. The last one we have finished -- we haven't finished it yet, but we are today, we have finished the baffle plate cuts in the core region.

The next diagram in your package shows a three D -- three dimensional depiction of those plates. Starting at the top, the lower grid plate. Then we had the flow distributor plate, the large thick forging. Below the forging we had a small plate, the incore guide support plate, and then finally the elliptical plate, which you can see that plate has the incore guide tubes which comes through it.

What we have done in that plate, unlike the other plates -- the other four plates above, we cut this plate into 26 sections, and we have some of those sections actually have those incore guide tubes still attached to them.

The next diagram is a view of -- a three dimensional view. If you look at the overhead, you get a little bit better sense of it from the color. That is looking down on the -- as if you were on the defueling platform. The green area in the center is the bottom head with -- that we would except to achieve the final removal of

all the material in there.

There are penetrations, 33 penetrations. You can see them in a kind of a spiral pattern coming from the center. Those are the incore instrument penetrations. You can see the step like pattern around the perimeter. Those are the baffle plates I'was talking about.

Each of the five plates -- the highest plate of the five is cut back the furthest As we went down, we had to have like a -- the next plate each got closer to the center, so that we could do the cutting. The yellow plate, I believe, is the elliptical flow distributor plate.

The next diagram in your package shows an acute angle view, and you can again see the step like structure of the baffle plates. The cutting that we've done on those baffle plates, we made eight vertical cuts from top to bottom.

We did that in four rounds of 40 inches a piece, making those cuts -- we are currently cleaning those cuts. Some of the cuts in the bottom of the baffle plate, we were cutting with fuel material behind the plates.

When we cut that material, we were heating up the material that was behind the plates, and some of that material flowed back into the cut. We are mechanically now driving a chisel like tool down through those cuts to make sure they are all free.

The next series

MR. ROACHE (Continuing): The next series is the defueling characteristics.

We do have a layer of hard materials. We talked about it, I talked about it in the last meeting. We estimate it to be approximately 15,000 pounds. It is the material that flowed down on the Eastern side of the vessel behind the baffle plates, flowed across the bottom of the reactor head. That material flowed as a liquid, then solidified, cooled and solidified on the bottom.

Later this evening we are going to show you a couple of tapes, videotapes of that material.

Earlier last week we removed one of the plate sections from the center of the core. That plate section had three incore guide tubes that were immersed, if you will, in that molten material when it flowed down from the Eastern side.

You will see a videotape which will show that two of the three incore guide tubes, and these tubes are approximately four inches in diameter, a portion of the tube is a 3/16-inch thick stainless steel wall. Here you can see on the overhead, the lower portion of that tube is a very thin wall tube. That is approximately six inches. Then there is another six-inch section where there is a tapered wall and then there is a fairly solid, with I think it is a 3/8-inch diameter hole in the center, 4-inch, roughly 4-inch

diameter stainless steel tube.

Two of the tubes have broken off of that center plate which had three tubes on it. The location grid is pointing out the location of where that break occurred.

The solid, kind of solid line that is below that break line, that is the elevation of the hard material, the resolidified material which flowed down around those in-cores.

We still have 51,000 pounds of material to remove from the lower head. And there is several thousand pounds of debris remaining between the lower core assembly plates.

This is the material, if you look at the next diagram in your package, or the overhead, there is approximately 6,000 pounds of material which we believe is located between the plates in the periphery, goes all the way around the vessel.

That material is a mixture of very hard material and some soft material. A portion of that material is the material that flowed down from the core from above.

The next diagram in your package shows essentially the configuration of the vessel as we have it today. You can see that five plates are removed from the vessel.

There are the 26 plate segments which are still in place. Some of them have fallen down to the debris bed below. Others are actually still in place.

The incore guide tubes of course are still, those that are associated with those plates are still there.

This gives you, this diagram gives you kind of a rundown of the amount of material in the various places. You can see approximately 9,000 pounds that are behind those baffle plates. They are sitting along those horizontal members that go all the way around the baffle plates, approximately 6,000 pounds in the periphery between the plates.

And then there is in the neighborhood of 27,000 pounds in a donut-like pattern that goes below the vestiges of the plates that we have cut all the way around the vessel. In the neighborhood of 9,000 pounds of soft material that is sitting on top of the hard material. And then the 15,000 pounds of hard material. This is what we have to take out.

The next diagram is the one we referred to earlier, the incore guide tube.

That brings me to where we stand relative to fuel shipping. We did make a 3-cask shipment to Idaho of February 19. We intend that we would have another shipment ready to go sometime in June. And 211,000 pounds or 71 percent of the material has been shipped.

Decontamination. In the last meeting I described the change that we did to try to focus our attention to

defueling. That essentially has removed the decontamination work from being done in parallel with the refueling. So what we have been doing in decontamination mainly is to support the defueling work.

We have very recently completed a major cleanup of the defueling platform area. We have completed draining the secondary side of the steam generators. The primary side will be drained with the reactor vessel after defueling.

We have started draining systems in the auxiliary building which are no longer needed. And we have completed draining three systems in the reactor building which are no longer needed.

That is my thumbnail sketch of the status of the cleanup.

I would like to now show you two videotapes. The first one will be some very short shots or short vignettes of the work that we have done between October and March. And Greg will run the tape, and when I raise my hand he will stop it and I will try to describe these various activities that we have done.

There is a monitor behind the panel for the public and there are two monitors on either side.

The forging was that large, 13-inch thick stainless plate. We cut it into four sections. Here we can see one section, one of the four pieces coming out of the

slot in the work platform.

We have a spray. There is a spray that we are training on the plate to rinse off the plate. Each of these sections weigh approximately 2,000 to 3,000 pounds.

That is the surface, the upper surface that we are looking at right there. We lift the plate up out of the vessel. Some of the plates we brought over to an area in the building and then we counted them for radiological conditions.

Before we removed each plate, we brushed the surface. You see a brush attached to a hydraulic motor. To remove the plates we have to rig the plate out. And of course we have no way to have a person go down and thread rigging through the forging piece.

So one of the most creative ideas that we have had in the recent past has been an industrial balloon was attached to an airline. We are looking at a balloon being fed down through the forging hole. Once it is through the hole them we inflate it and there you can see it coming up through another hold.

That brings us a light line which we then feed a heavy line down through the hole so that we can pull the plate out.

There you can see the bottom of the plate. The bottom of the plate was unbrushed. You can just take a look

at that to see. For us the question was, has there been any attack of the bottom of these plates or of the plates by the molten material which flowed down in some cases through them. And by looking, examining the bottom, we found no evidence of attack of the metal of the plate sections.

This is that one plate segment being placed in a canister, a rack, in the core flood tank. We have a rack in there that all of the plate segments have been stored in that rack in the core flood tank.

The next plate down is the incore guide tube support plate. That is that strange acronym there. The first thing we did before we cut this plate was that we put in a large saw and we sawed, if you look over at the overhead Greg, we sawed off the top of the incore tubes above that plate, sawed through a weld.

The plate had a nut on the top of the tube with two welded tabs on the tube itself. We sawed through the two welds and sawed the tube off. That was so that we would not have to cut around on the plate, around the tubes.

And this sequence is showing one of our saws. It is a hydraulic saw, cutting through one of those tubes. And this of course is under 35 or 40 feet of water.

You will see the blade stop in a minute when we have gone all the way through.

This was one of our other creative ideas. This,

by doing this sawing, we saved in the neighborhood of 100 cuts which the rate that we use typically for these kinds of cuts is three cuts per day. So we saved a tremendous amount of cutting of these plates by a use of a hydraulic saw.

This is the torch working. We are looking through a welder's shield. The torch is now, we are now using the torch to cut that next plate. This plate was a two-inch thick stainless steel plate.

Here you can see, in the center of the screen towards the bottom, you can see what looks like a tube, and around the tube are four small holes. Those are flow holes around the incore guide support, incore guide tube, and had we not been able to saw off the tab elds and take the nuts off we would have had to cut around those four holes.

You can see another balloon coming up through for the rigging of this plate.

Again, we brush the surface, the top surface of the plate. You can see the edge, see how ragged the edges are. That is, the torch is essentially blowing away the metal.

Here you can see that plate coming out of the T-slot on the work platform. You can just make it out towards the left portion of the screen.

That is a view of it in air. There you can see the ragged edges of the cut there to the right, on the right

hand side of the screen.

Here we are bringing the plate up. As I mentioned before, we bring the plate up, we move it to a line. You can see what appears to be a rope there. That line is an orientation line. It orients the plate and then we have a counter that we use to count the plates for if there are any fuel remnants on the plate.

During this period, we performed a number of activities outside the reactor vessel. I mentioned in the last meeting that we had a line, the KE drop line, which had a fair amount of fuel in it. We used an nuclear grade roto-rooter to go down through that line.

We first cut a hole in the top of one of our large pipes leading to the steam generator, fed our device, our roto-rooter-type device down through a funnel, leading into this 10-inch diameter line. Then we sent this flailing device down that line and broke up what was a hard layer of material in that line.

We then pulled that hard material up into the hot leg of the steam generator.

This, I mentioned in the last meeting that we had worked in the steam generator. We have sent electronic devices or radiation measurement devices down 61 of these tubes.

What we are looking at is what we call the tube

sheet. It is the steam generator's upper surface and we are looking at a device that is lining up on a particular hole and then we send a string of electronic and other types of measurement devices down the tube.

This work is all done outside the generator by a person behind a shielded area.

One of the uncertainties that I told you about in the last meeting was whether or not we could cut the baffle plates. This is a test cut we did earlier to determine whether we could cut with the torch through the baffle plates. That is the torch. You can see nitrogen gases coming from the torch. This is the actual cut of the torch. We started at the bottom of the baffle plate which is the worst place, and we cut up two 20-inch sections.

You will see molten material falling out of the cut to the left there. That is a mixture of molten stainless steel and fuel.

MR. MORRIS: Excuse me. While this is very interesting, I think, I am a little concerned about time. And I am just wondering, how much longer is the presentation at this point?

MR. ROACHE: Why don't we go to the next tape. I just want to show you this one --

MR. MORRIS: Fine. I just want to make sure there is a chance for public question at some point and some of

the other items.

MR. ROACHE: Four minutes on the next tape, which is of interest in the sense that it shows the two incore guide tubes that were in the molten material are now broken.

MR. MORRIS: Fine. Okay.

MR. ROACHE: What we are going to see is we have taken a plate and we have lifted it and we have turned it on its side. And the bottom of the plate has these three tubes, three incore guide tubes.

Greg, could you put that overhead on, the guide tubes?

This is the plate sections from the center of the vessel. Now, as we are looking at the bottom of this plate section, to the left is a long tube. In the center is a shorter tube. In the top is a shorter tube.

The hole in the center is one of the flow holes in that flow distributor plate.

That is a light that we have off to the right.

You can see, we are looking at the tube that is the full length tube now, and you can see what appear to be some type of heat marks or even a high water type mark on that tube.

Those two pieces of metal to the right and the left on the tube, they are supports that attach the tube to the plate.

Here is the bottom of one of the tubes that either was broken off or burnt off. You can see vaguely the 3/8-inch center portion, the circular portion in the center. You can see what appears to be a conchoidal-like fracture of that stainless steel tube that looks as if it were some type of a fracture. That is one of the two shortened tubes.

This next tube is the other of the two shortened tubes and it has a slightly different appearance, almost looks like it was broken off.

Again, the 3/8-inch diameter hole in the center, with the broken material around the side.

This is the full-length tube. And if you look in the center of the tube on the bottom, you will see two pinholes in a minute. See the pinholes? Apparently there was some material which burned through those pinholes. Otherwise, the tube has some damage on the left-hand bottom portion of the tube.

Here we have a light that is going inside the tube. You can see some material, some remnants of material on the bottom of the tube. As the light goes further up in the tube you can see the taper. The taper from the thin material up to that 3/8-inch diameter hole.

This is a look at the bottom. This is the hard material on the bottom with a series, a number of fuel rods that are laying on that hard material. We have a light

there. What we are looking for is the poles from where the tubes came from.

If you look just to the right of the light wire, there is a coil, almost looks like a phone, a telephone wire that is coming out of the hard mass. That is the instrument line that was in the gobd tube.

We have extended it when we lifted the tube. That conjunction from that incore was up in the original core region. That was a good incore tube.

This is another side view of that plate. There is the tops of those incore guide tubes and then the bottom.

That is the end of the tape. I had another section there showing the baffle plate cuts. But it is essentially the same is that test cut. We were very successful in cutting the baffles.

Any questions on where we stand on the cleanup?

MR. MORRIS: Neil, then Tom.

MR. WALD: Could you give us some idea how thick that hard layer, that 15,000 pound layer is at the bottom?

MR. ROACHE: We did topography measurements. In the center of the vessel it is approximately 18 inches thick.

If you look in your package, there is the one diagram that shows that hard material. Take a look at that, right in the center of that, and that material is

approximately 18 inches thick.

Off to the right side you see it tails off to only a few inches thick. Sorry, to the left side it tails off to a few inches. To the right side it is, at the edge it appears very thick. It almost appeared like a wall.

One activity that we did do recently was we did a test to see whether we could break that material up. We put a tool, after we did this topography, and the topography essentially has, that hard material has a fairly flat surface, and the thickness then varies because the bottom head has that type of circular attitude.

We took a tool, 900-pound tool, put a 350-pound slide hammer on it.

The tool had a chisel on the end. We put initially the tool in the center of the pile, right in the center of the diagram, and with repeated blows, dropping our 350-pound slide from 20 feet, we were able to penetrate that material only about four inches.

We stopped the work. We did not try to get all the way to the bottom.

We then went out on the edge and we started in about approximately ten inches of material, shown on the right-hand side of your, where there is that more like a wall, and we were able, by raising our slide to about seven feet and dropping it four or five times, we were able to

penetrate the 12 inches of material and get to the head.

We did the first, on the Northwest side we did the first hole.

We moved to the very next hole, which would be only six or eight inches away. And when we started there was material there, but when we got there to do the second hole, we think what we did was lock off a section of that hard mass.

We went to the third hole and there was ten inches there. We went with again repeated blows. At seven feet we were able to get to the head.

We then went to the Southeast and we repeated the work and were able in two holes to get from about six inches to the head.

That gave us encouragement that we will by simple means be able to break up the hard material.

The fact that we were not able to penetrate the material in the center, you could conclude either it is different material than it is on the periphery or, alternatively, it is as if you were breaking up a sidewalk, a concrete sidewalk, it is much easier to start at the edge and break off the material and work your way into the center.

There is still concern about, as I mentioned in the last meeting, the potential for metallic material to be

embedded in or below that hard layer, and only our work after we go on, and I will give you a sense of our next steps in the future, in not this segment, but the next one, but our future work will tell us exactly what is in that material.

MR. GERUSKY: 'What kind of airborne radioactivity levels if any did you have when you lifted the plates out of the vessel?

MR. ROACHE: We did not have any substantial airborne problems at all. We had brushed the top of the plate. We had then use that wash, that high pressure wash when bringing the plate up. And we made measurements of the plate as they were being held on that counting line. We had values in the neighborhood of 250 millirem per hour. And I think the highest, we did have a hot spot of 1-r per hour on contact. But we didn't have any airborne problems.

MR. LUETZELSCHWAB: How much of the fuel in there do you expect to take out eventually? Do you expect to get all of that out of there?

MR. ROACHE: Our intent is to -- as Mike Masnik was talking about before, our goal is to remove greater than 99 percent of the material.

At this point, with the exception of the uncertainty of the hard material on the bottom, and we know we have some of the hard material behind the baffles, we are

confident that we will be able to get the material out.

Among the most challenging will be the material between the plates. That is the 6,000 pounds of material. Some of it is soft and some is hard. We have a number of different mechanisms that we have tested that show promise to be able to clean that material out. But our intent is to get greater than 99 percent of the fuel.

MR. MORRIS: Any other questions?

(No response)

MR. MORRIS: Okay. Thank you.

MR. ROACHE: Okay. The next item was the present and future offsite radioactive monitoring programs.

I think you should all have a list of the transparencies that I will use on this.

MR. MORRIS: I would just ask that you be aware of the time on the presentation, if you could, please.

We are actually about 45 minutes behind schedule. That is why you feel me prodding a little bit.

MR. ROACHE: Quickly, there's four main points that I wanted to cover.

The first is that there is, in the radiological environmental monitoring program, we have plant monitors. The plant monitors measure in-plant radiation levels, measuring both liquid and gaseous effluent that comes from the plant.

These monitors are used to provide notification to plant operators of any changing radiological conditions.

Outside the plant we have a number of different means to collect information on environmental data, from environmental data.

The first is using dosimeters. These are thermal luminescent dosimeters, TLDs. We have 104 of these TLDs that are located around the plant, up to 21 miles around the plant.

These TLDs are read quarterly or more frequently if we have to. There is a map in your package, three maps in your package that show varying distances away from the plant and the locations of those monitors.

We have in addition to the TLDs, we have various sample collection programs that have aquatic, atmospheric and terrestrial samples being taken at various frequencies.

In 1987 we collected 1400 samples. We had performed 3600 analyses on the 1900 samples we collected in 1988.

Thirdly, we have real time monitors. These are gamma measuring devices that, you have heard the name Reuter Stokes, which is the brand name for the monitors that we have. There are 16 of these in an area that is approximately three miles from the plant. The readings are recorded electronically at GPU Nuclear, and brought to the

Lancaster County Courthouse. This diagram shows the location of the 16 monitors.

The real time monitors, there has been discussion about the monitors. In the last, I believe it was in September, I mentioned that the company had committed to maintain the monitors through the defueling and fuel shipping.

The company has, and I mentioned in the last meeting that the company has been involved in an evaluation of those monitors. We are taking into consideration the concerns registered by the panel and members of the public. Our intent is to modify the system and that the modifications to the system will involve the addition of some monitors that will have better capabilities in terms of transmission of information. And in the next meeting, the next panel meeting, I will provide more details about the upgrade to the system.

It is our intent, as I mentioned, to maintain the updated system at least through to the, I mentioned before, the defueling and the fuel shipping. And it is currently our intent to maintain the upgraded system through water evaporation and the initial stages of monitored storage.

MR. MORRIS: Any questions from the panel on that so far?

MR. LUETZELSCHWAB: Yes.

MR. MORRIS: John?

MR. LUETZELSCHWAB: The 16 Reuter Stokes monitors, why is there only one on the West side of the river? Everything else is either on the islands or on the North or East side.

MR. ROACHE: The distribution of the monitors was done in an attempt to cover a number of different factors.

Those that are on islands were intended, I believe, to cover the Western sectors.

The more proximate to the plant, the earlier the information would be to the system.

There were factors that were included in the evaluation that included the wind pattern. Typically there is for much of the year a general Westerly flow of air.

Also in consideration were population centers. Also the availability of placement in areas that we would not experience vandalism. It is very difficult to keep these devices. They are fairly large devices. It is difficult to keep them in operation all the time. So it is accessibility and to avoid vandalism.

MR. MORRIS: Any other panel member at this point?

(No response)

MR. MORRIS: Okay. What I would like to do if possible is, I know that Deborah Davenport ha asked for time on the agenda and I think she has specific interest in the

radiation monitoring question. And if we could at this point, maybe, Mike, we could ask you maybe to stay close, because she may have some questions of you I would assume.

You can either stay there if you want, maybe that might be helpful, and maybe Deborah could come forward. Is there another chair next to you or could we get one?

MS. Davenport. Yes.

MS. DAVENPORT: I am Deborah Davenport, Concerned Mothers and Women. And I am glad that GPU is going to maintain and I hope upgrade the Reuter Stokes system, but I wish that the system would be maintained through post defueling monitoring and storage, but I guess that subject is going to be covered in another meeting as to how much monitoring will be maintained at whatever stage, post defueling monitoring and storage or decommissioning delay takes place.

I am glad that this has happened, but I hope GPU will also be continuing to give access to Dauphin County Emergency Management and Lancaster County as they have done in the past. Will you be doing that?

MR. ROACHE: Yes, that is our intent.

MS. DAVENPORT: Also, regarding the windows on the west bank of the river. That is difficult. And I feel like just prevailing wind directions are not going not going to pick up what's going to the west bank of the river which has been a problem area. This is an area where there are farms, where there are people who have complained of health symptoms and they have had actual deaths and cancers because of the accident, as far as I am concerned. However, this is a step in the right direction to remedy some of that situation.

I know that in one monitoring study that has been

done, it was recommended that monitoring not just be placed according to prevailing wind directions, but also simply in concentric patterns around the plant so that angles or windows would not be left open should radiation pass through that particular area. And it doesn't matter what the prevailing wind direction would be, it depends on where the wind is blowing at the time that something might take place. So, I was wondering if there would be any possibility of augmenting the placement of the machines to the west. And then the second problem, the Reuter Stokes keeps going down on Shelly Island on the north and south. And I was wondering were you going to upgrade them because there are only three monitors to the west of the plant anyways, and they are usually down.

MR. MORRIS: Can you pick that up at this point? Are you able to hear?

THE REPORTER: Yes.

MS. DAVENPORT: I'm sorry.

MR. MORRIS: It's okay, Deborah. Maybe you could bring that mike a little closer. As I said, the upgrade, we'll talk about that at the next meeting. I am not prepared at this point to talk about any new locations. Relative to the Shelly Island, Shelly is an island that is to the west. We telemeter the data from Shelly to a telephone and then from the telephone, the data goes to our

computer. The telemetering system is not as reliable as the phones. And that is one of the problems that we have.

Traditionally, Shelly has had some power outages. There has been in the past another order cable, cable that runs to Shelly to supply electric power. And that cable has had more outages than would the typical cable. I believe, and I am not sure of the timing on it, but I believe there will be an overhead cable that will supply not just the Reuter Stokes and it is not intended, I don't think, for the Reuter Stokes, but will supply power Shelly in the future, which hopefully will help remedy the problem that we're having with -- some of the problems that we're have with Reuter Stokes there. That is one of the stations that we have the most trouble with. And it is mainly because of the telemeter.

MS. DAVENPORT: Would it be all right to ask a question on the PDMS plan now also?

MR. MORRIS: Sure.

MS. DAVENPORT: On that, I am wondering if monies will be set aside since this plan has been changed. It's not called PDMS anymore. It's called decommissioning or delayed decommissioning. Will funds still be required now to be set aside? I think they used to be required to be set aside right away if a plant was going to go into this status, so that they will be there to maintain.

MR. MASNIK: I think I can answer that. First of all, we are terming it delayed decommissioning. I don't believe that that is what the licensee is terming it.

Furthermore, under the new decommissioning rule, all utilities, including GPU and including -- well, for TMI II as well, are required to submit a decommissioning funding plan by July of next year. And that funding plan will address the issue of money being set aside to decommission the facility.

MS. DAVENPORT: Also, I am wondering with that, once, if you start to approve those plans when the plans come in, will monies be set aside then or would they only be required as the plant shuts down?

MR. MASNIK: No. The purpose of the plan is -- the purpose of the requirement for the utility to submit the plan is to provide assurance that monies would be available at the time of decommissioning. Basically, what it is, it's an escrow, it's a method by which the utility will escrow funds so that at the time that the plant is decommissioned, the money will be available.

MS. DAVENPORT: But they wouldn't apply to post defueling monitored storage, delayed commissioning, only at the final end when the decommissioning actions are taken?

MR. MASNIK: No. It is all utilities at the

present time. In other words, the rule says that starting now you have to set money aside.

MS. DAVENPORT: Could those funds, would any of those apply toward post defueling monitored storage or whatever?

MR. MASNIK: No. That money would be earmarked solely for decommissioning. They can't use it for any other source -- I mean they can't use it for any other means.

MS. DAVENPORT: I just have one more question. I know it is mainly tritium that is released. If the evaporator does go into use, are there going to be special plans for monitoring around the evaporator?

I know that when I was at the county commissioners' meeting, they did say something -- GPU did -- about putting in some monitoring. And I am wondering if that could be brought up here and if the monitoring is going to be adequate? I'm still hoping that that doesn't get approved. But it doesn't look like the U.S. Government or at least the NRC remembers that we have citizens here right now. It seems they are going ahead without waiting for a hearing to take place, first.

MR. MORRIS: The question is whether there is going to be additional monitors installed when the evaporation begins in order to track the krypton -- tritium. I'm sorry.

MS. DAVENPORT: Because it is a beta emitter and I don't think Reuter Stokes could pick it up and it might not pick up all gases.

MR. MORRIS: I haven't heard, other than the upgrading --

MR. ROACHE: There will be five monitors. The location I am not exactly sure of. There will be five of our air particulate monitors that would all have the stream that will be sampled for tritium. Those will be set up. I think there will be four that will be around the plant and one control. That may be what you had heard at one of the county commissioners' meetings. That is our intent: to specifically for the evaporation, during the evaporation process to have those five monitors.

MS. DAVENPORT: And then there was something where you were going to measure particles in some way?

MR. MORRIS: It is called a particulate monitor. And its typical configuration, we take a filter out. We are pumping air through a filter and we take the filter and count whatever the constituents on the filter. In this particular case, we're going to take a stream of the air that would be passing through and we will run it through a device which will collect the tritium and then we will count that. We will collect water and we will count it for tritium.

MS. DAVENPORT: If you have particulate wastes coming through on the filter other than beta particles --

MR. MORRIS: Deborah, we are having a real hard time hearing what you are saying on the record.

MS. DAVENPORT: Okay. If you have other wastes coming through on the filter other than tritium which will pass through the filter mostly, I guess, it picks up beta particles?

MR. ROACHE: It picks up tritium.

MS. DAVENPORT: Yes.

MR. ROACHE: But the filters themselves will take up any particulate material.

MS. DAVENPORT: Could, the next time, would it be possible for GPU to tell us, maybe, what plans -- could GPU maybe in the next meeting tell us what plans they are going to submit or show a little bit more in a diagram what the filtering for the monitoring of the evaporator?

MR. MORRIS: I would hope -- could you do that, Mike?

MR. ROACHE: Are you talking about the five filters --

MR. MORRIS: Yes.

MR. ROACHE: Okay. Maybe we could provide it to the panel in advance.

MR. MORRIS: That would be helpful if you could do

that. And also you did indicate that at the next meeting you would talk about the other additional monitoring that you are going to be installing.

MR. ROACHE: Yes.

MR. MORRIS: Thank you.

MS. DAVENPORT: Also, Debbie Baker has asked -- I have asked if she could have Tom Bailey's time, because he asked for five minutes and she would like to say something the panel. Would it be okay?

MR. MORRIS: Excuse me. There's no place on here for Mr. Bailey, but I will certainly be happy as part of the public comment to recognize her and have her come forward. Okay?

MS. DAVENPORT: Thank you.

MR. MORRIS: Thank you. Who else from the public would like time at this period to make comment?

MS. BAKER: I thank the panel for allowing me to come forward. My name is Deborah Baker and I wish to address my concerns to this panel to be conveyed to the NRC Commissioners.

What GPU is creating with this evaporation is a situation where the people of the Three Mile Island area are starting to question the sincerity and the integrity of our nuclear industry.

After years of study, pro-nuclear and

anti-nuclear, one thing is certain: There are too many gray areas where it concerns how much radiation is harmful to children and infants. The gray areas are involving the low levels, long term effects on children and infants. Based on the insufficient data, how can we even justify, based on what we have received since the accident, the intentional release of yet another dose of radiation to our area.

We are society divided between pro and anti-nuclear debates, each trying to discredit the other as opposed to forming a common goals: Finding the answers.

God knows we have had many opportunities to study the effects of radiation and we still do not have all the answers. My main concern is for my son born with a congenital abnormality. According to Dr. Hirsh of the oncology department of the Hirsh Medical Center, the Leukemia Society of America and the National Cancer Institute, children born with altered or unrepaired chromosomal damages are extremely susceptible to developing leukemia.

One thing that is a fact: radiation plays an important role in children developing leukemia. Our children are at double risks. I am not alone in my concerns. Parents with children who are born with congenital abnormalities live with this risk every day of their lives. To add the venting of radiation into our

atmosphere is to increase our children's susceptibility. If our children leukemia, will it be God's Will? Think about it.

I ask that you, the panel, support the appeal actions from our area groups. We are the concerned parents living in this area. Thank you for allowing me to address my concerns.

MR. MORRIS: Thank you. With that, we will take a 10-minute break and then reconvene.

(Whereupon, a brief recess was taken.)

MR. MORRIS: I would like to call the meeting back to order and ask GPU if they would come forward to present the TMI-2 cleanup schedule and funding.

MR. ROACHE: I am Mike Roache.

Before I begin, I was asked a question during the break that makes me think that what I said about the real time gamma monitoring system was not clear.

I wanted to be sure that everyone understood that the company is maintaining the current system through, until shipment, which would probably be into early 1990.

The company is aware of the concerns about the system beyond that point and are taking those concerns into consideration. And our review includes possible modification to the system. We expect to provide you a plan for that this Summer. The modifications that we talked about, Ms. Davenport was asking about the transmission, for example, from the island. That is the type of modification that we were looking at. In addition to that we are looking at adding some more stations for some period of time that would go into or through evaporation and into post-issuing monitored storage. I just wanted to make sure that that is clear.

Relative to the cleanup schedule and funding for that, I will just spend a minute or so reviewing the work that we have ahead of us, just kind of go down quickly. We

are currently, as I mentioned, cleaning up the baffle plate cut holes. We will begin shortly cutting support posts that will be in the periphery. These are existing support posts. So we will have our hydraulic saw, we will go around the perimeter and cut those support posts. We will cut the plate segments, or remove the cut plate segments from the bottom of the head. We will clean the guide tubes of any fuel or any material. Essentially we will have what looks to me like a battery terminal cleaner type of device that will actually clean those tubes. We will count the segments for fuel as we remove them. And then after that we will remove the material at the bottom. This includes that 27,000 pounds of evacuable material in the periphery, and about 8,000 or 9,000 pounds of evacuable, and those rods that you saw in that video on the surface of the hard material. Additionally, the 15,000 pounds of hard material.

We will then go up to work on the baffle plates. The first thing we will do on the baffle plates is to remove between 700 and 800 bolts that are on the faces of those plates.

Once we have removed the bolts, we will then remove the plates one by one. We will turn the plate around, look at the back of it, inspect the back of it. Then we will defuel the material that is resting on those horizontal formers.

We will then come down and defuel the material in the periphery. That is the 6,000 pounds.

We will then do a final cleanup of the vessel.

In the last meeting I described the sampling that will be done of the lower head of the metal on the lower head. Between 8 and 20' samples will be taken of the metal in the lower head.

And then finally we will drain down the vessel.

We are currently running approximately three months late in the defueling schedule. We have decided to put off revising the schedule until we have more information about the material in the lower head.

I told you about the experimental work we did in trying to break up that hard material. We are going to be into that work in May and we will not revise the schedule until we have understood the difficulty that we will have and the rate of removal that we will have of that hard material.

Our current plan will have us re-evaluate the schedule in the May-June time frame.

Relative to manning, I would like to just show you a graph that we have, that starts in October of 1988. It shows our manning. We have in the neighborhood of 220 company people. That line is fairly constant through the time period of the graph. The graph goes to December of

1989.

The contractor line, which starts in October, in the neighborhood of 420 or so, that has been declining. Some of the initial portion of that decline was our effort to focus the work on the defueling so that the remaining people that we had were actively involved in the defueling. We had people leave who had done the engineering work for a lot of the things that we had completed.

We are currently, in the early April time frame, we have approximately 500 total people in the TMI-2 Division. And we have another approximately 200 people who are people supporting the work. That would include health physics technicians, industrial safety people, quality assurance people, security officers, et cetera.

The graph that you see there is based upon a current budget, current schedule that shows a decline at the end of June. That decline was the anticipated time until the end of defueling.

We are in the process now of notifying all of our people that the defueling schedule has slipped at least three months, and making plans to have them stay through the completion of the defueling.

Going to the budget, we have, in the letter I sent to Mayor Morris, we have in the 1989 budget approximately $52 million. That budget has in it approximately $4 million

of a reserve or contingency.

The graph that I am showing is, the line that goes from the beginning of the year, January, through the end of the year, plus the reserve, is the budget line. That budget line ends at approximately $52 million.

The three dots connected for the first three months show our actual, where we were approximately $1/2 million under budget currently. We have currently spent $14.6 million. The budget was $15.1 million through the first three months of the year.

The calculation that we have done shows that the defueling, approximately one month of defueling time, would cost us in the neighborhood of about $1.5 million. With the re-evaluation, off in May, we are projecting that we will be fairly close with the three-month delay to the contingency that we currently have within the $52 million.

Just in summary, I wanted to point out, and I quoted the Chairman of GPU in the letter to Mayor Morris as providing the full support of the company to the cleanup. And I have the full support of both the Chairman of GPU as well as my superiors in GPU Nuclear. I would expect that we will be able to finish the project and not have any financial problems doing so.

Any questions?

MR. MORRIS: Does anybody on the panel have any

questions at this point? Joel?

MR. ROTH: I guess first I should thank you publicly for sending the information to us.

Second of all, I would just like to get back to your numbers to make sure that I am understanding them.

Using your letter, $917 million has been spent. $52 million for 1989 gives you approximately a projected $969 million at the end of this year, which would leave approximately the $31 million for the $1 billion figure which you say you would stay --

MR. ROACHE: $1 billion.

MR. MORRIS: Right. $1 billion.

And so to get back to the figuring a total of $83 million in the next say time span to get to that $1 billion, those numbers then, can they be equated to your trying to get within that 1 percent, to clean it up to that 1 percent? Do you follow where I'm at?

MR. ROACHE: The defueling -- I believe at this point that we will be spending that $1.5 million per month extra for defueling. And currently we are seeing a delay of three, possibly four months. So you multiply that and you have in the neighborhood of $6 million that would be, some of which would come from our contingency.

So I see us still well below the $1 billion.

MR. ROTH: to get to that 1 percent?

MR. ROACHE: Right. That would be, our goal in the defueling is to get to less than 1 percent.

MR. ROTH: Okay.

MR. MORRIS: Do any other panel members have questions?

MR. MASNIK: How much money do you have budgeted for next year?

MR. ROACHE: We have currently budgeted $5 million for next year. That will be part of the evaluation that we will be doing in May and June.

MR. MORRIS: Will we be getting in May or June did you say an updated schedule at that point?

MR. ROACHE: Yes.

MR. MORRIS: So you will be providing or at least reviewing both the schedule and the finances for the future, including 1990?

MR. ROACHE: Yes.

MR. MORRIS: Okay. Is it possible that at some point, May, June, or whenever you have that, possible for you to provide that information to the panel? You can check on it?

MR. ROACHE: I don't have to check. I will provide it to the panel, yes.

MR. MORRIS: Thank you.

I would be remiss if I didn't ask for Mr.

Smithgall, who always asks his questions on this part of it, when we talk about fuel removal, and that is, will you have a sufficient number of canisters?

And at the last meeting you gave the impression, or somebody gave the impression that maybe it was going to be tight, close. It gives credibility to his questions from the beginning. Because if I recall, these canisters take a long time to fabricate, up to a year or something like that, or maybe that -- is it about a year?

MR. ROACHE: It takes a long time. At least six months, from the time of order.

We have just recently completed an analysis of the number of canisters that we would need and recognize that we have defueling canisters and two different kinds of filter canisters.

We have on hand 369 canisters. We believe we will use 360 of these. There are nine other filter-type canisters that we will have remaining.

We mentioned I believe in the last meeting that the densities that we are finding are increasing as we go down in the material so we are getting much higher packing in the canisters. Our weights of canisters are substantially up from what they have been earlier on. And that gives us great encouragement that we will be able to compete with the existing canisters.

MR. MORRIS: Good. Thank you. Anybody else?

MR. GERUSKY: Yes.

MR. MORRIS: Tom.

MR. GERUSKY: What was your previous, I don't remember your previously projected end date for defueling?

MR. ROACHE: The current schedule for the end of defueling is the end of June.

MR. MORRIS: Anybody else have a question?

(No response)

MR. MORRIS: Thank you very much.

At this point, prior to public comment, there is an opportunity for the panel to discuss the schedule of funding. Anything they would like to offer?

(No response)

MR. MORRIS: Anybody?

(No response)

MR. MORRIS: It is really a repeat of what we just went through. If there is any special discussion that we need to have at this point?

(No response)

MR. MORRIS: If there is not, and I am not seeing anybody jump at it, I would assume that we should move on to the next item on the agenda.

And at this point we will go to public comment. I do think there was a question that I saw somebody's hand

back there that somebody did want to ask regarding I believe the schedule and funding.

So if you would like to ask that, Ms. Davenport, and I think it was probably to GPU. So if they could be available.

Could you come and maybe for the record just ask it? And following the question, I have been told that Eric Epstein would like to come forward and offer some comments. So if that is the case, maybe you would like to be next up there, sir.

MR. EPSTEIN: Yes.

MR. MORRIS: Fine.

MS. DAVENPORT: Just a question to clarify what is going to happen on the Reuter Stokes and in what timetable. Because apparently in 1990 defueling is projected to be done and after that the plant will go into some stage of post-defueling monitored storage.

At that point, does GPU intend to perhaps still keep the system in?

I was trying to clarify what Mr. Roach had first said in his correction.

In other words, are they going to keep Reuter Stokes?

MR. MORRIS: During PDMS?

MS. DAVENPORT: Certainly in the early stages of

PDMS, or are they going to still be re-evaluating through and then present their plan this Summer?

MR. MORRIS: I heard him say that they would have, and if I'm wrong on this, Mike, please correct me, but you would have that in place up to and during the early part of PDMS, but you would be re-evaluating the future of it thereafter. That is what I heard you say.

MS. DAVENPORT: Maybe the good way to ask this is what would be considered the early stages of PDMS and when would they be projected to end. Is there any end point in sight on them now?

MR. MORRIS: I did not totally -- what would they consider as the early point of PDMS?

MS. DAVENPORT: Yes, when they would re-evaluate the system.

In other words, what might be the timetable at which this would finally be addressed, they might consider either taking the system out or going with it, you know, going the distance with it.

MR. MORRIS: I heard earlier on that you were going to be providing some more specifics on this entire subject at a future meeting, and as I understood your comment, would be sometime this Summer.

MR. ROACHE: That's right.

MR. MORRIS: So I think I hear what you say, but

they didn't give anything more specific than that. They did indicate that there would be more specifics available at the next time we visit this question. And all I could ask you is to be present at that time and raise these questions. Because they have made a commitment to come forward publicly to provide that information.

MS. DAVENPORT: Yes. Thank you.

MR. MORRIS: Thank you. Yes, sir.

MR. EPSTEIN: Do you want a copy of the statement or would just prefer to have me elucidate it for you?

MR. MORRIS: I think if you have copies, we would like to have them.

MR. EPSTEIN: Okay. Frances also asked me to read a statement in.

MR. MORRIS: You don't always stay with your copy, but it makes it easier to follow.

MR. EPSTEIN: Yes, I know.

MR. MORRIS: Thanks, Eric.

MR. EPSTEIN: I am sorry for missing the last meeting. I was in Tampa Bay.

MR. MORRIS: It is going to hurt your attendance record.

MR. EPSTEIN: Don't fly Piedmont. Especially when there is an ice storm in Carolina.

MR. EPSTEIN: For the record, I am Eric Epstein.

And I am from Perry County, for now. I just moved to Susquehanna Township. So I have become a yuppie.

Mayor Morris, I would like to just clarify some things before I begin. I would if possible like to get a copy of the reports GPU sent to you, the one on economic cost. You said you have a document outlining the economic, some of the economic parameters involved with the cleanup.

Also, since we were the people who had introduced the questions concerning the inattentiveness to duty, the negative trend in skin contamination, et cetera, I would like to get a copy of that also.

Boy, that's quick.

Could you help me with my mortgage?

In addition, just to GPU is possible, I know members of the public were interested in some of the reports they gave to the panel, so if they could make them available to the general public, I think they would appreciate that.

MR. MORRIS: I didn't catch that last thing. I'm sorry.

MR. EPSTEIN: Some of the materials they made available to you while the screening was going on, I think some people in the general public would have liked to have copies of those documents also. Just a request to GPU if possible to make those available.

MR. MORRIS: Okay. Let me just say too, for the

record, that as I handed you that information, I believe I did provide at least a copy of the answer to those questions that would be part of the transcript as well. So that would be part of the record.

MR. EPSTEIN: Okay. But that takes so long until it gets to my rural dwelling.

I would like the literature that I gave to become part of the official record, too. Thank you.

Frances Skolnik cannot be here. And without further ado I would like to read a statement for her, concerning the NRC's decision today, if that is okay with you, and then get into my statement.

STATEMENT OF FRANCES SKOLNIK, READ BY ERIC EPSTEIN

"The decision of the Commissioners to grant the amendment to amendment to GPU and to dispose of the water at TMI Unit-2 by boiling it and releasing the radioactive carryover into the air comes as no surprise to us. Their decision is in keeping with their uncaring attitude and disdain for the people of central Pennsylvania. They have steadfastly maintained this attitude since the 1979 accident and during the subsequent cleanup. It is highly unlikely that the NRC would have voted in favor of abandoning a project, which releases radioactive and non-radioactive contaminants unnecessarily into the air, when to do so, would cause inconvenience to a nuclear power company.

"SVA/TMIA have clearly shown that evaporation and release to the radioactive carryover into the air is not a viable alternative for dealing with this liquid radioactive waste. We have shown that this will undoubtedly cause adverse health effects

"The unnecessary release of carcinogenic substances into our air and water is nothing but immoral. Tne use of evaporation and release of the radioactive carry-over into the air as a means to reduce the volume of radioactive waste is a dangerous precedent for the state of Pennsylvania to permit at its nuclear power plants. It is a precedent which we strongly oppose. As the victims of this exposure to hazardous waste we will take this issue tot he courts. The decision today opens that avenue to the citizens groups."

At this time, I would like to read into the record my comments. And they mostly deal with the economics surrounding PDMS.

I would like to at this time acknowledge receipt of the information from the NRC pertaining to PDMS criteria. At this time, we would like to request a copy of the PDMS safety evaluation report which is apparently completed and available for public inspection.

Is that possible?

MR. MASNIK: Yes.

MR. EPSTEIN: Okay. Thanks.

STATEMENT OF ERIC EPSTEIN

MR. EPSTEIN: After receiving NRC's response to our concerns on PDMS, we remain unclear as to who developed the general guidelines which apparently are not "absolute criteria." We are a little confused as to what exactly is the "clean enough" criteria. Is it analogous to the ALARA standards? Is there a precedent for developing radiological standards which are elastic and continually being revised in conjunction with common sense and good radiological practices?

I think many people in the community feel that the utility and the NRC do not have a monopoly on the virtue of common sense. So I would like a clarification of what exactly common sense is. It was a little vague.

I will skip the next paragraph since I think it has already been dealt with.

I would at this time like to draw the Panel's attention to some recent developments regarding GPU's financial health that we believe correspond to their plan to mothball Unit 2.

As you may already be aware, Stand and Poor's Corporation has upgraded the financial ratings of GPU to "single A" status for their subsidiaries, due in part to the progress being made with the cleanup.

However, upon inspection of GPU's Annual Report, it is clear that we can expect little or not progress in the cleanup for the foreseeable future.

GPU's game plan includes maintaining, and I quote, "existing generating facilities in service as long as technically and economically practicable." End quote. This include spending $500 million on construction improvements this year, and implementation of their 1986 initiative known as the Expenditure Analysis Program, or EAP, to control costs and increase savings.

This plan will enable GPU to extend the life of their generating stations for at least another 20 years, "'which is well beyond their previously scheduled retirement dates."

In other words, it is an acceptable practice to indefinitely mothball a damaged nuclear station that needs to be cleaned up and provides no revenues. This allows GPU to meet customer needs while controlling costs.

At the same time, GPU will artificially extend the life of a nuclear power plant or plants thereby decreasing the margin of safety at these sites in order to sustain market viability. This promotes economic expansion while minimizing new construction costs.

This seems like a fair tradeoff if you live in New Jersey.

Let me continue. This is probably not necessary, but an observation.

GPU's austerity program also calls for a substantial reduction of employees by 1990, I quote, "in order to reduce costs while continuing to safely operate and meet customer needs reliably."

I think the cut is 13,400 down to 13,000, roughly 400 employees is the employee reduction plan by 1990. A visible part of this employee reduction comes from PDMS.

At the same time EAP is being activated, the GPU Board has announced plans to compensate Bill Kuhns, former Chairman and CEO, I quote, "at a rate of not less than $500,000 per year" plus benefits. The new CEO and Chairman, Stanley Hoch, will receive a base salary of not less than $450,000 plus benefits. I just thought that was an interesting contrast.

More importantly, in their Annual Statement, GPU made it clear that they will decommission Unit 1 and Unit 2 at the same time, i. e., "sometime in the next century." They admit that minimum funding for decommissioning one of the reactors is between $100 million to $125 million. However, and this is very interesting, an independent consultant hired by GPU estimated the cost to be about:

"$200 million to $300 million per plant in 1987 dollars for removing radioactive and non-radioactive

materials (other than fuel) and the structures of [Unit 1] and Oyster Creek. The actual cost of decommissioning" -- and this is all from their Annual Report -- "The actual cost of decommissioning may be materially different from these estimates depending upon regulatory requirements and technology available when the work is done. No study has been conducted for TMI-2, but decommissioning of the plant is expected to be substantially more expensive than Oyster Creek [and] TMI-1."

The above-mentioned cost do not include the removal and disposal of spent nuclear fuel or the additional costs of decontaminating Unit 2. GPU has also acknowledged, and I quote, that "significant experience in decommissioning such facilities is lacking and the technology available at the time of decommissioning may differ significantly from that assumed in these studies."

Also, according to GPU, at the end of 1988 $26 million had been collected for the decommissioning of Oyster Creek and TMI-1. This I found extremely interesting.

Jersey Central Power & Light is collecting funds assuming that in-plant entombment will be the method or decommissioning of Unit 1. At the same time, Met Ed and Penn Elec are collecting monies assuming that dismantlement will be implemented when TMI-1 is retired.

What are we going to do? Dismantle half of it and

entomb the other half? I am unclear on that scenario.

Presently, there are no being collected for the decontamination or decommissioning of TMI-2. No money. However, GPU believes, and I quote: "that costs associated with the eventual decommissioning of TMI-2 (which includes the annual cost of decommissioning) should be recoverable through the ratemaking process."

It is clear that GPU believes that the ratepayers and taxpayers and not the shareholders should shoulder the burden of cleaning up a nuclear power plant that only generated electricity for four months.

Finally, I think these revelations do support our earlier findings that GPU does ont have the economic resources to safely decontaminate or decommission TMI-2. It is now apparent that they are without adequate funding to decommission TMI-1 and Oyster Creek.

We believe the Panel needs to forcefully convey to the Commission that Unit 2 should be decontaminated immediately, and that cost must be borne by the utility.

In addition, the panel should elucidate the acute shortfall of funding associated with the eventual decommissioning of Unit 2.

All this information is documented, and I have footnoted it, from the Annual Report. And the shareholders meeting I believe is May 4 in New York City, and I plan to

be in attendance to get more information.

I don't know if you all have any questions. But I thought it was relevant to PDMS and I hope it clarified some of the outstanding issues for you all.

MR. MORRIS: I do not have any questions. I think that the observations, and there will be several of them, regarding the uncertainty of funding and the ultimate decommissioning of the plant, and I am talking about Unit 2 particularly, that is one of the concerns that I expressed during our discussions on PDMS, how does one project what monies will be needed and how does one require that those monies be in place when and if that takes place.

And I think that many of the points that you are raising here, and I am assuming that they are accurate because you certainly offered quotes and you footnoted it, and if anybody from EPA wants to disagree I guess that we are available to do that, but assuming that they are accurate I think that there is cause of concern based on what GPU is telling us, because they apparently do not know a lot of the answers yet. They readily admit that one cannot project today what will be needed twenty, thirty, fifty, or eighty years from now.

MR. EPSTEIN: I would suggest if it is available, they only sent me one shareholder report for owning one share of stock and I think that it somewhat unjust, but I think that you all should request a copy, because it outlines their economic priorities and it outlines what they are going to get into as far as energy demands in the future. And there are some good ideas in there, and I would

give them credit for some things.

But it is clear that economically that they have no idea how they are going fund decommissioning. Technically, they have no idea how they are going to do it. And clearly, they feel that the rate payer should shoulder the burden. I am not going to belabor the point, because I know that it is late. But I think that it would really be helpful to get a copy of the shareholders report.

MR. MORRIS: Well, I wonder, as it relates to TMI-2, whether it would be possible to get that information.

MR. RUACHE: I could provide the panel with a copy of it.

MR. MORRIS: If you could, I think that it may be helpful. While there are comments here directed at the decommissioning of Unit 1 and what have you, we particularly have interest in Unit 2. So if we can get that information, we would appreciate it.

MR. EPSTEIN: I probably will not get a proxy statement, but I can make those available to you if you want to vote.

MR. MORRIS: Thank you, sir.

(Applause.)

MR. MORRIS: Are there any other questions or comments from the public at this time?

(No response.)

MR. MORRIS: From the panel at this time?

(No response.)

MR. MORRIS: Panel, when would you like to meet again; Neil, Gordon, Tom?

MR. WALD: Did you say when?

MR. MORRIS: We have finished our agenda and we are really ready to talk about another meeting. And I am wondering if anyone wants to make a suggestion. Maybe to help us through this, we have heard from GPU that sometime summerish that they would be ready, at least I am hearing that, that they would be ready to discuss more information regarding monitoring, and it seems to me that that may be helpful.

We have been told that they are going to be updating their schedule on both funding for next year and in regard to the actual clean-up itself sometime in June or later. So I guess what I am looking at is that it may be helpful to look at a meeting in June or July, maybe July.

MR. WALD: That would be from the standpoint of the NRC PDMS evaluation.

MR. MORRIS: You are looking at that by the end of June?

MR. MASNIK: By the end of June, we should have the impact statement published.

MR. MORRIS: What are your thoughts about looking

on July then?

MR. WALD: If it would that give us enough time to evaluate it other than the night before.

MR. MORRIS: How about the third week in July?

MR. MASNIK: The week of 9 July then?

MR. MORRIS: No, the following week, the 16th.

MR. MASNIK: Okay, the 16th.

MR. MORRIS: The week of the 16th. We are hearing one person say no. I know that is going to be summertime and maybe people will be off, so we may lose some people.

Is there anybody else who cannot make it that week that they know of?

(No response.)

MR. MORRIS: How about the week after that?

MR. MASNIK: I cannot make it.

MR. MORRIS: You cannot make it. So Ken, we are trying to get you in there, but we should have Mike at that meeting if we can.

Does anyone else have problems making the third week?

MR. ROBINSON: Yes, I have problems.

MR. MORRIS: That is the week of the 17th which would be the Wednesday or probably Thursday. It would be Thursday of that week. There are two people.

Is there anybody else who cannot make it?

MS. MARSHALL: That is too far ahead to know.

MR. MORRIS: Well, I understand that, but we are trying to get a sense here. We can do that or we can decide and let you know, but I think that it is easier to do it this way.

Who else besides Mike Masnik cannot make it the fourth week?

MR. GEREVSKY: I cannot tell you.

MR. MASNIK: The fourth week would be the week of the 23rd of July.

MR. MORRIS: It would be that Thursday, what is that day?

MR. MASNIK: It would be the 27th.

MR. MORRIS: The 27th of July.

MR. GEREVSKY: I cannot make it that week.

MR. MORRIS: If you cannot make it and Mike because of the PDMS review, I think that it is important to have you here for that.

MR. MASNIK: I guess that I could make it. It would be difficult, but I could make it.

MR. MORRIS: You would make a commitment to be here?

MR. MASNIK: I will make a commitment to be here.

MR. MORRIS: So far in the fourth week, we only know that we are going to lose one person and that is Tom.

If we go with the third week, we lose two people. My inclination is to go with the fourth week, Thursday of that week. Again the date is, Mike?

MR. MASNIK: The 27th of July.

MR. MORRIS: Any preference on location? We can debate that for another hour if you would like.

(No response.)

MR. MORRIS: If you are happy to come here, sold. The meeting stands adjourned.

(Whereupon, at 9:30 p.m., the meeting was adjourned.)

UNITED STATES NUCLEAR REGULATORY COMMISSION
ADVISORY PANEL FOR THE DECONTAMINATION OF
THREE MILE ISLAND UNIT 2

Agenda for the April 13, 1989
Meeting in Harrisburg, PA

		Minutes
1.	Chairman's Opening Remarks - A. Morris	5
2.	NRC Update on PDMS Environmental Evaluation-NRC Staff	10
3.	Status of Clean Activities - GPUN Staff	15
4.	Present & Future Offsite Radiation Monitoring Program-GPUN Staff	20
5.	Public Comment*	15
6.	Break	10
7.	TMI-2 Cleanup Schedule & Finding-GPUN Staff	20
8.	Panel Discussion on Schedule and Finding - Panel Members	20
9.	Public Comment	20

* Includes D. Davenport for 5 minutes.

GPU Nuclear

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April 10, 1989
4000-89-R-068

Mayor Author E. Morris
Chairperson, TMI Advisory Panel
P.O. Box 1559
120 North Duke Street
Lancaster, PA 17603

Dear Mayor Morris:

This letter is in response to several questions that were asked at the February 16, 1989 NRC Advisory Panel meeting. Most of these questions were asked of the Panel by citizens who addressed the Panel. GPU Nuclear is providing you with information on those questions.

A question arose as to the use of SDS to treat water that would go to the evaporator. A review of the Panel's transcripts has indicated several references to SDS/EPICOR as part of the general explanation of how we process water. No commitments were made to the Panel that we would use SDS in conjunction with the evaporator. We have committed that the water evaporated will, on the average, meet "base case" conditions. All water in storage tanks located outside the Reactor, Fuel Handling, and Auxiliary Buildings has been processed through the SDS and/or EPICOR systems and all future water that may be transferred to these tanks will be processed through EPICOR.

Two other questions concerning water evaporation requested a range of concentrations of isotopes and implications of detergent in the Process Water Storage Tank (PWST). The expected range of isotopic concentrations for the influent water to the evaporator has not been established; however, the current range of concentrations of the major isotopes in the external water storage tanks are presented in Table 1 (attached). The issue of detergents was addressed in the "memorandum and order" issued by the ASLB on August 25, 1988. The ruling concerning Triton-X states, "...does not raise a genuine issue of material fact to be heard."

A concern was raised at the Advisory Panel Meeting as to whether GPU Nuclear could make money from royalties on the evaporator. There a number of ways that the total estimated cost could be reduced, but in no way would GPU Nuclear make a profit from evaporating the accident generated water. The total estimated cost could be reduced as a result of the over-estimation of total gallons of water to be processed, over-estimation of the total waste to be generated by this process, and/or utilization of the evaporation equipment by a third party at another site within 2 years following the completion of its TMI-2 use. If the evaporator were to be used by a third party daily for 2 years, that would reduce GPU Nuclear's outlay by $365,000.

An individual raised concern on an increased number of skin contaminations reported in August 1988. Thirty-two contaminations were reported for the reactor building work in August 1988. Nine of those were associated with the plasma arc cutting of the forging and six were associated with maintenance on the robot in the basement. The remainder were associated with many different jobs. GPU Nuclear took steps in September 1988 to address the problems in contamination control arising from the plasma cutting work and completed use of the basement robot work about the same period. Many of the recommendations were implemented and resulted in better contamination control and fewer skin contaminations arising from the cutting work. Our staff reviews skin contaminations on a monthly basis to determine if there are additional ways to lower the total number.

A concern was raised concerning three inattentive-to-duty cases that were noted in NRC Inspection Report 88-12, dated September 6, 1988. The events were discovered and reported to the NRC by GPU Nuclear personnel. GPU Nuclear immediately investigated the incidences and the individuals involved in those incidences (none were licensed operators) were discharged from the site. In an effort to ensure against inattentiveness, GPU Nuclear has: 1) realigned the management tour program so that tours now occur on backshifts and weekends only and not during normal working hours; 2) continued to emphasize inspection of low traffic areas for signs of inattentiveness; and 3) designed a program to enhance the effectiveness of inspections on the 11-7 shift.

With regard to a question concerning krypton gas, krypton 85 has been released from the reactor vessel whenever plasma arc cuts are made with core debris in the proximity of the torch. Apparently, the extremely high temperatures of the plasma are causing the ceramic structure of core debris to melt, thereby releasing Krypton 85 from the ceramic matrix. The total released gas is very small and well within allowable release criteria. During the period from August through October 1988, less than .5 curies of Krypton 85 were released within the reactor vessel.

An individual expressed concern concerning the cavity beneath the reactor vessel and the conditions within this cavity. Water samples from the cavity have been taken from the cavity and have been similar to other water samples from the reactor building basement. GPU Nuclear intends to perform a visual inspection of this area along with measurements there after the completion of defueling and the draining of the reactor building basement water. As we have said, there is no indication or evidence that the reactor vessel was breached at the bottom head or any other location.

Very truly yours,

Michael B Roche

Michael B. Roche
Director, TMI-2

GRE/dlb

cc: T. A. Moslak - Acting Senior NRC Resident

TABLE 1

ISOTOPIC CONCENTRATIONS

Isotope	Current Storage Tank Concentration Ranges
Cesium - 137	3.9 E-6 - 1.4 E-4 uCi/ml
Cesium - 134	1.43 E-7 - 2.7 E-6 uCi/ml
Strontium - 90	2.1 E-5 - 7.1 E-5 uCi/ml
Carbon - 14	1.5 E-7 - 1.8 E-7 uCi/ml

COMPARISON OF THE LICENSEE'S PROPOSAL AND THE SIX NRC STAFF IDENTIFIED ALTERNATIVES

1. Delayed Decommissioning (Licensee's Proposal)
2. Delayed Cleanup
3. Immediate Cleanup
4. Immediate Cleanup With Reduced Effort
5. Immediate Decommissioning
6. Incompiete Defueling
7. No Further Cleanup Following Defueling
   (No Action Alternative)

LICENSEE'S PROPOSAL AND STAFF IDENTIFIED ALTERNATIVES CONSIDERED IN DRAFT SUPPLEMENT 3

QUANTITATIVELY EVALUATED

Delayed Cleanup

Immediate Cleanup

NOT QUANTITATIVELY EVALUATED

Immediate Cleanup with Reduced Level of Effort

Additional Cleanup Prior to PDMS

Delayed Cleanup with Storage of Less Than 20 Years

Delayed Cleanup with Storage of Greater Than 20 Years

No Further Cleanup Following Defueling

STATUS OF

TMI-2

CLEANUP

ACTIVITIES

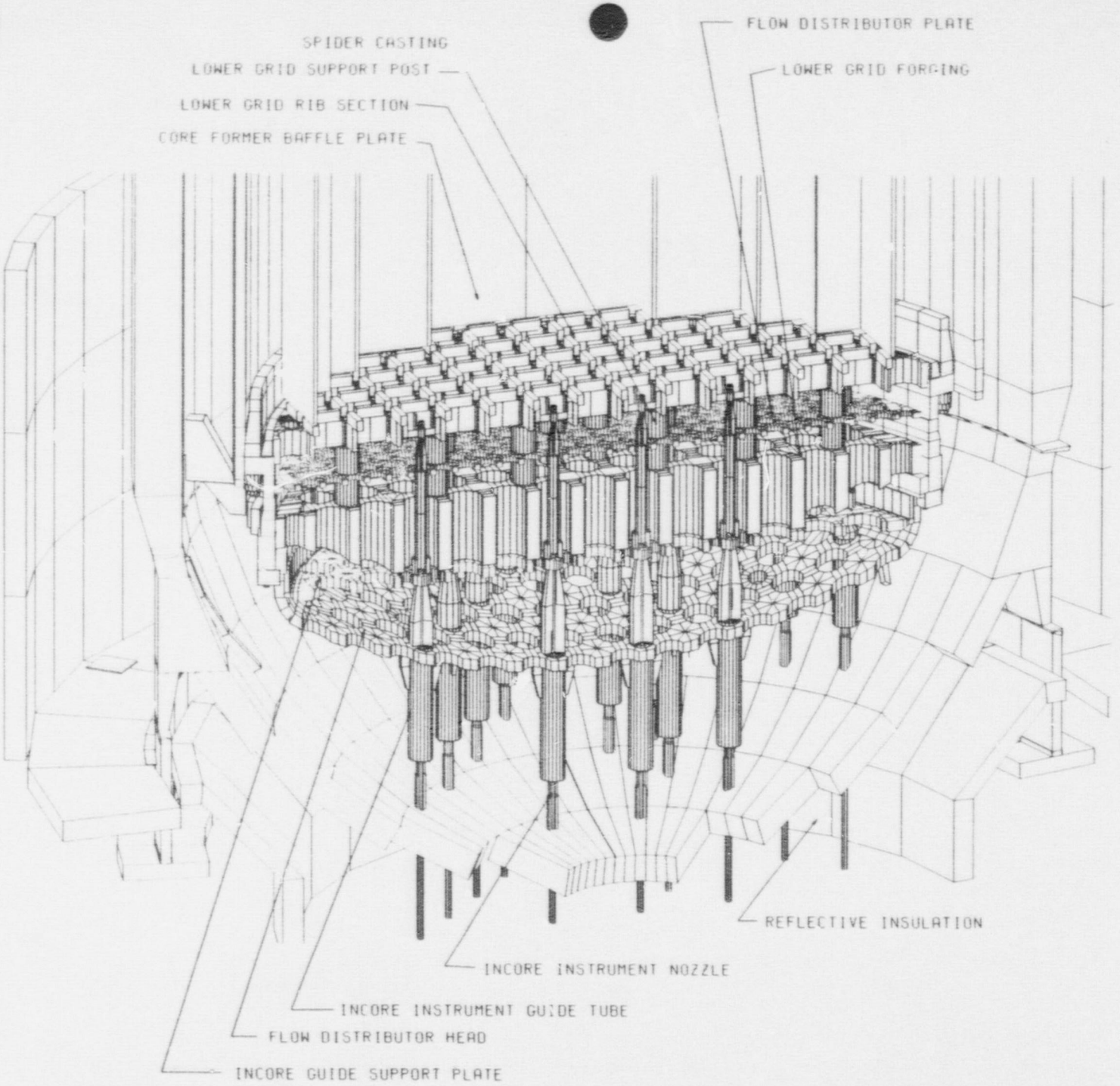
TMI-2
DEFUELING STATUS

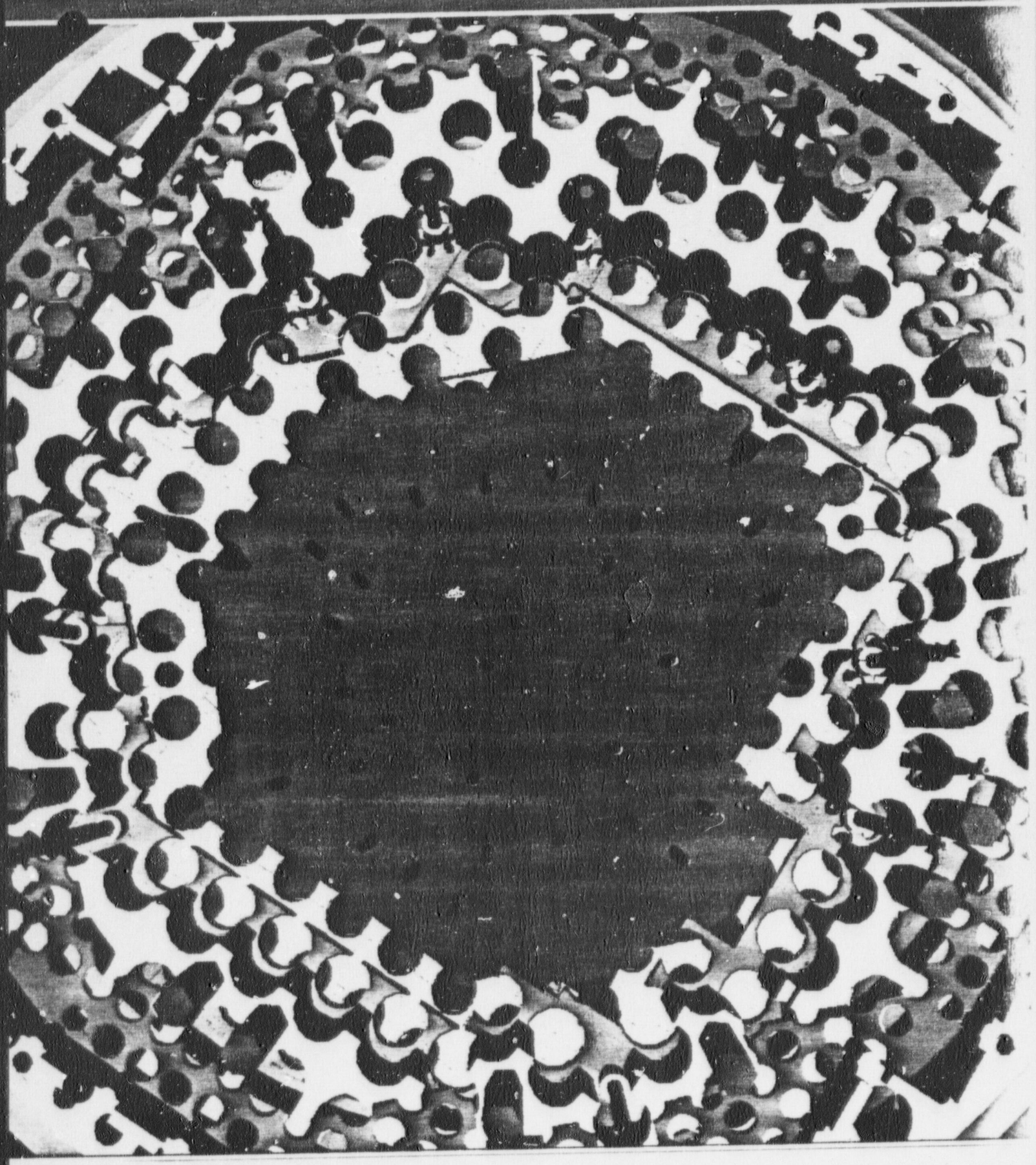
- Progress — Defueled 229,000 lb - 77%
  Shipped 211,000 lb - 71%

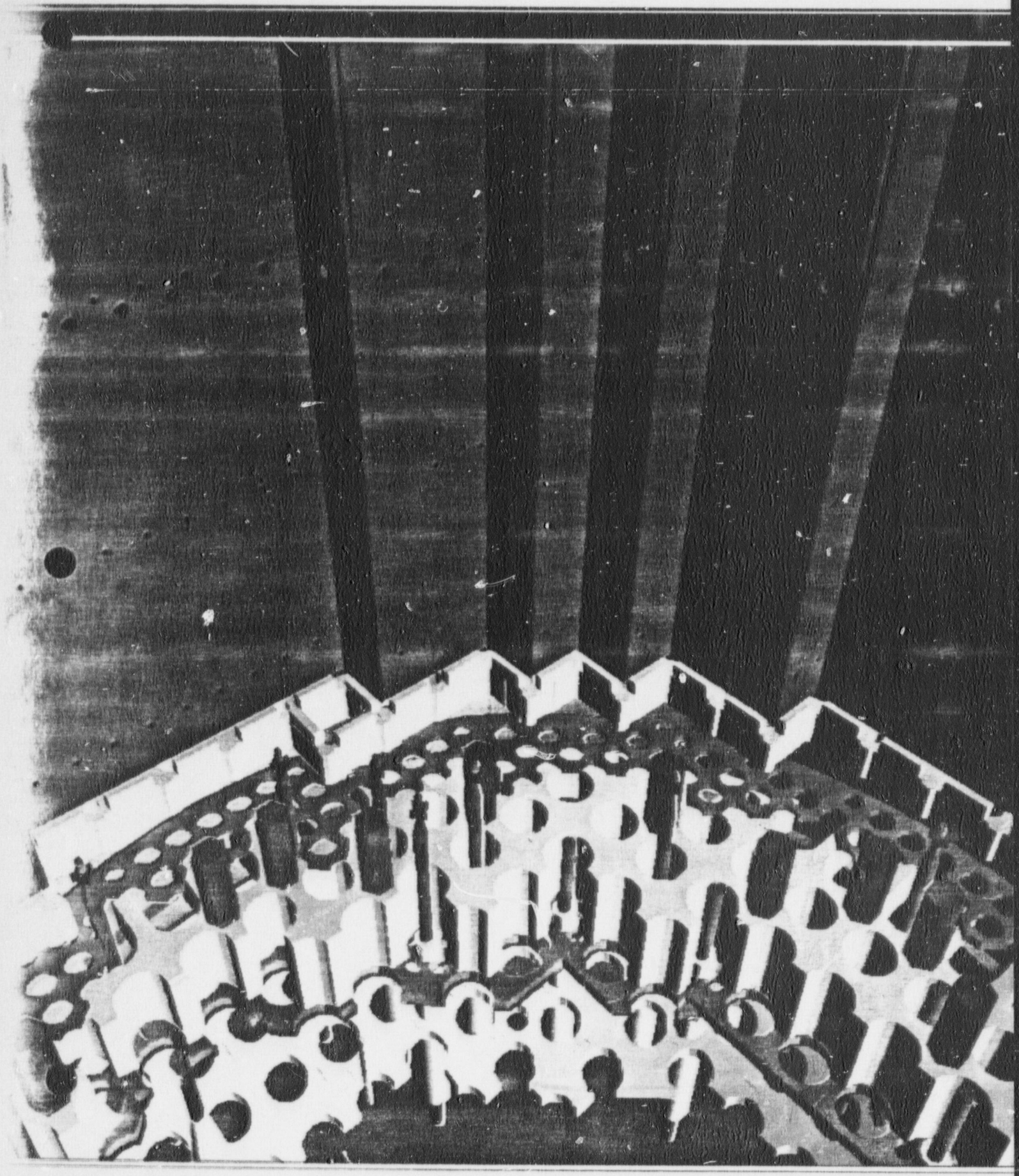
- All lower core support assembly plates cut.

- Achieved necessary access to the bottom of the reactor vessel.

- Now cutting baffle plates in the core region with plasma arc torch.

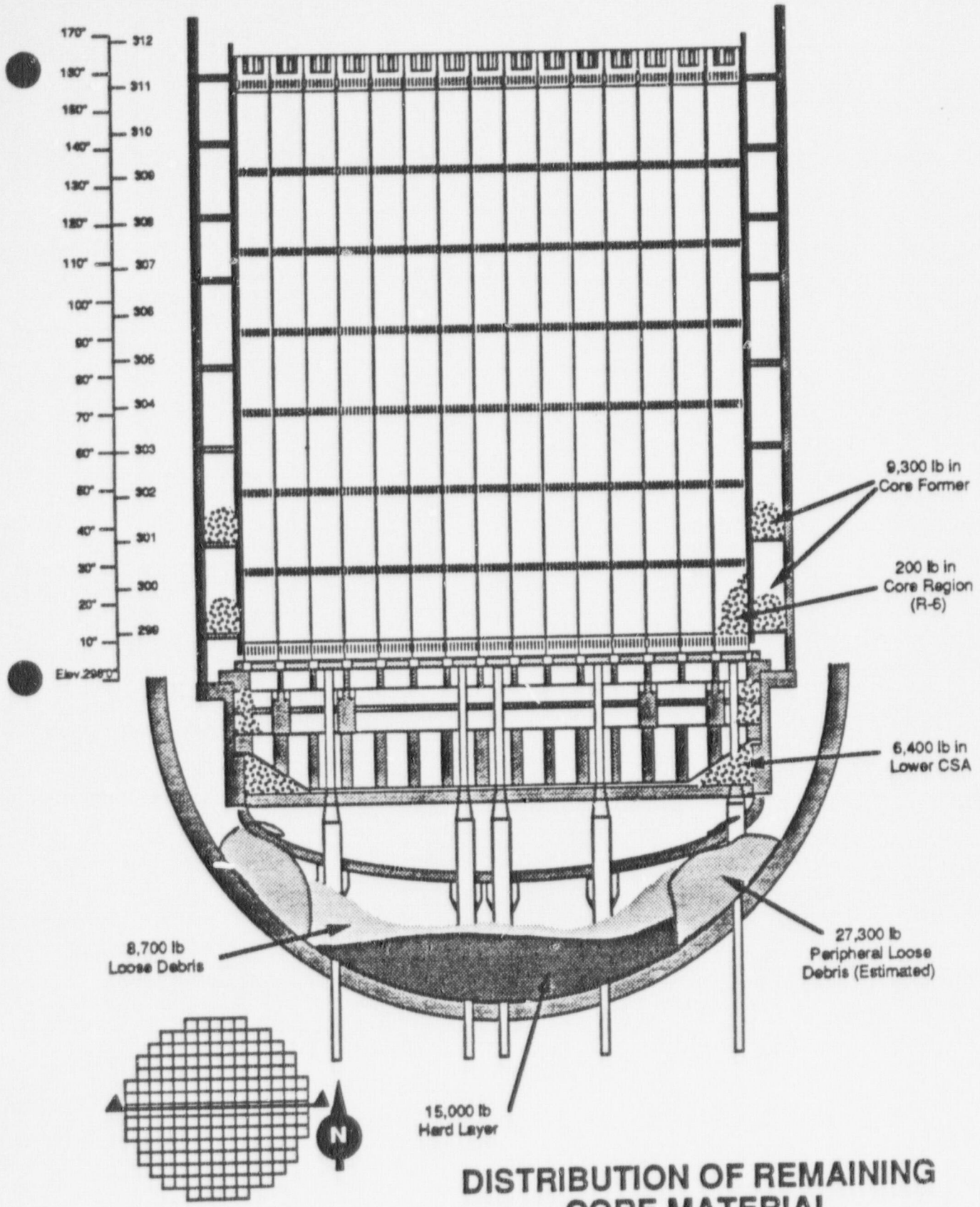

FLOW DISTRIBUTOR PLATE
SPIDER CASTING
LOWER GRID SUPPORT POST
LOWER GRID FORGING
LOWER GRID RIB SECTION
CORE FORMER BAFFLE PLATE
REFLECTIVE INSULATION
INCORE INSTRUMENT NOZZLE
INCORE INSTRUMENT GUIDE TUBE
FLOW DISTRIBUTOR HEAD
INCORE GUIDE SUPPORT PLATE





DEFUELING CHARACTERISTICS

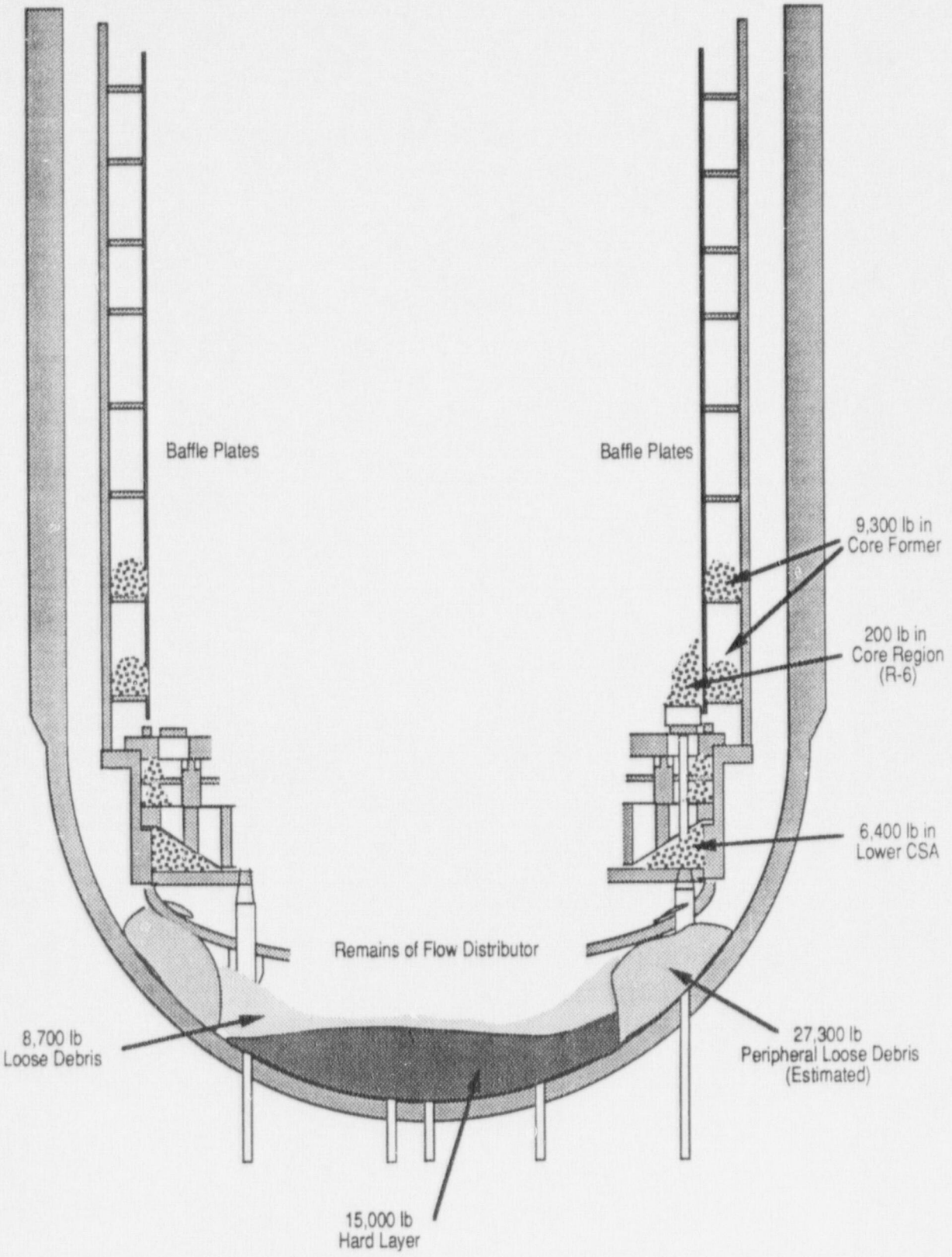
- Hard layer of material on the bottom of the reactor vessel.
- Damage to two incore guide tubes confirmed.
- 51,000 lbs of material in lower head region.
- Several thousand pounds of debris remain between the lower core support assembly plates.



DISTRIBUTION OF REMAINING CORE MATERIAL

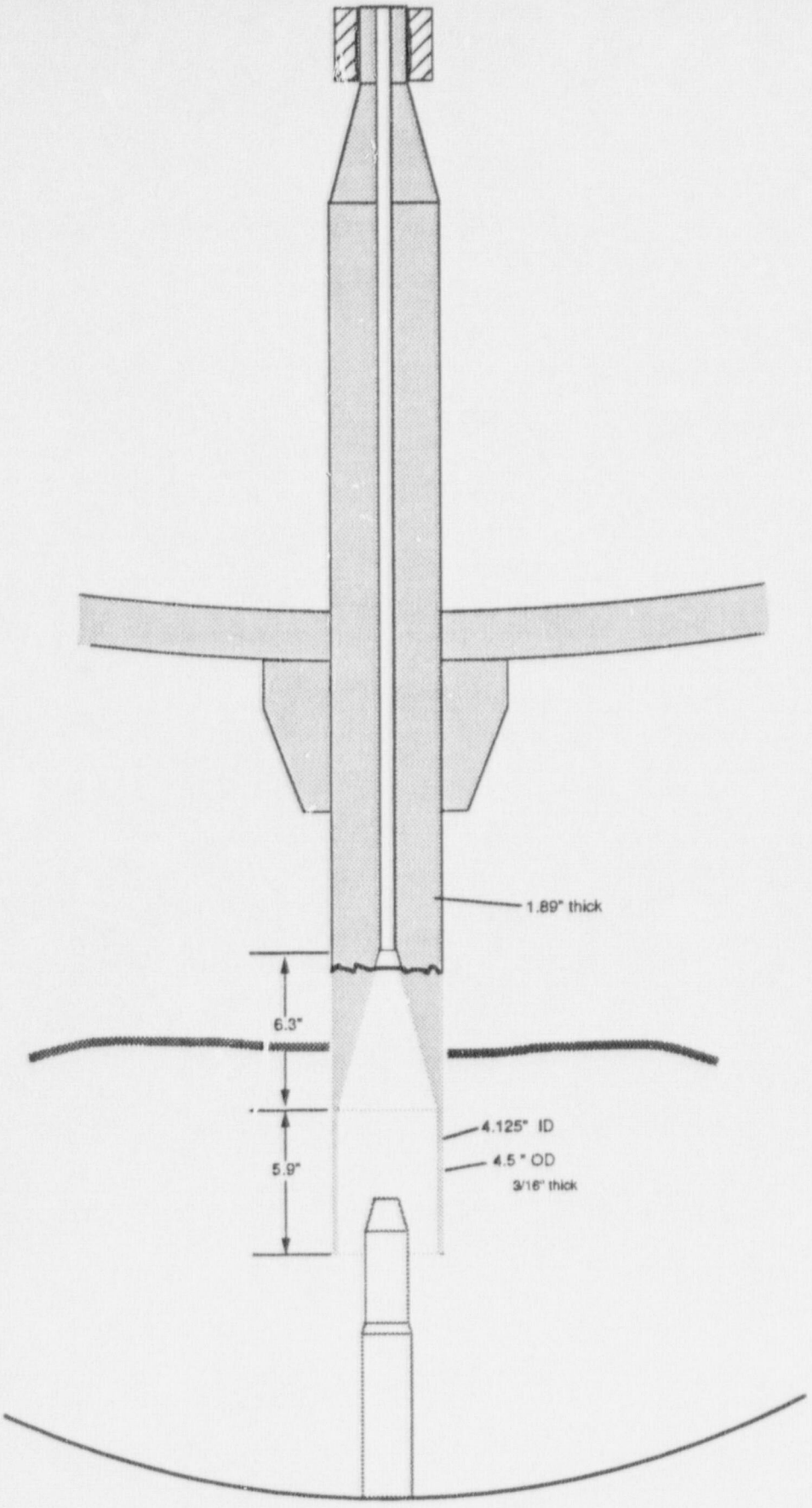
A total of 67,300 lb of core debris remains, including ~400 lb outside the reactor vessel.

Fricke
3/28/89



TMI-2 MATERIAL AT THE BOTTOM OF THE REACTOR VESSEL

V. R. Fricke
4/4/89



BROKEN INCORE GUIDE TUBE

FUEL SHIPPING

- Made a 3-cask shipment to Idaho February 19.
- Next fuel shipment scheduled for June.
- 211,000 lb shipped to date.

DECONTAMINATION

- Performing general decontamination to support defueling.
- Completed a major cleanup of the defueling platform area.
- Completed draining secondary side of the steam generators, the primary side wili be drained with reactor vessel after defueling.
- Started draining systems in the auxiliary building which are no longer needed.
- Completed draining 3 systems in the reactor building which are no longer needed.

TMI-2

RADIOLOGICAL

ENVIRONMENTAL

MONITORING

PROGRAM

TMI-2
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

- Plant Monitors
- Dosimeter (TLD) Station
- Sample Collection
- Real-time Monitors

PLANT MONITORS

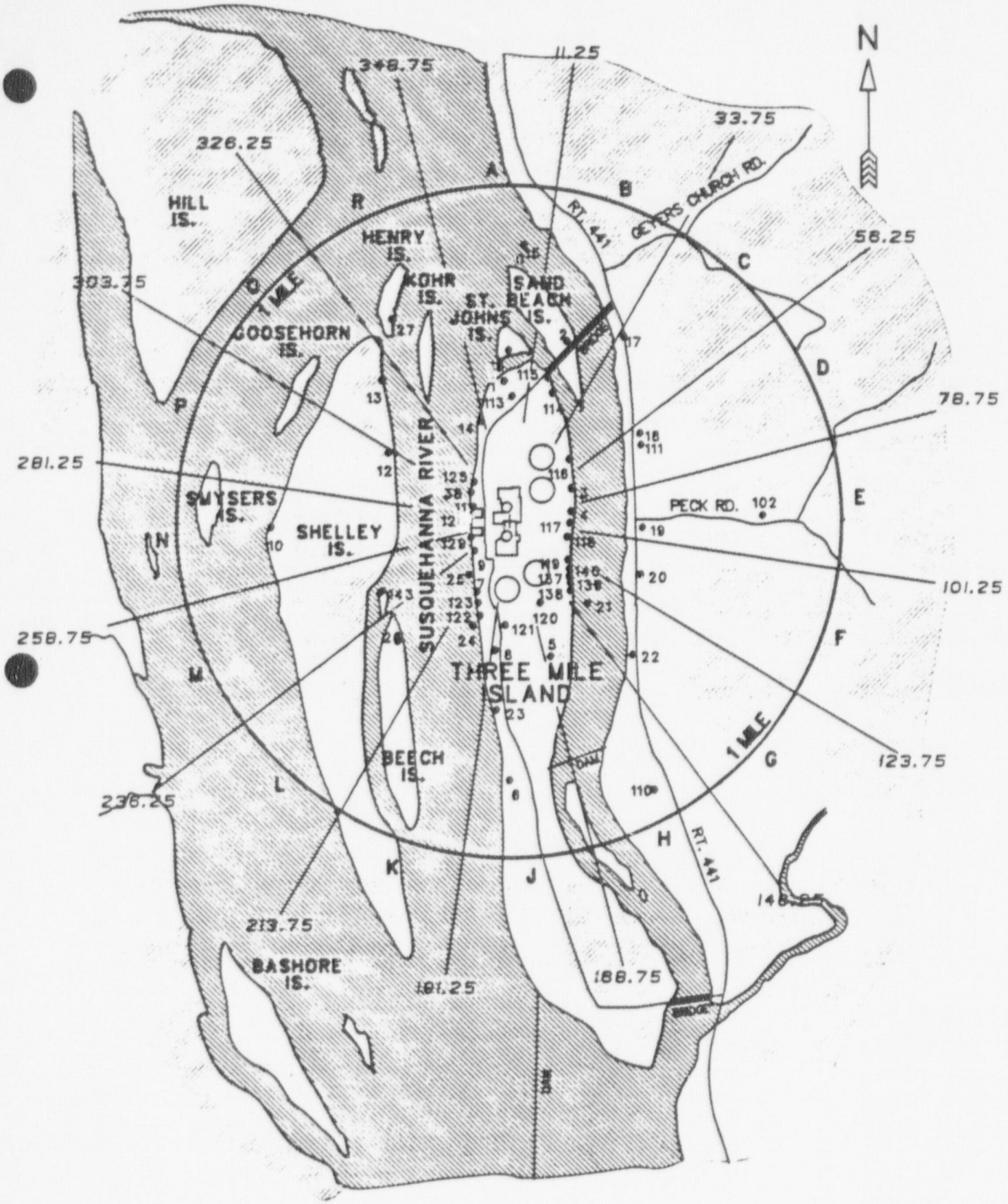
- Measure in-plant radiation levels
- Measure liquid and gaseous releases from the plant
- Early notification to plant operators of changing radiological conditions

DOSIMETER (TLD) STATIONS

- Measure environmental radiation at 104 locations up to 21 miles from TMI

- Read TLD's quarterly, or more frequently, if necessary

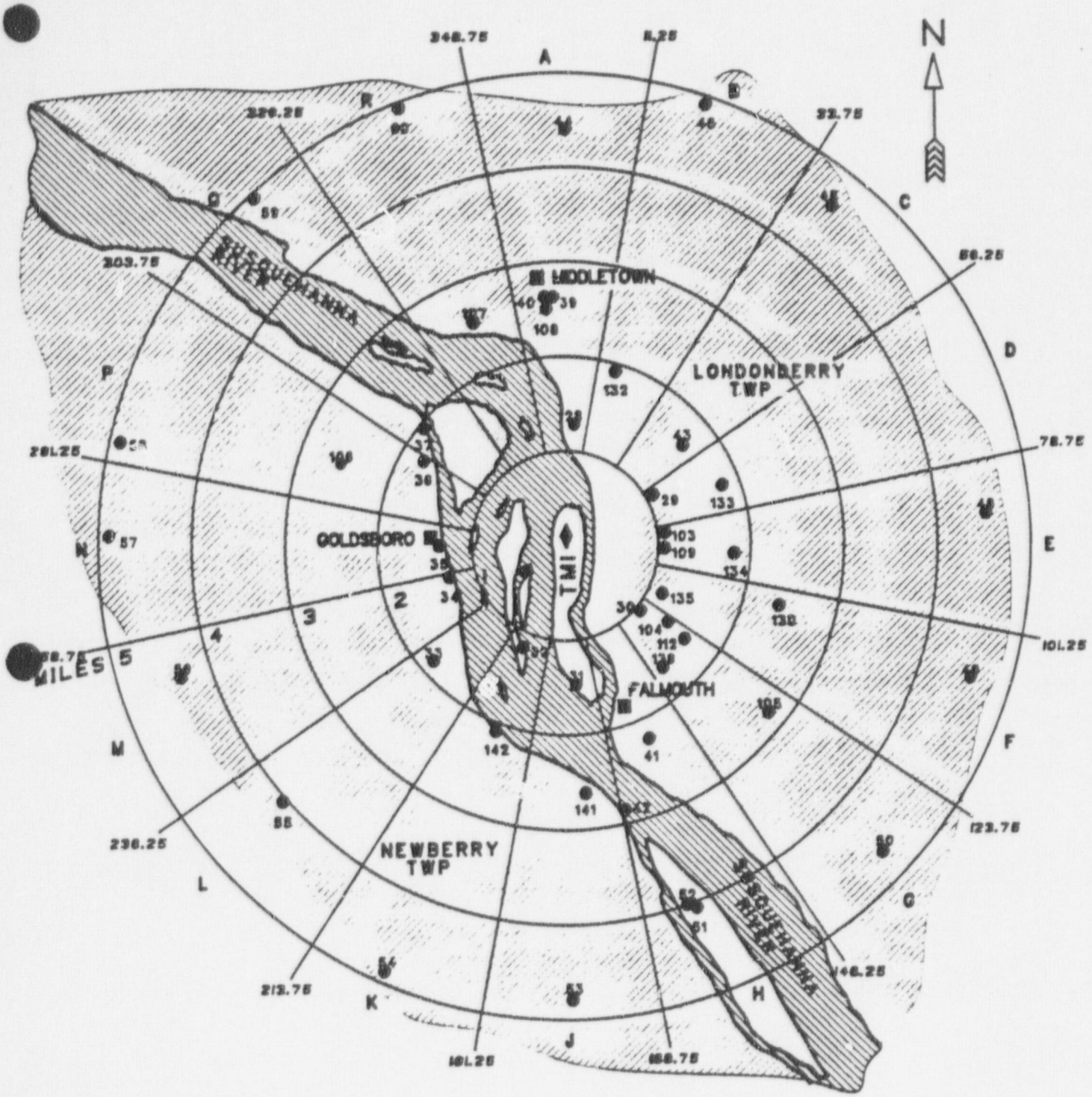
FIGURE 2



THREE MILE ISLAND NUCLEAR STATION

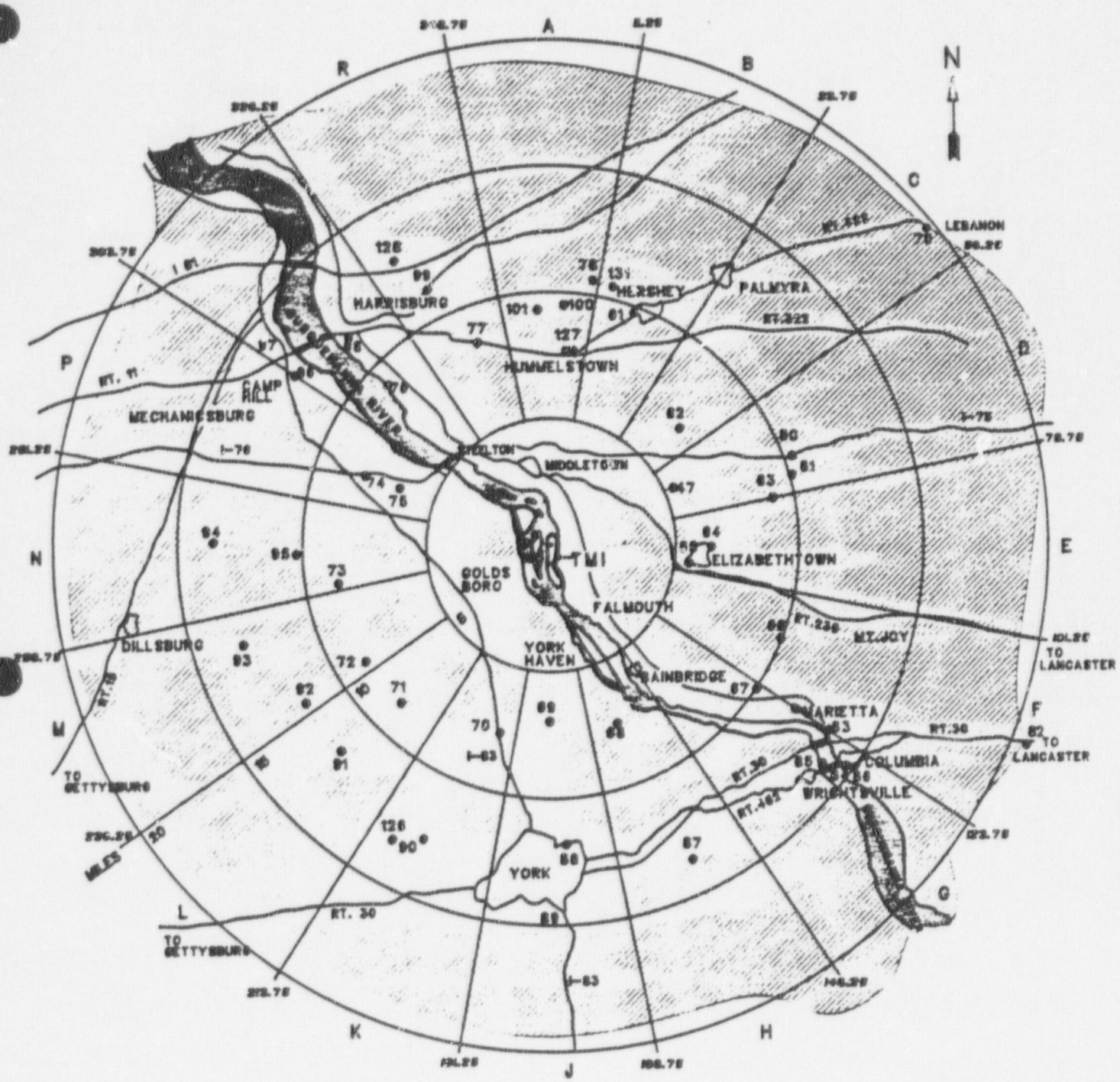
Locations of Radiological Environmental Monitoring Program (REMP)
Stations Approximately 1 Mile from the Site.

FIGURE 3



THREE MILE ISLAND NUCLEAR STATION
Locations of Radiological Environmental Monitoring Program (REMP)
Stations Within 5 Miles of the Site

FIGURE 4



THREE MILE ISLAND NUCLEAR STATION

Locations of Radiological Environmental Monitoring Program (REMP) Stations Greater Than 5 Miles from the Site.

SAMPLE COLLECTION

- Three types of samples:

  Aquatic - water, fish, river sediment

  Atmospheric - air particules, precipitation

  Terrestrial - milk, soil, meat, vegetables

- In 1987, 1400 samples were taken

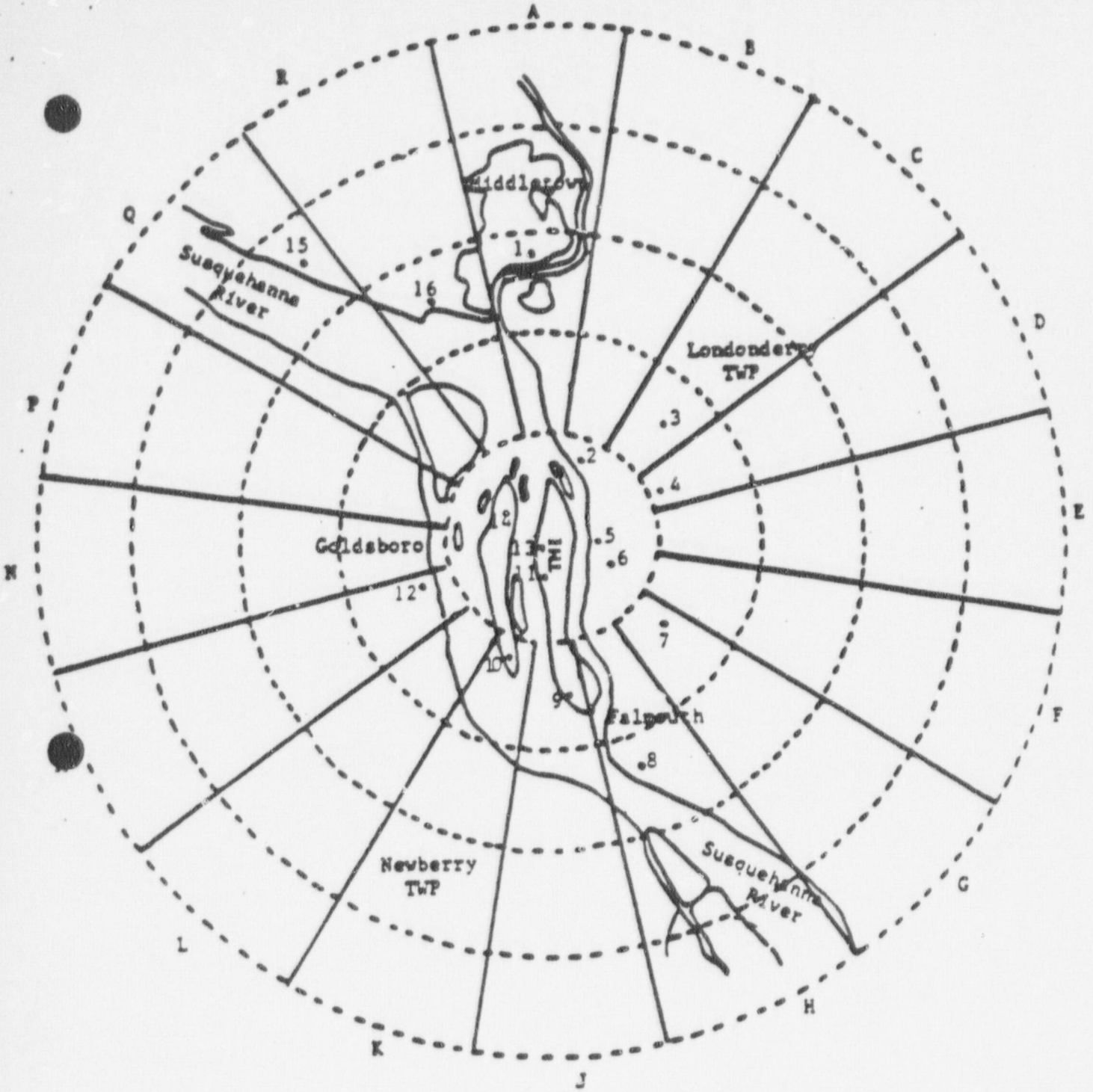
- 3,600 analyses performed on the 1900 samples

REAL-TIME MONITORS

- Measure environmental radiation at 16 locations up to 3 miles from TMI

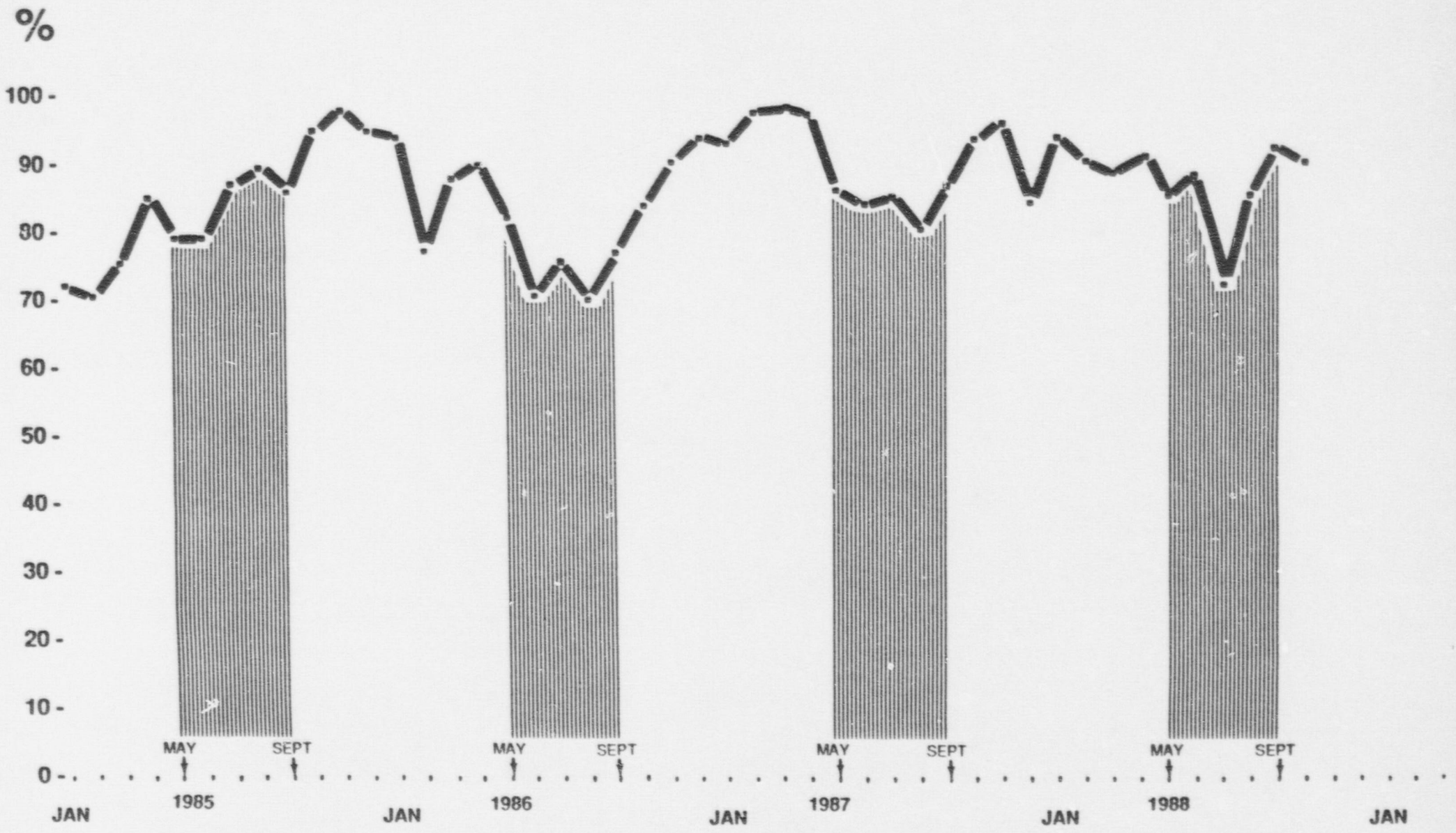
- Readings recorded electronically at GPU Nuclear, and Dauphin and Lancaster county courthouses

Real-Time Gamma Monitor Locations

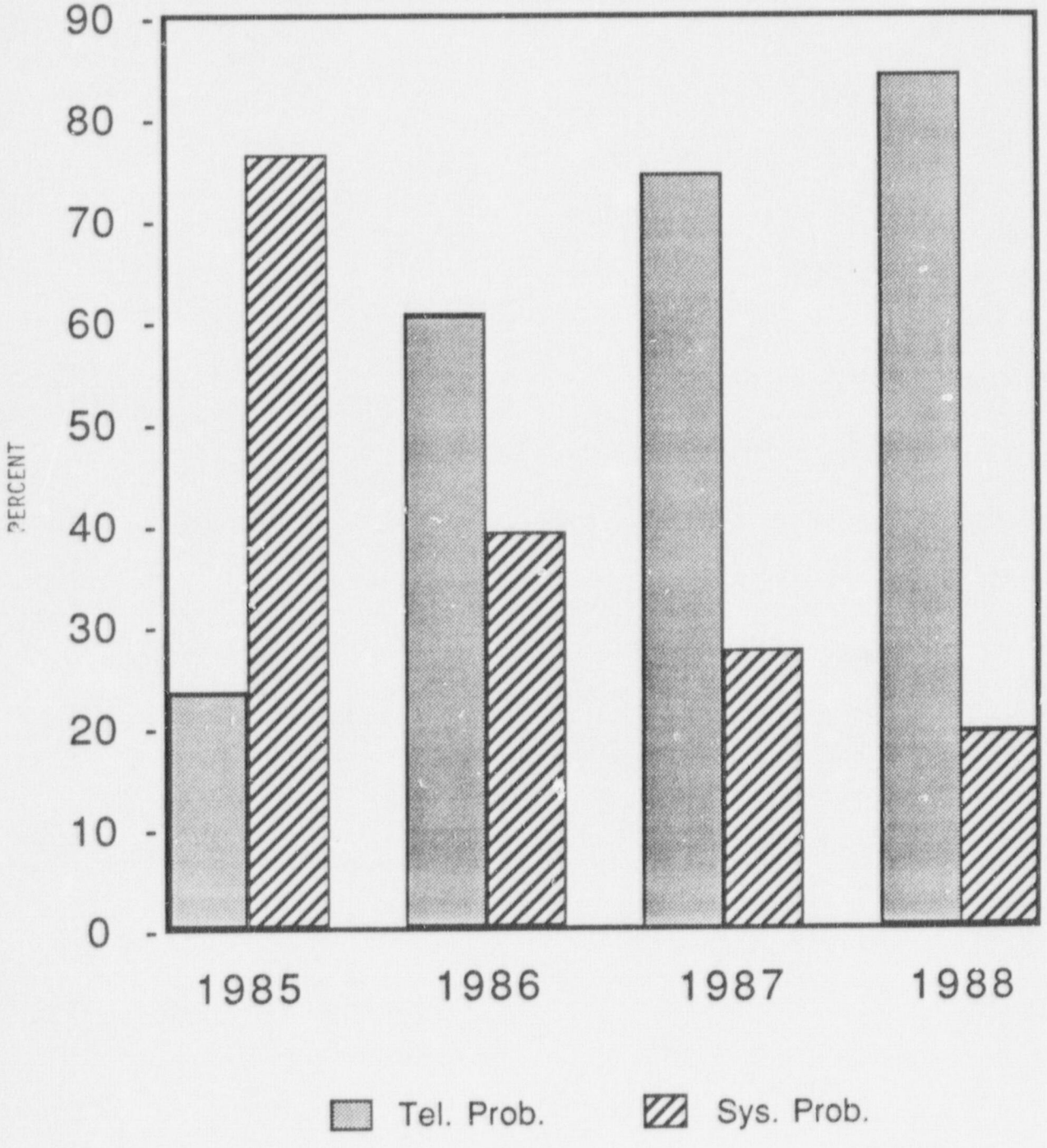


1. Mill Street, Middletown
2. North Gate, Rt. 441
3. Middletown Junction, Geyers Church Rd.
4. Alwine Farm, Gingrich Rd.
5. Observation Center, Rt. 441
6. 500 KV Substation, Rt. 441
7. Becker Farm, Becker Rd.
8. Collins Substation, Falmouth
9. South End TMI
10. South end Shelley Island
11. Mechanical Draft Towers, TMI
12. Goldsboro Air Station, Goldsboro
13. Between Intake Structures, TMI
14. North End Shelley Island
15. Harrisburg Int'l Airport
16. Crawford Station, Middletown

Real-Time Monitors' Percentage of Data Recovery



REUTER - STOKES ANOMALIES



REUTER STOKES EVALUATION

- GPU Nuclear is committed to maintaining the current system through the completion of TMI-2 defueling and fuel shipping.

- GPU Nuclear is aware of the concerns about the future of the system and taking those concerns fully into consideration as the system is evaluated.

- The evaluation includes possible modification of the system.

- The evaluation of the entire environmental monitoring program is expected to be completed and presented to the panel this summer.

SKOLNIK (READ BY EPSTEIN)

Susquehanna Valley Alliance
P.O. Box 1012 · Lancaster, PA 17604
872-0803

April 13, 1989

STATEMENT OF SVA

The decision of the Commissioners to grant the amendment to GPUN to dispose of the water at TMI Unit-2 by boiling it and releasing the radioactive carryover into the air, comes as no surprise to us. Their decision is in keeping with their uncaring attitude and disdain for the people of central Pennsylvania. They have steadfastly maintained this attitude since the 1979 accident and during the subsequent cleanup. It is highly unlikely that the NRC would have voted in favor of abandoning a project, which releases radioactive and non-radioactive contaminants unnecssarily into the air, when to do so, would cause inconvenience to a nuclear power company.

SVA/TMIA have clearly shown that evaporation and release of the radioactive carry-over into the air is not a viable alternative for dealing with this liquid radioactive waste. We have shown that will undoubtedly cause adverse health effects.

The unnecessary release of carcinogenic substances into our air and water is nothing but immoral. The use of evaporation and release of the radioactive carry-over into the air as means to reduce the volume of radioactive waste is a dangerous precedent for the state of Pennsylvania to permit at its nuclear power plants. It is a precedent which we strongly oppose. As the victims of this exposure to hazardous waste we will take this issue to the courts. The decision today opens that avenue to the citizens groups

EPSTEIN

TMIA: THREE MILE ISLAND ALERT, INC.
315 Peffer St., Harrisburg, Penna. 17102 (717) 233-7897

April 13, 1989

TMIA's COMMENTS FOR THE TMI-ADVISORY PANEL

First, we want to acknowledge receipt of information from the NRC pertaining to Post Defueling Monitored Storage criteria. At this time we would like to request a copy of the the PDMS Safety Evaluation Report which apparently is completed and available for public inspection.

After reviewing the NRC's response to our concerns on PDMS, we remain unclear who developed the general guidelines which apparently are not "absolute criteria". What exactly is the "clean enough" criteria? Is it analogous to the ALARA standards? Is there a precedent for developing radiological standards which are elastic and continually being revised " in conjunction with common sense and good radiological practices" (Post Defueling Monitored Storage, Safety Evaluation Report, 5.1-1)? Also, could the NRC or GPU please define "common sense"?

I would like to point out that we never received any correspondence concerning three issues we raised at the last meeting: inattentiveness to duty, the negative trend in skin contamination and the ongoing problems with the plasma arc cutting operations and the releases of krypton-85. We would appreciate a response from the NRC and GPU.

At this time I would like to draw the Panel's attention to some recent developments regarding GPU's financial health that we believe correspond to their plan to mothball Unit-2. As you may already be aware, Standard and Poor's Corp. has upgraded the financial ratings of GPU to "single A" status for their subsidiaries due in part to the "progress" being made with the cleanup. However, upon inspection of GPU's Annual Report, it is clear that we can expect little or no progress in the cleanup for the foreseeable future.

GPU's game plan includes maintaining "existing generating facilities in service as long as technically and economically practicable" (General Public Utilities, Annual Report, p.13.) This includes spending $500 million on construction improvements this year, and implementation of their 1986 initiative known as the Expenditure Analysis Program (EAP) to control costs and increase savings. This plan will enable GPU to extend the life of their generating stations for at least another 20 years, "which is well beyond their previously scheduled retirement dates..." (Annual Report, p.25.) In other words, it's an acceptable practice to indefinitely mothball a damaged nuclear station that needs to be cleaned up and provides no revenues. This allows GPU to meet customer needs while controlling costs. At the same time, GPU will artificially extend the life of nuclear power plants, thereby decreasing the margin of safety at these sites, in order to sustain market viability. This promotes economic expansion while minimizing new construction costs. Seems like a fair trade off if you live in New Jersey.

GPU's austerity program also calls for a substantial reduction of employees by 1990 "in order to reduce costs while continuing to safely operate and meet customer needs reliably" (Annual Report, p.25) A visible part of the employee reduction will come from Post-Defueling Monitored Storage. Yet at the same time EAP is being activated the GPU Board has announced plans to compensate William Kuhns, former CHairman and CEO, "at a rate of not less then $500,000 per year" plus benefits. The new CEO and Chairman, Standley Hoch, will receive a base salary of not less than $450,000 plus benefits (Notice of the Annual Meeting of Stockholders and Proxy Statement, General Public Utilities, p.10.)

In their Annual Statement, GPU made it clear that they will decommission Unit-1 and Unit-2 at the same time, i.e. "sometime in the next century." They admit that minimum funding for decommissioning one of their reactors is between $100 to $125 million . However, an independent consultant hired by GPU estimated the cost to be about,

> "$200 to $300 million per plant in 1987 dollars for removing radioactive and non-radioactive materials (other than the fuel) and the structures at TMI-1 and Oyster Creek. The actual cost of decommissioning may be materially different from these estimates, depending upon regulatory requirements and technology available when the work is done. No study has been conducted for TMI-2, but decommissioning of the plant is expected to be substantially more expensive than Oyster Creek or TMI-1" (Annual Report, p.9)

The above mentioned costs do not include the removal and disposal of spent nuclear fuel or the additional costs of decontaminating Unit-2. GPU also acknowledged that "significant experience in decommissioning such facilities is lacking, and the technology available at the time of decommissioning may differ significantly from that assumed in these studies." (Annual Report, p.35.)

According to GPU, at the end of 1988 $26 million had been collected for the decommissioning of Oyster Creek and TMI-1. Jersey Central Power &Light is collecting funds assuming that in-place entombment will be the method of decommissioning Unit-1. At the same time, Met Ed and Penn Elec are collecting monies assuming that dismantlement will be implemented when TMI-1 is retired. Presently, there are no funds being collected for the decontamination or decommissioning of TMI-2. However, GPU believes "that costs associated with the eventual decommissioning of TMI-2 (which includes the annual cost of decommissioning) should be recoverable through the ratemaking process" (Annual Report, p.34). It is clear that GPU believes that the ratepayers and taxpayers, and not the shareholders, should shoulder the burden of cleaning up a nuclear power plant that only generated electricity for four months.

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I think these revelations support our earlier findings that GPU does not have the economic resources to safely decontaminate or decommission TMI-2. It is now apparent that they are without adequate funding to decommission TMI-1 and Oyster Creek. The Panel needs to forcefully convey to the Commission that Unit-2 should be decontaminated immediately, and the cost must be borne by the utility. In addition, the Panel should elucidate the acute shortfall of funding associated with the eventual decommissiong of Unit-2.

CERTIFICATE

This is to certify that the attached proceedings before the United States Nuclear Regulatory Commission in the matter of:

Name: ADVISORY PANEL FOR THE DECONTAMINATION OF THREE MILE ISLAND UNIT 2

Docket Number:

Place: Harrisburg, Pennsylvania

Date: April 13, 1989

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

/s/ Patrick N. Morrison

(Signature typed): PATRICK N. MORRISON

Official Reporter

Heritage Reporting Corporation

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FOR THE DECONTAMINATION OF
THREE MILE ISLAND UNIT 2

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