T-1134

NUCLEAR REGULATORY COMMISSION

ORIGINAL

In the Matter of: ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

269th GENERAL MEETING

DATE: September 9, 1982 PAGES: 1 thru 103

AT: Washington, D.C.

TR04
Debbie Bluhte

ALDERSON REPORTING

400 Virginia Ave., S.W. Washington, D. C. 20024

Telephone: (202) 554-2345

UNITED STATES NUCLEAR REGULATORY COMMISSION

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

269TH GENERAL MEETING

Room 1046

1717 H Street, N.W.

Washington, D.C.

Thursday, September 9, 1982

The Committee met, pursuant to notice, at 8:30 a.m.

ACRS MEMBERS PRESENT:

P. SHEWMON, Chairman

J. RAY, Vice Chairman

J. MARK

C. SIESS

R. AYMAN

D. MOELLER

M. BENDER

M. CARBON

H. ETHERINGTON

F. REMICK

D. WARD

J. EBERSOLE

D. OKRENT

DESIGNATED FEDERAL EMPLOYEE:

RAYMOND FRALEY

ALSO PRESENT:

M. SCHWARTZ

G. QUITTSCHREIBER

M. GRIESMEYER

D. RATHBUN

P R O C E E D I N G S

MR. SHEWMON: Good morning, gentlemen.

This is the 269th Meeting of the Advisory Committee on Reactor Safeguards. During our meeting today we will hear reports and discuss the following:

Safety goals for nuclear power plants;

Implementation of safety goals for nuclear power plants;

Backfitting of nuclear power plants;

Consideration of severe accidents in the regulatory process.

The items scheduled for discussion on tomorrow and Saturday are listed in the schedule of the meeting which is posted at the bulletin board outside of the meeting room.

The meeting is being conducted in accordance with the provisions of the Federal Advisory Committee Act and the Government in Sunshine Act. Mr. Ray Fraley on my right is the Designated Federal Employee for this portion of the meeting. Portions of today's meeting will be closed to discuss information the premature release of which would be likely to seriously inhibit the performance of the committee's statutory function.

A transcript of portions of the meeting is being kept and it is requested that you speak up enough

so that your words can be recorded. We have received no written statements or requests to make oral statements from members of the public.

The first item on today's schedule is a report by the chairman.

I guess amongst the "news items" today is that Joe Palladino is in the hospital with pneumonia. He will hopefully get home today.

I would like to welcome Forrest Remick who, I am told, is not a member yet but when he becomes a member by the end of the day, he will have been a member since yesterday.

(Laughter.)

MR. SHEWMON: We are pleased to have you here.

Finally, Milt Presset is not with us today. Milt apparently broke his arm when his steering wheel on his Corvette spun around. In good tradition, he came on to Washington to chair his meeting and then that night went in to see why his arm kept aching. He came back the next day with his arm in a cast.

I think that is all the items I have, then. Are there any other general announcements before we get on to safety goals?

MR. SIESS: The meeting with the Commission is still on?

MR. SHEWMON: Yes.

MR. SIESS: That is upstairs?

MR. SHEWMON: Yes. Dave?

MR. OKRENT: I am at a small disadvantage, I left my glasses.

(Laughter.)

MR. OKRENT: Let me first call your attention to a yellow piece of paper. Does everybody have that?

MR. SHEWMON: What does it say on it, just "Response to Questions?"

MR. OKRENT: Response to Questions.

MR. SHEWMON: Thank you.

MR. MOELLER: Is it in the notebook?

MR. OKRENT: I don't know. We had them at the subcommittee meeting yesterday and I do not know what was done. Are there copies of this yellow thing, Mike?

MR. GRIESMEYER: I thought there were.

MR. SHEWMON: It may be coming out with yesterday's meeting.

MR. OKRENT: The first agenda item for today is safety goals. The second is on the staff draft action plan to implement the safety goals, which will take us to lunch.

Then, the first thing in the afternoon, there is a SECY paper on the proposed change in the rule on

backfitting; and then, the fourth item is a discussion of what is called SECY-82-1A which is the staff's approach, technically, to look at core damage and things. So, these are somewhat tightly interconnected.

It is going to be a busy day and what I hope we can do is within the time allotted for each of these spend roughly half talking to the members of the staff who are going to be here - but I would hope not more than half - and the other half looking at draft, possible ACRS positions or letters, or so forth, with the idea that at least we have a first go-around on possible committee positions on each of these today.

Tomorrow, in the morning, there are other things on the agenda. There is a brief session tomorrow for the meeting with Commissioners. Many, if not most of these items, are supposed to be on the agenda for discussion with the Commission - not necessarily to give positions. But I think on many, if not most of the agenda items, we should if we can give an ACRS report at this meeting which would be completed on Saturday.

I think at the first go-around we will be looking at the main aspects of what is proposed here today - there is not going to be a good chance of finishing on Saturday. So, this is the crude way I would like to propose we handle these four items.

Dr. Mark?

MR. MARK: You mentioned, and certainly properly, that implementation, backfitting, sphere accidents, safety goals, are indeed tightly interconnected.

I have not seen any reference to emergency planning which, I believe, is also potentially very tightly connected because now that the safety goals apply to within a mile of the plant you can get all the people out and guarantee zero probability - with a bunch of school buses.

It is not mentioned what credit for that might be thought of in connection with the safety goals.

MR. OKRENT: Well, I think it is the kind of question you can pose to OPE, how they envision this might enter into a calcuation of meeting the safety goals.

MR. MARK: It should either be said you may not take credit or whatever. They are going to be in today?

MR. OKRENT: They are supposed to be here for the first topic.

MR. MARK: I will raise the question then.

MR. OKRENT: Let me note that there will be handed out - although they currently are not ready -

five or six documents not all of which are necessarily possible letters. There will be, as I said, one called Draft ACRS Response to NRC staff questions of the Commission regarding safety goals.

To refresh your memory and for those who were not at the subcommittee meeting yesterday, in July there was a new draft version of a possible safety goal statement prepared by the Office of Policy Evaluation. There were questions posed by the Office of Policy Evaluation and also by the NRC staff to the Commissioners concerning specific important questions as to what the Commissioners thought should be in the next version of the safety quality statement.

At the back of this yellow thing, when you get it, you will find a list of those questions. The Commission has not yet given its answer to the staff on these questions and it is my understanding that if the committee could provide input, the Commission would be interested in receiving such input.

But this is the meeting, though, to get that input if you are going to do it. But I expect the Commission is going to try to answer the staff before the October meeting so that the Office of Policy Evaluation can prepare a next draft version and the staff can provide the current draft implementation plan,

et cetera.

So, I would propose myself that in dealing with the first subject, "Safety Goals," we focus on these questions and if you have time take on other things. I would recommend that you do this.

Now, at the subcommittee meeting yesterday we did not discuss these questions specifically. The way we handled the subcommittee meeting was as follows:

In order to try to help provide a kind of focus for the meeting which was going to be very busy since there were actually five subjects - one subject dealing with a report by the staff and the committee on safety - we have prepared a set of questions on each of the several documents that we are sort of referring to today. You all should have a set of those questions.

I do not have my glasses, I assume they are in the notebook but I can't guarantee that.

Basically, at the meeting yesterday we largely went through these questions as a way of focusing the discussion. Those were the questions for the staff on each of the different documents. As I say, we did not specifically, as a subcommittee, try to look at the proposed answers.

So, what I would suggest as a possible way to proceeding today is that when Dennis Rathbun comes in -

he is here, I think he will be the spokesman today for OPE - maybe he will give a five or ten-minute summary of where he thinks things stand. Then I would suggest that the members pose questions to him that they find of interest - Dr. Mark indicated one kind; if there are other kinds that you think would be particularly relevant to the committee developing a position on the staff questions for the Commission on safety goals, which are at the back of this yellow thing.

Then, as I say, I hope that at the end of the first hour we can start talking about a possible committee response in a general way to these, whether we have opinions on the committee. There may be some we choose not to respond to, I don't know. I think there was one item I did not prepare any answer on, I do not know what the committee might want to say.

Are there any questions?

What I would like to do is sort of before each topic give you a proposed mode of operation and tell you what the reading, specific reading material, for this is.

So, again to repeat, you have this draft yellow thing. There also should be the set of questions that we prepared to OPE on their second draft safety goals. You will find there were various questions raised to them. In fact, there are a few questions on

their list that belong on somebody else's list but don't let that bother you. We had a little quality control problem on typing - it is not very important.

Now, let's see, there were several committee members present yesterday, Mark, Shewmon, Siess, Bender, Ward; so, we had a pretty good attendance.

Kerr will not be here. I should note that he has provided specific comments on a couple of the draft letter, if you want to call it that. So, you are going to see later on some version called Draft Two. He promised to telephone in today comments on the others. He had to be back at Michigan today, the first day of classes.

If there are no comments, I would propose we ask Dennis Rathbun to give some introductury comments and then have the committee members raise the questions they are interested in, and proceed for an hour that way.

MR. RATHBUN: Thank you, Dr. Okrent.

What I would propose to do is present to the full committee a brief status report which I presented yesterday to the subcommittee on where we are on the safety goals project and where we plan to go from here.

OPE sent the Commission a summary of the public comments last July 7, organized by overall reaction from the commenters; comments on the

implementation plan; comments on the qualitative goals, and comments on the numerical guidelines.

We also sent an abstract of public comments to the Commission on July 8.

The Executive Director for Operations transmitted the staff implementation plan to the Commission on July 6.

In light of the public comments and the staff implementation plan, OPE sent for Commission consideration on July 12 its recommendation for proposed revisions to the Commission Policy Statement.

There were three key features which we believe were central to the further development of a Commission policy, Commission Safety Goals Policy Statement.

Fist, as the July 12 paper stressed, we recommended that the Commission endorse the key principle of application, namely that the Commission intends the goals, the benefit cost guideline, and the design objectives would be used in conjunction with probabilistic risk assessment and would not substitute for NRC's reactor regulations contained in 10 CFR Part 1. Rather, individual licensing decisions would continue to be based at present principally on compliance with the Commission's regulations.

Secondly, a key principle of application which

we recommended that the Commission specifically endorse was, the regulatory decisions to use probabilistic risk assessment should be made on the basis of an appraisal of its value in the specific application. Thus, the implementation of an NRC statement of safety policy should not of itself mandate the use of probabilistic risk assessment.

Thirdly, recognizing that we simply cannot proceed on every potential problem which could result from the NRC use of a Commission-aproved policy statement, safety policy statement, we recommended that the Commission establish a two-year trial period to permit an evaluation of the benefits of its safety policy.

At the conclusion of our briefing of the Commissioners on July 14 we were asked by the Commission to provivile it with the set of questions, the answers to which would form the basis for Commission guidance to the Office of Policy Evaluation and the staff in revising the Safety Policy Statement and associated implemantation of the plan, next steps.

We sent the Commission on July 20 the set of questions which I believe the members of the ACRS have before them now, and after discussion with the Chairman's Office we believe that it would be very

useful to all of us if we could obtain ACRS views on these questions.

I know that tomorrow you will be briefing the Commissioners, tomorrow afternoon, and perhaps in that session you may be able to relate your answers to some of those questions, the briefing on September 10.

We have not obtained Commissioners' answers to those questions yet and thus ACRS input really would be very timely. What we plan to do after we do obtain Commissioners' answers to those questions is draft for Commission review guidance to ourselves and the NRC staff which the Commission would then review and decide that this was in fact the way they wanted the Commission's policy statement, the staff implementation plan, revised.

Based upon the Commission-approved guidance, OPE would revise the Safety Policy Statement and the staff revise its implementation plan. Our target would be to present the Commission with a revised Policy Statement, revised implementation plan for their approval, and to have that ready to go out for public comment by the end of this year.

Yesterday, in the subcommittee meeting, I went over the answers to these questions and I do not think that is what you want to do today.

That concludes the status report of where we are and where we would go from here. Yes, sir?

MR. SHEWMON: Several of us are concerned about the possibility of going from a statement that says we do not want to increase the probability of Mrs. Jones getting cancer by more than one in a thousand or something, to what you do for the modification of an off steamwater system. In that the path is tenuous, honest people could differ on it and it may well be a morass with employees, a lot of people, doing probabilistic assessments but does not help you decide about the off steamwater system.

Therefore, if I have concerns about how that will be handled, do I wait until this afternoon when we talk about implementation or are you likely to say anything in your proposed policy statement, the next draft, that would comfort me on that problem?

MR. RATHBUN: Well, as I said yesterday in the subcommittee meeting, I recognize, we have recognized throughout the development of the Commission Policy Statement that there are different approaches.

My interpretation of the Commission's effort in the past year and before that has been that the Commissioners themselves wanted to produce a policy statement which provided the public, the Congress, the

industry, the NRC staff, its perspective on how safe was safe enough.

In accordance with its statutory responsibilities - that is to protect public health and safety - that it would be most easily understood by a wide spectrum of groups if it was stated in terms of individual risk and societal risk.

As I think we recognize, one could as an alternative take an engineering approach, if you will, which focused on internal, plant-specific probabilities - the probability of the auxiliary feedwater system operating; the probability of large-scale core melt; the probability of containment failure, so forth and so on.

But that, as I am sure you recognize, has not been the tack that we figure. We do with our eyes wide open, I believe, I think we do appreciate, understand, that there are uncertainties in models.

I personally am not an expert on that. We rely heavily on NRC staff, Bernaro's people and those who work for Ernst in that regard.

MR. SHEWMON: Let me state that nobody is an expert if you define an expert on something, a question. You cannot get different groups to get the same answers because the data is not there in many cases, and if each one assumes what they think is the

best set of data, then you can end up with very different answers.

The ATWS case is the one I have lived through and in that case you had the industry coming in with their statistics and the staff coming in with their statistics, and each one proved that you had to go in a different direction. Everybody can say they fit the rule if the rule is vague enough.

Now, if we want to stay with "how safe is safe enough," we make a policy statement. But then you ought to say, but we are going to regulate by different rules and we will not get hung up by somebody coming in taking us to court and saying, "Can you prove that if you do not require this off feedwater system changed, that you will still meet your ten to the minus three?"

MR. RATHBUN: Of course, the way you described the problem there it sounds as though what you envision is a rule, a requirement that must be met.

I think that one principal reason that we have adopted the approach is that this should be a policy statement, that it is not a binding requirement which must be met. That it would be a factor considered in decision making but would not be determinative in some sense, I would say is a recognition of the fact that there are substantial uncertainties in modeling and we

are really not ready at this point to have it firm.

That is why I said what I said.

MR. SHEWMON: That is a subtlety that had passed me by. I thank you for restating it.

MR. RATHBUN: That is very important. Yes, sir?

MR. MARK: How does that argument you just went through operate if you go the other way? The chap says, "I have met your policy." Are you then in a position to say, "Yes, that is all well and good but you have to do something additional."

MR. RATHBUN: Well, again I think the primary basis for regulatory decision making would continue to be that the regulatory requirements, rules, must be met. Yes, you would have to meet the rules.

MR. MARK: Except if it were shown that the rules require something else. What you are saying, you could relax the thing at your own option. It does not quite prove that you have met the ten to minus three, but you have given it a good picture that we will accept.

I think you are in more trouble if you say, "You have got to put this extra pump on," it is not in the present requirements. You are going to say, "We are not sure about the ten to the minus three."

MR. RATHBUN: The problem of the risk

assessment in conjunction with the safety goals, I think, is just another perspective on the problem, another factor that one would think about in deciding whether or not, let's say, to impose a new regulatory requirement or not to. But it does not determine, nor was it intended to determine.

MR. MOELLER: One sort of fundamental problem that I find I have - and perhaps that was answered yesterday at the subcommittee meeting - but you have told us that PRA is not an exact science and there are many possibilities for differences of opinion, and so forth.

Therefore, you are going to stop with the estimate of the frequency of core melt - at least that is what I read. You were not going to try to go beyond that because of the room for error.

And yet, in your policy statement, in your goals, you tell me about immediate fatalities and latent cancers. Well, if you stop with core melt, what is the meaning, then, of the fatalities and latent cancers?

MR. RATHBUN: I guess we approached the problem the way the Commission has approached the problem, to go the other way.

That is, how safe is safe enough; what are the risks, to answer the question that many outside of the

NRC have asked. What are the risks that I run if I live near a plant; what are the risks that we run as a society if we live near the plant.

That is the problem we were trying to work in the original. I suppose if we were to stop, we were to stop there and not even have gone into the question of large-scale core melt probabilities.

However, recognizing again that there are uncertainties in these kinds of calculations, we felt that it would be prudent if we included the probability of large-scale core melt. That was added after a number of discussions with the staff. We stopped there rather than the traditional internal plant-specific probabilities.

MR. BENDER: If I follow the discussion which you just had with Dr. Moeller I would come to the conclusion that you have decided on what the limiting health effects would be first, and then you are going to start from the outside in.

What do I have to do to assure that those limiting health effects are not exceeded? If I work it that way, then the first place I would look at is the containment, can the containment withstand everything? If not, what can it withstand and what constraints do I have to put on the reactor system?

Now, that is kind of reversed logic to me. I don't really see how you can start from the outside in and come up with something that makes any sense to the people that are designing the plant.

In general, I think, you have to start with the plant design that exists and say, "What is it capable of doing?" And that goes successively through the various barriers or whatever you want to call them. Then, as a consequence of malfunctions in that particular system -- basically, that is what the PAR was supposed to do. I happened to be a skeptic of that PAR, I don't believe it will do much of anything.

But I don't see without that there is any way to take the position that you are taking regarding health effects. You say that you will use them when you want to and if you feel like you do not want to, you use some other basis. That leaves me with the feeling that it is still going to be sort of a mystical kind of basis for deciding on what is acceptable.

Now, mysticism is OK, but if that is what it is I think you ought to say so.

MR. RATHBUN: Of course, I would hate to cast this on the conduct of mysticism, I hope it is better than that.

To put it, perhaps, in an economic context and

think of it, are we are going to work it from the demand side or the supply side. The supply side is the engineering side, that is the probability of pumps and valves functioning and so forth and so on. That is what the technology will produce. That is "a" way to work a problem.

But there is the other side, too, and the other side is, what is society looking for? Congress and the people want to know, "What are my risks? And do not confuse me with what the probabilities are, I do not understand that. But if you tell me my risk of an accidental death is one in a million, I can relate to that, that means somthing to me. I have had so many friends in my experience over so many years that have met unfortunate calamities and died in car crashes or some such thing as that. I can understand that in some sense."

That is the difference of how we have been working the problem. I suppose if it were really a case of just coming up with plant-specific probabilities, the Commission would not have done it. They would have assigned this as a task to Bernaro's people or Denton's people and said, "Go out and come up with a rack-up of acceptable probabilities for a whole series of systems, individual systems," and so forth and so on.

But in my judgment, anyway, that would probably not be a statement that the Commission would be in the driver's seat and writing and adopting as their own.

MR. BENDER: Well, this may sound like a broken record, but I think you are mixing up apples and oranges. I think when people tell me that the likelihood of dying of cancer from things other than radioactivity is some number, it is based on actuarial experience. They have looked at how many deaths there are from various causes and they have laid them out and the statistics are there.

The only qualification that they put on it is, "Well, am I exposed to those particular circumstances?" We do not have any actuarial experiences to work with, they are all speculation. We do not even know the constraints that are laid on them and the basis for setting the risks.

Consequently, when you lay that number out on the table you do not have any basis for depending on it. I think that is a confused concept that the Commissioners have developed and it will be destroyed the first time somebody besides me, who does not have any nuclear experience, tries to ask, "How do you know that you are meeting a criterion?"

I think that is the dilemma we are in.

MR. WARD: Dennis, I think your explanation of the situation in terms of supply side and demand side is interesting. It seems to me that the key question is, who is going to be responsible for translating the demands into supply side requirements?

It seems that the present implementation of the plan would have something vaguely -- I guess industry as a whole would be making that translation. But since the translation is made by this, as Mike referred to it as kind of a mystical art or at least a very difficult and inexact art, that seems to me that it is going to be inevitably very troublesome and maybe impossible.

An alternative would be to have the NRC for the present time, for the foreseeable future, keep to itself and take responsibility for making this translation so that the safety goals in terms of ultimate health effects would be an expression of the NRC to the public of what its purpose, what its goals are in regulating the industry. Then the NRC will take the responsibility for translating those into fairly specific and unambiguous requirements which will be placed on the licensees.

It seems to me that if that is not the plan at

the present, my bet would be, after a two-year trial period that something more like that is going to be seen as the most workable way to go about that.

So, I just hope that that sort of option is held open and kept visible, and discussed during the two-year trial period.

MR. MARK: David, it is worth noting that that is exactly the approach that the staff has decided they are going to follow. The only thing they are going to attempt is the ten to the minus four on core melt, and they will leave it up to reasonable arguments.

MR. WARD: I think they are going to need more than that, though.

MR. MARK: They will need more than that.

MR. MOELLER: You mentioned something in the course of the ten to the minus four, and that was, if I remember correctly, the desired objective; and then, ten to the minus three was the number being quoted for operating, completed plants.

Now, am I correct, then, when the plant is under construction and planned in the U.S. or completed and we have, say, 200 operating facilties, then we will have a core melt every five years on the average; is that what we are considering as acceptable? I mean, I need help.

MR. SHEWMON: That is the way you will decide that indeed we are doing better than that.

MR. MOELLER: Well, that ten to the minus three number surprised me personally. I was expecting a lower number. But am I correct, ten to the minus three with 200 reactors is once every five years? Is that what your objective is?

MR. RATHBUN: I do not think it was that frequent. The objective is ten to the minus four.

MR. MOELLER: That is the design objective, is it not, if you look at an operating plant?

MR. RATHBUN: The ten to the minus three, I think, is in the implementation plan, it is not in NUREG-0880.

MR. MOELLER: Oh, all right then, the implementation plan. But as I read it, if you look at an operating plant and it meets a frequency estimate of ten to the minus three, then it is an acceptable plant, it can continue to operate.

MR. SHEWMON: That might tell you as much about PRA as it is now practice, as it tells you about operating plants. So, I don't know which way you want to work that conclusion.

MR. MOELLER: Well, how am I, as a committee member, supposed to look at the ten to the minus three

number?

MR. RATHBUN: I am not sure exactly how to answer that. Let me just say that the ten to the minus four and the implications of the ten to the minus four -- I don't recall the passage we had in NUREG-0880 was in the document, NUREG-0880 which the Commission reviewed along with the rest of the documents sent out for public comment.

What you are referring to, the operating limits and the like, were in the staff's draft implementation plan which is still under development and has some miles to go, along with revisions to NUREG-0880 before the Commission sends it out for public comment.

If in fact that is an implication of the ten to the minus three, you may want to call that to the Commission's attention to discuss it with the staff. But we have not specifically run calculations on that and examined the implications of it.

MR. MARK: I would like to introduce a different question, if I might.

It is quite apparent to everyone, I think, that the severe accident rule indicates --

MR. SHEWMON: Carson, do you have a microphone? It would help all of us if you would use it.

MR. MARK: Yes, I realize that.

I have not seen any mention of the fact that the emergency preparedness plans are also somewhere in this picture, particularly if the goal, as it is now written for individual risk, discusses only people within a mile of the plant. Then an operator, a licensee, could perfectly well be in the position of saying, "The risk to those people is exceedingly small because I can get them all out of there - there are only 15 of them anyway - get them all out of there with a very high likelihood. So, I meet the goal." That is all I may do to meet the goal.

Now, you are going to object or someone will object and say, "Well, but we do not give any credit for evacuation plans," or "we do give credit. So, we will allow you a ten to the minus one factor for a value for evacuation but not more," or somethig like that.

It is not mentioned, it has to be at least decided somewhere.

MR. RATHBUN: NUREG-0880 and the individual risk in the revision does not really make clear what our position is with respect to the question of emergency planning. We have discussed this with Bernard's people, specifically Roger Blond and, quite frankly, I think we are going to have to look at it.

MR. MARK: Well, you included the individual

risk to people within a 50-mile radius, and there the idea of evacuation was certainly not defensible. So, you had a control.

But now the thing is written so that it is only the ones in the vicinity and the "vicinity" is defined as a mile and evacuation becomes absolutely straight forward.

MR. RATHBUN: That is true. Also, the revised statement, as I explained yesterday, the July 12 paper did not contain a societal risk design objective, and that is one of the questions before the Commission. I think based upon the meeting that we had with the Commission on July 14, we will be back at the drawing board trying to come up with a societal risk and we will probably have to say something about the relationship to emergency planning.

MR. MARK: The July 12 revision does include societal risk.

MR. RATHBUN: Through a benefit-cost guideline limitation.

MR. MOELLER: No, through the delayed cancer risk to the people in the vicinity, and society got it, got all the benefit that was in 880; in fact, it got more. All you would have to do would be to say that people outside the mile are less than ten to the minus

three.

MR. MOELLER: Carson, on your point, though, I understand what you are saying, but my understanding was that the calculation for the people within one mile was, you assumed they were not evacuated. You assumed they stayed there.

Are not the calculations for the persons who stay there?

MR. OKRENT: No, I think anyone doing a PRC would put in an evacuation model and they do put in evacuation.

MR. MOELLER: All right, I misunderstood.

MR. OKRENT: They calculate risk to the individual and to society, allowing for evacuation, allowing for interdiction of land and contamination, and so forth, which is what 1.1400 also did.

So, I myself would assume that the interpretation would have been and will be, unless for some reason a change is made, that evacuation is included in the model.

I would like to make one or two comments that come out of this. I think Carson is quite correct that one could envisage calculations that you could employ very effective evacuation and in particular since at least at present the trends of much of the thinking -

and I will say "much" and not "all" because there are some skeptics - is that, "Well, if you have a core melt in the containment they are thinking again of large dry containers" - we have not looked at the other containment - "will have a large inherent capacity well beyond the design pressure. So, should failure occur it will be much delayed, eight hours or 18 hours, or something of the sort."

In principle, a time in which you could accomplish very effective evacuation if you were sure which way the wind was going to blow for an extended period of time. So, one could calculate, therefore, very modest early effects and in principle control the delayed effect to some extent that you calculate by what you assume on interdiction and decontamination of the land, and so forth.

I think this points to, among other things, two problems in the current version. One is that it does not include economic effects in the ALARA criterion and in fact there is a trade-off between health effects and economic effects, of course depending on how long you allow land to be interdicted and how much land is interdicted you reduce the health effects accordingly for such land.

Also, depending on what you claim you can

decontaminate, again you can reduce the health effects. But as to the costs, that does not show in the current ALARA calculation. That is one kind of thing.

The other thing which I think myself is more important - I am increasingly convinced it is more important - is that nowhere in the Safety Goal Statement, 0880, and I must confess only in a praragraph in NUREG-0739 but not as one of the criteria, is there a consideration specifically of what one could call a loss of access to an important region of land - which is in fact what would most likely occur if you had this delay for these.

In fact, in many countries in Europe this is looked upon perhaps as a dominant concern. Some of them have implemented design measures to reduce this likelihood for some, many of the accidents that can occur. In fact, they have raised questions in discussions with NRC staff people about the absence of any such criterion in NUREG-0880.

I guess, actually based on the thinking that we are doing about threshold action criteria, in the end when we tried to put it in numbers this one seemed to come out to be maybe the controlling factor in our preliminary numbers, rather than individual risk. In other words, you make a guess how willing people in the

counties surrounding a reactor might be, willing to accept the loss of access to a substantial part of it.

I think you end up with a larger number than on the individual risk part. In the end, I guess I am beginning to think, that is where what I would call risk aversion from society appears at least in a strong way if not the most dominant way. That is, as I say, not in NUREG-0880. Again, we only mentioned this, zeroed in on it but did not propose anything in a guiding letter.

MR. BENDER: Dave, you know, this point has been hanging around since the WASH 1400 Report was put out. The Department of Interior has frequently made the point with respect to water resources not land, but generally water resources.

It seems to me, though, in order to be able to address it you have to know a lot more about the mechanisms associated with accidents that penetrate containment than we presently know. If you are going to take a position on its importance, then the corrective action would have to be defined pretty well.

I think it is a very useful concept, particularly for new sites because it would steer you away from places where the resources are of great value. But to start out from existing sites and decide how the resources might be jeopardized as a function of

where the site is, would require you to go through the entire accident sequence, assign some probability to certain circumstances, address the interdictive actions that are associated with it before you can come to any conclusion.

It is an awfully complicated thing to deal with. If it were in the Safety Goal Policy, I think the Safety Goal Policy would have to work on that side of it very much, at least as much as humen health effects, to come to a position.

MR. OKRENT: Can I offer one comment? I am not pretending it is an easy thing to develop criteria. If it had been easy it would have been in 739. Mr. Griesmeyer and I talked about it for more than a small time.

I don't think in the end it applies only to what you would call "major resources." I must confess, that was the way my original thinking was going and, you know, it might be that there were truly major areas that were affected which the Department of Interior was concerned about.

That certainly is one that we would think about. But I think after reflecting on it, I suppose, let's say, how citizens living around a plant would think, I suspect that the loss of access to a

substantial area that was not just scrub out in the desert but farmland or an urban area or so forth, even though it was not such a big national resource that it had a big effect on the national economy, that this sort of thing from a regional point of view is a way of reflecting risk aversion.

And in the end, I think, this is what the concern is that has been explicitley expressed in places like Sweden and France where in fact they are taking measures to the effect that they are cost effective in some crude measure. In Sweden they are doing a very sophisticated thing and in France they are doing something more modern.

MR. BENDER: Also, the other potentials for limiting access to that resource become more significant, as well. If you are living in a town that has a big chemical plant associated with it, the risks from that chemical plant are usually quite large. They are not usually measured but a lot depends on how you postulate the risks.

It seems to me we are going to have be pretty careful if we try to go very much below major resources in trying to make judgments.

MR. SHEWMON: Let me only comment, Dave - I am not quite sure how it fits in - but the arguments you

are using, I think, are some of the main arguments for not putting a reactor in my neighborhood, at least out in the farmland of Illinois where I know some of the people who were not against nuclear power but did not want to have their farms preempted by it and their neighbors'.

In effect, you already take away the resources of those people, change the nature of the neighborhood, and you do it under the banner, I guess, of "The government has decided it is for the public good."

It seems to me that I do not quite know how to make the next step in the logic. What you are saying is, "Well, I guess we should spend more money to try to make sure you do not preempt some more land with more safety functions."

I think what happens is that those people who are up-tight about building nuclear plants, feel the neighborhood is going to hell, move out and those that move in are the ones that feel they have some benefit from the plant being there and they are going to live with it.

MR. OKRENT: I was not trying to look at all at the questions of preempting land, I must confess.

MR. SHEWMON: But we are preempting it already, or the government is, I guess is my meaning.

You take it out of service, you are going to put a cooling pond on it.

MR. OKRENT: Well, I think in Europe it is a little bit more of an acute question because in some cases the reactors is in one country but near a big city in another country, and the region might require some decontamination in the future. If you think of it that way, you really have incentive to avoid or reduce the probability of this need, even though they could say there is plenty of time for evacuation.

MR. BENDER: If you remember Hiroshima and Nagasaki, the circumstances are not irreparable and you have to be careful not to overstate the risk.

MR. OKRENT: The reason I raise the point is two-fold. First because I think it is, in fact, a real concern in at least some countries in Europe and they are taking specific steps.

The second thing is, if you look at only health effects and in no way include economic effects, even in the ALARA, then you completely miss the question.

MR. SHEWMON: Would this be a good time for a five-minute break?

MR. MARK: Why not?

(Whereupon, at 9:35 a short recess was taken.)

MR. SHEWMON: Could I have your attention,

please? Let's get back to this.

MR. OKRENT: We have roughly an hour. What I would like to do is go through the questions that staff poses to the Commission and look at the rough draft, possible responses, and get sort of just major comments - no editorial-type comments at the first stage.

There is an associated question, are there some points that one wants to make concerning the safety goals that are not included in the questions or in response to the question.

In some cases the response to the question includes a specific response and then some added related things we note as we read them. There is a variety of reasons for this. I think in fact one can anticipate when the Commission responds to these questions in some cases they will also add additional guidance and not just give a narrow "yes" or "no" sort of thing.

MR. SHEWMON: But by leading us in this direction, do you feel that the staff does have a reasonably complete set of questions and therefore we should couch our response, comments, in that mode?

MR. OKRENT: Well, the committee did write a set of comments in July, I can't remember which any more, on NUREG-0880, and there are some points there we might want to add on. There may be some other things

that are not there that we may want to add on.

I do not intend that this preclude the possibility of having a paragraph or several paragraphs at the end, that was not my intent. The thought was, though, that we should try to get a letter out at this meeting.

MR. SHEWMON: This would be part of it, plus whatever else we wanted to add.

MR. OKRENT: That was my intention.

So, what I propose, if it is agreeable -- I do not know whether you want this in the transcript or not. As you wish.

MR. SHEWMON: I do not see any point in it.

(Discussion off the record.)

MR. SHEWMON: Dave, you want to bring up implementation now?

MR. OKRENT: Mike, do you have the handout?

All right, Mike will hand out a draft, a very rough draft. This one, though, has the benefit of comments by Bill Kirk so it is a little less rough than all the others, and some comments that Mike Bender had.

Then he is going to hand out something else which I put down in a hurry, which I called "Possible General Statement of Position."

A lot of these issues end up being

interrelated among the topics that we awre going to talk about today. This partly is the way we were trying to see whether there are some general ideas that we might want to keep in mind, whether or not anything is actually forwarded to the Commission; even if we agree on these general statements is a separate question.

But anyway, Mike, you have Draft 1. You also have the draft staff implementation plan and the questions that we gave to Mr. Ernst in connection with yesterday's subcommittee meeting.

The implementation plan is a rather long document. In trying to decide how the committee might approach preparing a letter on this, assuming we would have to prepare a letter at some point, we will maybe try to do it this month, or by next month.

My own guess was, it would be the preferable approach for the committee to pick out what it considered were the general issues or the main issues or so forth, and have a committee comment there. Then, at the end say, "We have some further questions or comments from the subcommittee which the full committee has not had time to consider in the time available."

MR. SHEWMON: The issue of transmitting subcommittee reports to the Commission without the committee going over them is going to come up again

tomorrow, and I want to tread lightly on that.

MR. OKRENT: I was trying to think of how we could manage dealing with this long document with so many specific points. This was a trial balloon approach, if you will. I chatted with Kerr on it. In a difficult world that might be one of the easier things to do, but this is a question that we have to decide. I doubt that we can address in the committee all of the specific points in view of all the topics we have.

MR. SHEWMON: They are on the record in the form of the subcommittee report.

MR. OKRENT: Well, right now there is no subcommittee report, there is only a set of subcommittee questions or discussions.

MR. SHEWMON: Fine.

MR. OKRENT: Anyway, so what you have then, you have three - I do not know why yellow is the color, unless they ran out of all other colors - but you then have, as I say, what I would call a draft letter which includes only general comments with the idea that there might be other points, possibly, identified here; and then these other two documents.

Now, I would suggest that the way of beginning the discussion again, we ask Mr. Ernst to give us a summary of how he views things today. Then have the

committee members raise whatever questions or comments they think they wish for, in the order of 45 minutes; and then try reading these things at least once through and see what the thinking is.

That is going to be quite a large mouthful to swallow, actually, in two hours.

MR. BENDER: Could I ask for a little clarification of the intent about the letter? We are going to wind up having three or four letters on this subject. I have trouble just keeping straight the record. Can they be combined in such a way that it would cover the whole subject matter?

MR. OKRENT: I think that is a possibility. If we can decide what we want to say, which to me is the more important thing, then if the committee decides on a format, overnight, Friday night, somebody can put it into that format. I am not too worried about it.

I have chosen for now because of the fact that we have separate documents, to try it this way.

MR. BENDER: I have no problem with it.

MR. OKRENT: I would just ask Mr. Ernst if he would start.

MR. SHEWMON: Fine. Please begin.

MR. ERNST: I had not prepared, other than lightning conversation, so I will make a few observations anyway. Just as a reminder, the action plan was developed with the intent to be consistent with the proposed safety goal. In this regard, the proposed safety goal talked in terms of accident sequences as far as quantification is concerned, talked in terms of accident sequences, not just core melt but also the old nomenclature of the more expected kind of things, but did not address quantitatively routine missions.

The EDO in its transmittal letter expressed some concern about routinely calculating the more expected transients and accidents, and I guess since the revised safety goal submitted by OPE to the Commission which also included the quantification of routine emissions, we think the EDO has been even more concerned principally from the fact, as I mentioned earlier this morning, that there has not been a great attempt to try and document what these releases might be, and fear not so much that the releases might be exceeding the safety goal, but fear that there would be undue analysis in this area.

The action plan also proposed, as you are well aware, the operating limits and the design objectives as being within the intent of the safety goal, and as was expressed yesterday, the EDO has some concerns over the operating levels, particularly when applied to the licensing arena, and it is my understanding of the EDO's position that he would prefer not having these explicit operating limits. I don't think he objects to the philosophy of the design objectives, but I think he was a little leery about specifying operating levels and even perhaps more worried really about having the operating levels and design objectives applied to operating reactors.

I think his recommendation to the Commission is that when applying safety goals to an operating reactor, the Commission should retain the decision powers or the guidance powers or whatever they are during this stage of the game, during the interim period. For example, if one makes a decision to do an INREP of some scope in the next few years, one might make this decision whether one has a safety goal or not. I think the perception of the safety goal would help to make decisions on INREP, but it is not necessarily necessary to have a safety goal before an INREP could proceed. You could still get some very

useful insights from the PRA's.

However, if a decision is made, and one has not been made at the present time, and the action plan is not the vehicle for making that decision, if the Commission at some later time decides to do some number of INREP kind of reviews, I would assume that it would retain jurisdiction over decisions made after the INREP is completed, decisions that might hinge somewhat on the risk assessments to come forth. So that is my perception of the EDO's recommendation at this time.

As of yesterday, there is no NRR or EDO position on the revised safety goal that went to the Commission from OPE. I don't think we have really looked at it in that sense to have any kind of a comment except perhaps in the areas of routine releases, and we might call it the efficacy of applying the safety goal to operating reactors which has been expressed by the EDO.

MR. SHEWMON: If I have --

MR. ERNST: You might guide me in what else I might say.

MR. SHEWMON: I would like to ask you a question. If I understand the implementation goal, you see a great flurry of activity of doing PRA's to calculate frequency of core melt, and then in the

fullness of time, this will get transformed and translated into something which will allow people to decide how reliable aux feedwater should be or containments or other things which may look as if they could play a part in the dominant scenarios. Is that what you meant? Am I misquoting you?

MR. ERNST: I guess two comments. One is the hope, anyway, that the mere existence of the safety goal would not result in a flurry of new PRA's that had not been anticipated as useful or needed at this time.

MR. SHEWMON: Well, I suggest that you look through the first six or eight pages of the action plan, and safety goal PRA's sort of occurs on every fifth line.

MR. ERNST: In most cases, I think it says it would not be required. For example, would not be required for OL's -- I think the only time it says that the staff would start recommending, I think there is an unfortunate use of the word "would" or "must" or something like that instead of maybe "should", because a decision has not been made. I think the staff is recommending in 82-1A that a PRA be conducted and measured against whatever safety goal exists at that time for standard plant review.

MR. SHEWMON: You may remember more not's. As I look through the first couple of pages, I see one

"not" and then the next ten or fifteen, the PRA's will be required, is the first line. That is on Pages 3 or 4.

MR. ERNST: Would it be helpful to go through these item by item briefly?

MR. SHEWMON: Well, that's the basis for why -- then when I get back to Page 12 it says, "Regarding the development of second level engineering guidance, the staff will further disaggregate the first level core melt engineering guidance in such a way as to allocate reasonable reliability requirements for those systems and components most important to safety."

MR. ERNST: I would like to do two things, I guess. Let me comment on this disaggregation first. There has been a lot of discussion about different levels of safety goals, and I guess it is fine to have an umbrella kind of a safety goal expressed in terms of public risk.

I think when you start talking about regulation, though, particularly if you are talking about getting into the licensing process, it probably comes since reviewers and engineers, things of this sort have their own areas of responsibility and interest and expertise. It quickly gets disaggregated as far as the last stage of the review is concerned. I guess the

thought was that it might be useful to do things slowly, methodically, and usefully, hopefully, like we have done in the aux feedwater and diesel generator area, where we start trying to identify if not the required reliability level, at least a range of reliability levels that we find to be useful from a public risk standpoint as well as from a technology standpoint.

So, that was the idea, to try to get useful insights that you might get from PRA's and safety goals down into the bowels of the licensing process through the mechanism of trying to specify where reasonable ranges of reliability that seem to be appropriate.

MR. SHEWMON: Okay. Thank you.

MR. ERNST: I can spend a couple of minutes on the first couple of pages.

MR. SHEWMON: Let's see what other questions there are.

MR. BENDER: Let me try a different tack from Dr. Shewmon. If the Commissioners put in their annual report next year that we announced our safety goal policy and the staff has to say what it did in order to conform to it, what might we envision the staff doing for the next year?

MR. ERNST: Well, one area clearly is 82-1A. I think once you get a safety goal and knock that out on

a siting policy or whatever, I understand there are some other things that are awaiting the safety goals.

MR. BENDER: 82-1A is not without its controversial aspects.

MR. ERNST: Certainly.

MR. BENDER: And it seems to me, at first it doesn't represent something to be done in a discrete time period. I am really thinking in terms of what can be accomplished once the safety goal policy has been established over the first incremental time period which the Commission might have in order to implement something?

Having a broad, sweeping plan is not as meaningful to me as what you can do to report to Congress next year how well you have met the goal.

MR. ERNST: I think from the standpoint of, if the question from Congress is: Do plants out there meet the safety goal? We will give you a year to come back and tell us. And I would share exactly the same kinds of concerns, because there is no way we can really know a lot more about that extant situation than we do now.

MR. BENDER: I kind of think that message needs to be conveyed to the Commissioners, because if the staff doesn't see that it has a way of presenting the picture in a discrete time period, even

incrementally, then I think it is just something hung out in the air without any supporting mechanism.

MR. ERNST: I think there will be some useful additional insights when we complete the reviews of Zion, Indian Point, and Big Rock and a few others. If we get a go-ahead on an interim basis anyway for some kind of an INREP review, that will help, but not next year. That is like a two-year time frame. We do have plans to review some of the other existing PRA's that we really haven't looked closely at, so that would help a little bit I guess. In the two-year time frame, the 82-1A comes into play a little bit more.

We do have some, as was mentioned yesterday, and I wholeheartedly support, and in fact I went back and talked to my people a little bit more this morning about a good, solid plan for this. That is, to find out where we have been in PRA in the past seven or eight years, what we have really learned generically and plant-specific, and then try and do a good job of trying to quantify where possible, certainly qualitatively, do a better job of seeing where we have been in the past.

MR. BENDER: That is a very constructive action. I agree with you. That might be the most useful thing that could be done for a while.

MR. ERNST: We had that under way already, and

I would intend to augment that and to sharpen it up a little bit.

MR. BENDER: That is all.

MR. SHEWMON: Other questions?

(No response.)

MR. SHEWMON: What goes next? Dave?

MR. OKRENT: Well, if you like, we can read through this draft letter and read through Mike's comments and just go through this once and then see where we are. When we read what is in the draft action plan, I didn't know whether the committee members, particularly those who are in the subcommittee meeting, would want to have a chance to have discussion on the specific aspects or not. So that is why I deliberately came in with a rather loose reading, but if we think we are ready, we will try reading these.

MR. SHEWMON: One of your concerns has been in the inspection and enforcement goal. If somebody comes up with a new scenario, will there be action thresholds about how fast one has to respond to something? If I am patient and get to your comments, or what you propose as our comments, will I learn something more about that, or did you learn something more about it in the subcommittee meeting yesterday?

MR. OKRENT: Well, there is a comment, a short

comment on that part in the draft letter. Let me raise one point of discussion before we go into reading the draft letter. There is a question that you need to think about, I guess, which goes like this. What is an action plan for implementation? Is what you have seen an action plan, or only part of an action plan? If it is only part, what are the parts that are not there?

I guess my own answer to that set of questions is that it is only part of an action plan, and an important part that is not there is what you might call the nuts and bolts of how in fact you would go ahead and try to use it on a trial basis. There is about a paragraph order of magnitude in it saying that the staff thinks it is important to have some kind of prescriptive guidance on how to do PRA's and so forth, but the question of just how one should approach doing PRA's or reliability analyses on this trial basis when there are the large uncertainties, even controversies concerning certain portions of the overall subject concerning how you interpret data, et cetera, is not discussed in here.

The question of how one decides whose numbers to use, or how one arrives at a decision in the face of large uncertainties, even if people agree on the numbers, is not addressed in here, and we also do not have sort of a spelling out of the specific things that

should be done in order to test the ethics, the applicability, the practicality of this process that we are in.

To me, those should also be in an action plan, and they are not there. Now, some of those are hard questions to answer. Nevertheless, we really should start to try, or say, look, I will set up some problems and see where I end up on them. Sometimes that is the only way you learn. You don't have a golden rule at the beginning. I don't find those in this action plan. I think they should be in the next version. And I just wanted to note that for the Committee's thinking.

Now, in my opinion, that thought does not come through very strongly in this letter. It is alluded to, but I think the committee should be making a fairly strong point in what we say here. I just wanted to mention that. I don't know. If the members don't want to raise specific questions concerning the draft action plan, I propose we next go into just reading the draft material and see what the reactions are. Again, I will ask whether you want to do this with the transcript on or off.

(Whereupon, the committee went into Executive Session.)

(Whereupon, at 4:00p.m., the Subcommittee was reconvened in open session.)

MR. SHEWMON: The next item is severe accidents.

Do you want to start that one, too, Dave?

MR. OKRENT: Bill Kerr is not here, or he would be leading this particular item. I assume all of the members have a copy of SECY 82-1A. I do not know if it was in the --

MR. SHEWMON: It came out this morning, as I recall.

MR. OKRENT: Everyone has it. Right?

MR. SHEWMON: No cover letter on it. It is just a copy of the policy.

MR. OKRENT: I will call to your attention enclosure B towards the back. Around 80 percent towards the back is a letter dated February 8 by the ACRS on SECY 82-1. So if you want to go back and see what we said on the first version, there is a short letter there.

MR. WARD: We got 82-1A today?

MR. OKRENT: You should have received this before.

MR. SHEWMON: Forrest has got yours. Why do you not have yours, Dave?

MR. OKRENT: In my Tab 5 --

MR. SHEWMON: It is not in Tab 5. If you do not have it, let us have our staff get it for you.

MR. AXTMANN: Before we start, can I have a clarification? When I read about core damage accidents, severe core damage accidents, severe coremelt accidents, Class 9 accidents, are these all the same thing, or are we distinguishing? Are there real distinctions between these, better, worst?

MR. OKRENT: What is your question?

(Laughter.)

MR. OKRENT: Let me offer a nonfacetious comment. Sometimes people try to make a distinction between what is called an interrupted accident involving damage to the core where you manage to get things back together again, and you keep it from going to large-scale coremelt or full-scale coremelt, a la TMI. Okay. So you could call that, if you want, severe core damage but not a large-scale coremelt possibly.

And then a second category is where you have either large-scale or full-scale coremelt plus whatever may follow there, and actually NUREG-0739 on the safety goals, we in fact indicated sort of two hazard states which resembled those two. But the Class 9 accidents has a different --

MR. AXTMANN: Meaning the two being TMI and

TMI-plus?

MR. OKRENT: The interrupted accident where you recover, and the one where you don't manage to recover before it goes large-scale core melt. Class 9 has a different meaning. The Staff, you know, had a paper back roughly 10 years ago where it could find classes 1 through 8, class 8 being the design basis accidents like a pipe break or so forth and an accident that did not fall in 1 through 8 or 2 through 8, whatever it was, was let's say in the Class 9. The definition of what constitutes a Class 9 became an active subject after TMI, and then people, if you recall, said, well, certainly, the damage to the core was far beyond what one would calculate in any of the design-basis accidents if you went through them mechanistically and things worked.

So in that sense, it exceeded Class 8. However, the radioactivity that was released from the containment was no larger than we calculate in some of our Class 8 accidents using the big source term. So in that sense, it was not larger than a Class 8, and so some people called it a Class 8.5.

Does that help you at all?

MR. AXTMANN: After Fellini.

MR. OKRENT: Yes, it was after Fellini

finished his movie, if that is what you mean.

(Laughter.)

MR. OKRENT: Okay. Let us have a short summary of what has happened. As you can tell, back in January there was a paper, SECY 82-1A, which ACRS wrote a letter on in February which I would say was not quite enthusiastic about SECY 82-1.

And the Commissioners met with the Staff and at that time indicated that if this were to be followed -- and I cannot tell whether they were noncommittal or what -- but there would need to be somehow signals given to the industry at least with regard to new reactors and so forth. And at that point there was some discussion about strong containment by the Commissioners and so forth.

In July, after the July ACRS meeting, the SECY paper 82-1A went up in which the Staff proposed that the Commission approve and issue this revised statement on severe accidents. In fact, they suggested that the ACRS comment after it was published for comment, which some of wondered about.

In any event, the Commission has not acted on this, and I do know whether they will before the October meeting or not. But it may be relevant for us to get what comments we can on SECY 82-1A after this meeting.

I think it is fairly important that we try to do it if we can.

We generated a set of questions on this paper as well as others. And in fact, some of them even got scrambled by the Vydec into the memo we went to Mel Ernst. But that is not crucial.

We had a draft letter which I think has been handed out, blue --

MR. GREISMEYER: The blue one, no, she is typing it.

MR. OKRENT: So there is no version?

MR. GREISMEYER: I never saw the blue, at least not today.

MR. OKRENT: The people on the subcommittee saw it. There will be something called Draft 2, which Bill Kerr has suggested changes in Draft 1, which will be circulated to you. I asked them to work hard on the flight. And anyway, it provides something for you to think on while you are reviewing the matter.

Now, the way we propose to start is to ask Roger Mattson to provide a summary of what it is he thinks either SECY 82-1A is or should be, and I will let him choose those and tell you which it is he is saying. He was asked for about a 10-minute summary or so. And then again the view was that we have in the order of a

total of an hour iiscussion and questions and so forth, after which we take a look at the draft letter and see where we are.

So I would propose, unless the subcommittee members want to add to this, to let Roger open it up.

(Slide.)

MR. OKRENT: By the way, since I do not know how long it will take to get the Draft 2 out, I have asked Mike Griesmeyer for copies of Draft 1 for the benefit of those at the subcommittee meeting. So you should get the Draft 1.

MR. SHEWMON: Go ahead when you are ready, Roger.

MR. MATTSON: I will try to do two things in this brief presentation. I will summarize the paper and highlight its contents. Second, I will highlight the points that I think there is some sensitivity from the subcommittee and the committee on, and try to interject current thinking or other words that are already used in 82-1A.

These five bullets on this first slide are the outline, if you will, of what we attempt to touch on in this policy statement. First, summarizing the post-TMI developments in the rule and the licensing practices, starting with the operating plants, and among those the

B&W plants, and progressing to the operating licenses and hence to the CP rule for those pending CP applications.

And then finally, in this attempt that has been going on now for 9 or 10 months to articulate a policy, to state two things: first, where the Commission would go with future plants -- that is, the requirements for licensing plants for which a CP application has not yet been received; and where the Commission would go in coming to grips with the severe accidents question.

The Commission can put out a notice to intent rulemaking on severe accidents. There was a feeling on the part of a number of us that that rulemaking was very difficult to focus on maybe too abstract. And we looked for ways to provide an incentive for industry to participate actively in trying to close the severe accident issues and at the same time to provide a way of thinking where we could make the next generation of plants safer than the first generation of plants.

What we came up with is summarized in the words of he second bullet on the slide; that is, to replace the long-term generic rulemaking with severe-accident rulemaking with several discrete rulemakings on plant applications to be referenced in

future CP applications.

That created the incentive for at least three of the manufacturers to make their proposals for how their designs could close not only the severe-accident issues but some of the longstanding unresolved safety issues. I will turn more to the specifics of that proposal in a moment after I finish the summary.

The other thing that you all had a lot of interest in back in February, and we generated some more interest in subsequent to your comments, was what do you do about operating reactors and plants in the pipeline insofar as the severe-accident question is concerned?

People were not content with coming to conclusions on only standard plant applications and then try to see how those conclusions might apply back in time to plants under construction. You and others said, tell us what you are going to do in the near term about operating reactors, plants in the pipeline. So the policy statement speaks to that question.

I guess it is a point that was of some controversy as to exactly what it was. Let me read briefly what it says. In the section on severe-accident research, which is the cornerstone, if you will, of our proposal on how to treat severe accidents for the next couple of years, there is a paragraph that summarizes

the situation as we propose it with operating reactors:

"The Commission will conduct an annual review of severe-accident research to determine progress and to ascertain whether any substantial and significant new information has been developed that would require additional rules for severe-accident protection procedures at operating reactors and plants under construction. The Commission expects to conduct this annual review twice: the first time in the spring of 1983, and the second 1 year later; finally resolving this matter for operating plants and plants under construction by mid-1984."

In order to get more specifics about how that decision process for operating reactors and OLs might work, one needs to turn to NUREG-0900, the severe-accident research plan. And in that document there is described a process by which the Office of Reseach will be measuring the existing risk with a number of surrogate plants typical of operating reactor designs over the next couple of years and will be evaluating design changes that could be made to those plants, evaluating them in two senses: first, how would they reduce risk; second, what would they cost?

Then they will attempt to make a judgment whether those reductions in risks can be made cost effectively. Obviously, today you have heard a lot about backfit rules and safety goals. Those things dovetail. If there is a safety goal, if there is a new backfit rule, then these decisions on futures to reduce risk from core melt accidents in operating licenses would be judged against those new rules or new criteria. If there are not those new backfit rules, then that safety goal, the judgments flowing from that research program would have to be made the way judgments are made today, with discussion and consideration and no unified single aiming point of the sort that the safety goal represents.

Now, one thing about this decision in '84 that you will notice in reading in 82-1A, it doesn't say whether it would be a rulemaking or a policy statement. There are many in industry who I think would prefer a rule that it puts the issue to rest whatever the outcome, once and for all, and tends to be more binding on licensing proceedings and hearing boards and regulators, and you have heard today about how we are all out of control out there in Bethesda, ratcheting away, keeping us from abusing children and small dogs. That is that kind of thinking.

On the other hand, there are people that think it ought to be a policy statement and leave some flexibility for further learning. If in early '84, for example, the research program has not delivered what we optimistically hope today, then another policy statement might be more in order than a rule. So, this policy statement would hold judgment on that issue and wait to see what the facts are at the time.

Another thing that is contained in 82-1A's policy statement is words we would like to put in the Commission's official mouth about the treatment of severe accidents in ongoing licensing proceedings. I will turn in a subsequent slide here to that in a little more detail, but the idea is to hold the status quo with some existing rules and not explore these issues case by case in proceedings before licensing boards.

Another thing that paper attempts to do, and here we run the risk of saying things differently than they are being said somewhere else, but we attempt to tie this policy statement on severe accidents to a number of other things going on, the Commission's desire to promote standardization in future designs, the Commission's work on safety goals.

Obviously, as the safety goal thought process and decision process goes on, 82-1A would have to

continue to be revised and stay alive relative to that process. We don't mean to control the safety goal through 82-1A, just reflect the safety goal. The use of the PRA, that is the subject that seems to be getting more thorough and deep treatment in the context of safety goal discussions than it does in the context of 82-1A, and again, we are trying to follow whatever the consensus of conventional wisdom is on the use of PRA and not dictate that wisdom.

I guess another point to make in discussing this relation to these other things, we are trying to make the severe accident policy a sort of stand alone policy. The safety goal stands on its face and we still have a way of dealing with severe accidents, and we shouldn't have it with the other.

Similarly, despite the uncertainties in PRA's, whether your view is that they will be closed rapidly or never, there clearly is that spectrum of views. You are still going to have to come to grips with what we all believe to be the dominant contributor to public risk at nuclear power plants. Core melt accidents. What are we going to do about them?

Now, this approach has been accused of lacking substance and not reaching decisions and putting off until tomorrow what might be better decided today, that

is, why rely on PRA to give us an answer? There are such uncertainties in some areas those answers will never come. Instead, we just ought to be identifying those policy issues, the gut decisions, so to speak, that need to be made, and get on with making the decisions.

That alternative was brought up in the subcommittee again yesterday. If I can state it in the way I heard it stated in a more gentlemanly way yesterday was to begin now to draft alternative proposed rules, and begin discussions of those alternative proposed rules. Obviously, there are costs and benefits, the research needed to fill in gaps in knowledge and where the gaps in knowledge couldn't be filled in, the policy framework for making the tough choices in a policy sense.

I tried to think last night after they finally let us go in that subcommittee meeting what was the real difference between that alternative and what we are doing today. I have kind of come to the conclusion that if we are doing well what we advertise we are doing today, that is, the thing we are trying to reflect in 82-1A, then we must fairly soon get on to this process that is proposed in the alternative as I heard it suggested.

In fact, I think Bob Bernero, if I can recall this subcommittee's memory, and tell you other people something he said yesterday, he came close to saying we are already doing it, it is something I should find out more about, and maybe we should do it together. He said, in order for the research program to have confidence that in early '84 it would have the information necessary to answer the questions, they are trying to phrase an answer to the questions today, and where it is impossible to phrase the answer today, they make sure that is covered in the research program, and he talked about a meeting that was conducted at Sandia along these lines.

Well, if the decision in '84 is a rule, and if Bernero phrases his questions in a sort of rulemaking context, then he described what he is in the process of doing is not much different than the suggestion I heard yesterday about beginning to draft now a proposed rule. I offer that for your consideration and comment later.

The purpose in having an 82-1A is not necessarily to reach a conclusion here as it is to discuss what the conclusion ought to be and how we ought to go about reaching the conclusion. So, none of us are trying to adopt a process or a procedure and then defend it to the death. At least on the staff's part there is

no siege mentality on 82-1A. We are using it to promote your discussion. You offered an alternative yesterday. It may be that it is not all that much different from what we are doing, and that there is ground that we could commonly agree on.

So, let me try to get into some more detail on that.

(Slide.)

There are some specific standard plants that folks have said they would like us to review in this context. We have offered them, if they participate in this, and we can come to an agreement on their being adequate for addressing certain specified issues, including core melt, we would certify these designs for future use for a period of ten years, which is not a small offering on our part.

The basic conclusion, the planning assumption, as we came to call it yesterday, that underlies a decision to move in that direction is the conclusion that plants can be built safely in view of our understanding of core melt, a statement that is not often made by regulators in the United States government. We say it another way. Although we have a lot of items we would like to haggle about in the review process, as Dr. Okrent pointed out yesterday, just

haggling about the review process may not be enough.

That is, we want to consider them in the design process. Although those issues remain, we are confident they can be closed, and that plants can be built safely in the future. So, what we have tried to do is articulate a policy for future designs that would require people to would look well beyond the current design basis and to come to grips in a way satisfactory to them and to us through rulemaking with, as we call them, the live issues on severe accidents. We do that in two ways, kind of a cross-cut on those issues.

One is to specify the events and issues of interest. The other is to specify the design features that have been traditionally talked about for coping with those events and issues of interest. First, we will require, and these are listed, 82-1A, that people design modifications if these features aren't already included in the design, design modifications of the following sort, filtered containment vents, dedicate heat removal systems, hydrogen control systems, and base mat design changes to decrease the potential for challenges to containment integrity from interactions between a molten core and the floor.

In addition to these design features that we will require of these three standard design approval

applications, we will require them to look at a number of events, address them, show us how they are addressed, and to some extent optimize in their design. External events, principally seismic events, sabotage, multiple human errors, systems interaction, that list goes on, insofar as included in it are all of the unresolved safety issues that apply to these particular designs.

So, the idea would be to examine how design tradeoffs have or could continue to be made to optimize protection for these areas. We spend a minute saying what the subcommittee, and I think what we mean by optimization. The subcommittee has pointed out the work by Gerrick recently to show the separation of systems is not necessarily good, and our more recent designs in this country, given the regulations on separation, are evidently not as forgiving in some people's view as other designs that had interconnections. They don't have the flexibility to find another source of power to deliver water. That shows up in the reliability sections of the PRA. They are not as capable of coping with the broad spectrum of accidents. There is a school of thought like that going on today.

There is another school of thought having to do with sabotage that says sabotage protection has improved, the harder you make it for the saboteur. So

having many trains vitally separated in your safety systems is inherently better for sabotage protection than having a few trains close together. How do you consider both of those things in looking at a new design? That is a place where it is in a cooperative spirit to look at it when it is all on paper. We mean to try to treat those things in the design review for all three of these applications.

Obviously, you can do it in some better than others. The Westinghouse design, the effort with Mitsubishi that has just been announced, that is on paper. From the beginning it is conceptual design stuff. We are going to meet with them for a full year on the principal issues that they have identified before they freeze their design.

They are going to get us to make some commitments before they sit down and try to write the safety analysis report information they would file in '84. Obviously this process of considering the tradeoffs can be more interesting there for give and take than it could be, for example, for a plant like CESSAR that already has an FDA under the rules.

It may be a credibility question, but we will examine how far we can go in our design reviews. GESSAR seems to be sort of in between. They are not quite as finalized as CESSAR. Their FDA review under the old rules has just gotten started within the last few months, and it has not been completed yet, so they are not as far along as CESSAR, but they are much further along than Westinghouse.

Those are some of the practical questions that are coming to bear with what do you do with future standardized plants.

(Slide.)

MR. MATTSON: Just to summarize, then, the way we get then to consider all of these interesting things is by a series of requirements listed on this third page of your handout, compliance with the current regulations, including all the TMI requirements, completion of the PRA before we give the standardized

design approval. That in itself is a bit of a departure from past practice and a bit of breaking new ground because with a preliminary design like the Westinghouse, how do you do anything but a conceptual PRA, and what is a conceptual PRA, and how do you do one with a partial plant like CE, where there are a lot of design interfaces with the balance of plant? Can you specify reliability on the interface? There are a lot of questions before granting a new design approval.

The third thing is the use of the updated version of the standard review plan; fourth, consideration of all applicable unresolved safety issues. I don't mean to be hiding anything under consideration, but we don't want to use the word "resolved," all unresolved safety issues because that has connotations in some circles we don't mean either.

92-1A says that you take the unresolved safety issues applicable to that design, you take the dominant contributors to risk for that design as disclosed in the PRA you have done. You take some other design features that we articulate in the paper, and you examine what they do for risk, changing the design to accommodate those unresolved safety issues, or ignoring those unresolved safety issues.

How does risk change given those approaches?

Then you make decisions, if you have a safety goal, in the context of the safety goal on what to do about all of those issues. If you don't have the safety goal, you still make decisions more judgmentally.

Last is compliance with the CP rule requirements. There seems to be some misunderstanding in some industry requests for specification by the Commission, how they might replicate or continue to use current FDAs in future CP applications. I want to make it clear that the CP rule, if it applies to pending CP, must also apply to a new CP application. Then, as I said -- it is not on the slide -- a consideration of a number of specified design alternatives in 82-1A also are required of future CPs or future standardized plants.

(Slide.)

MR. MATTSON: The last page in your handout says that the treatment of severe accidents in ongoing licensing proceedings, which it is, but it gives me a chance to say more about operating reactors.

The first bullet is really a policy judgment. It is one that we are having trouble saying in ways that the five Commissioners, the 15 or 16 ACRS members, the 700 NRR Staff members, the CRGR, the Executive Director for Operations, all those people can agree with. We are

trying to say in simple terms the plants today are safe for the period it takes to continue to examine severe accident issues. We are not delaying that examination. It has been going on for several years now. It is spending millions of dollars a year. It has caused us to make changes in severe accident requirements beyond the previous design basis, but as far as we know today, there are not any other changes that we are ready to decide to make today, we collegially, all these people that these words must satisfy, no significant new insights into the consequent mitigation features sufficient to support further regulatory changes, nor indication of clear need to add such features.

What we do have, says the second bullet, is a final rule on hydrogen, a proposed additional interim rule on hydrogen, and one final rule for pending CPs. That much treatment of severe accidents, plus a few other indirect things you can list like Regulatory Guide 1.97 that goes beyond the design basis.

Those things we are trying to say for now are all we know to do to the operating reactors and to plants in the licensing process, and they are safe enough, despite the fact that we want to look for a couple more years, and we are trying to schedule that decision. We won't look any longer before we come up

with more definitive statements about what, if anything, additional to do in 1984. That is, we are scheduling our programs to obtain sufficient information in about two years to complete the policy development and the decision making for severe accidents for all classes of plants.

Now, the cornerstone of that process for the next two years is the research program, our research program and the IDCOR program. Both of these programs -- these programs are similar. They both examine prototypical light water reactors, measuring their risk and measuring how that risk or estimating how that risk could be changed through design modifications, and what those design modifications would cost.

The idea in both of them is that once that information is available, late '83-'84, to compare them with the safety goals of both programs we are promoting, to make the decision on what is required for severe accidents in light of what is needed for safe enough.

The other things that are going on that will be factored into our learning in that two year period are like things that are going on, design in Zion, Limerick, GESSAR, in their PRA reviews.

The third bullet is hard to understand. In what the research program is doing, with the four plants

and studying phenomenology to support the risk assessments of the surrogate plants.

The regulatory program NRR is also looking at the containment response characteristic for core melts, development of methods for handling external events and PRAs that we have to have in order to deal with pending licensing matters like the Indian Point 2 and 3 hearings, like Limerick, other places for licensing decisions, the SEP program, depend upon our current knowledge of how plants respond to core melt accidents. So there is more in that third bullet than just research up in the first bullet.

Then finally, close interaction with the ACRS as technical information becomes available. I don't mean that to be a motherhood statement. We have suggested to IDCOR, and IDCOR has agreed that a good forum for testing the progress against defined technical questions in both their program and ours is this committee or a subcommittee of this committee. We are not getting any reception to that suggestion from this committee at all. I have been saying it now for four or five months. I haven't seen you at all ask for the research program or IDCOR to come in and go through it by the numbers, not that we have come to. Maybe you are attending meetings I am not aware of.

MR. SHEWMON: We have heard the research program every other month. I don't know where you have been.

Now, it changes every month from what you have told us yesterday. Several of us have also been to IDCOR meetings where you weren't.

MR. MATTSON: I am suggesting something different that the ACRS review of the research program and all of its broad manifestations. I am suggesting you get down to what are the questions that have to be answered in '84, what are the possible statements that should be made in '84, and what information is needed to make those statements, and how is progress being made toward answering those statements?

MR. BENDER: Roger, I wanted to try to get a better understanding of what we ought to get out of this meeting. I would presume that what you are suggesting is that both the Staff and IDCOR should come in and make an integrated presentation so that we could see how they fit together, and then as a parallel kind of effort to that, or in conjunction with it, someone described the experimental program that would be associated with the work that is being done by IDCOR and the NRC collective staff.

MR. MATTSON: Well, I wouldn't do anything

quite so stilted. I wouldn't suggest that you sit here and make them have a presentation and them on the other hand make a presentation. I suggest you take 0900, as we talked yesterday, it has a recent set of modifications. It is this thick thing (Indicating). It has in each element of the research program, to the best of the research program manager's ability, the questions he thinks he is being asked, the things he thinks he has to answer from either Bernero's concept of how we make these decisions, or Jim Meyer-who-works-for-me's concept of what he needs to answer, or Walt Passadag on the source term, what he thinks he needs to answer as he goes around talking to people like the ASNS Committee on Source Terms, what have you, concentrate on those questions, and at the table ask what is your program for doing this, how far along are you with this, what are your problems, how does it relate to the IDCOR program, is it getting into this at all, what is IDCOR relying on NRC to come up with in the area to complete its program? Is that the right question? Maybe the question should have been different.

Unless we deal with these specifics, we could argue about how we are going to do it forever.

MR. OKRENT: Well, I don't think we should spend too much time on 0900, Roger. One of the comments

that we made last month was we failed to find in the document we were looking at that month something that could tell us if you needed information to develop a containment performance criterion, what was this information, how was the program oriented to supply that information?

Now, maybe it is going to be in the next version. I don't know. But I am not sure that you are asking the Committee to just listen to research programs in the absence of the focus that you yourself said, well, maybe Bernero is asking. I am disappointed that you do not have that focus to give to Bernero, or if NRR doesn't.

MR. MATTSON: We do. There are memos that have our questions in them. You have those memos. You can use those at the table when you go through it. They have been asked. We said yesterday at the subcommittee meeting that we have gotten an agreement now to name a few people to try to state what a containment performance goal would look like if you could write one, and try to fill in what would be the elements of the containment performance goal.

We are making progress on those things, but only when you deal with them in specifics, not when you make broad charges and countercharges and information is

hard to get.

MR. MOELLER: Roger, in the letter to the Chairman from the committee of February 8 on severe accidents, was this not adequate in our Item 6 where we said the ACRS is willing to work with the NRC in developing approaches to resolving issues?

MR. MATTSON: I will be completely candid with you. I am in an awkward position on that. I support that recommendation, but there is not an agreement among the leaders of the agency to do that. The place you need to take that recommendation is not to me. You need to take it to the Commission tomorrow, if you still feel strongly about it and you want it, bring it to them. I am suggesting working in the system we have, which is form a subcommittee, have us down here. We will deal with it that way on the record. If you are suggesting something different than that, then I can't agree with that.

MR. BENDER: Not being the Chairman of the Subcommittee, I can't volunteer to do this, but it seems to me when we have tried to do these things before, the answers have turned out to be very, very mushy, and because they have been, you can't really tell whether you are getting an answer to a question or people who are talking are being evasive, and that is troublesome.

It really is the reason why we have started --

MR. MATTSON: I have never seen an issue like the safety goal and the implementation plan and the accident policy make people so suspicious. I think it is happening down here, it is happening within the Staff.

MR. SHEWMON: It sounds like maybe all of our letters have not been thrown down a well, and it is time perhaps to hold a meeting.

MR. MATTSON: You are scaring the hell out of us. We are jumping through hoops.

MR. OKRENT: Well, we have procedural types of meetings, and then the Staff feels it can put out some speculative ideas, but the Staff has been unwilling to do that up until now. Let's put it that way.

MR. BENDER: I think the Staff has an obligation, if you want to have such a meeting, to help develop some structure for it. I think just having it helter skelter the way we have in the past has not been too effective, but it doesn't have to be structured to the extent that you can't have some interchange with the committee.

MR. MATTSON: Well, you guys made great progress in that direction this month. You made a lot of fun of this list of questions yesterday, but they

were very useful in the focus of the discussion and let each of the various parties know how the pieces fit together in your view, and how they fit together. I thought that was very useful.

MR. BENDER: It was a useful piece of work.

MR. MATTSON: Well, this is office motherhood here. We haven't found a way to do this yet institutionally, how we work together and how we narrow these widely swinging views.

We should not forget the industry views on these matters. Westinghouse sent you a letter on 82-1A. Insofar as it affects what they are trying to do on standard plants, they like it. I haven't heard much criticism of what it tries to do with standard plants, at least as early in the process as what Westinghouse did. Do we agree on that? Somebody down here needs to say so, or is the thing all wet on standard plants? We haven't the foggiest.

MR. OKRENT: Let's look at Westinghouse for a moment, since they are the most flexible of the three that you identified. Maybe there is the best chance of, let's say, a design that meets both what they would like to accomplish and what ultimately the NRC will want to have accomplished. If there is no what I will call policy guidance from the Commission in some way -- I won't say a rule, but it could be a rule on things like reliability of containment, heat removal systems, on reliability and or diversity of core heat removal systems -- let me use that term, because you might want to think of some very small LOCA's in addition to shutdown heat removal. If there is no guidance on, should there be or not on future plants a bunkered system, or should certain things be bunkered, or whatever it is, if there is no guidance that you should

consciously try to do certain things with regard to sabotage, and if there is no guidance at all on severe accidents, the question is even at the stage where Westinghouse is, and suppose you have a year to talk back and forth, are you going to be able to have gotten all of the things I have mentioned?

Jesse I am sure has ten more that are going to warrant some thought. Are you going to be able to get these handled via the mechanism you are proposing adequately? Not perfectly, but adequately? At some point you said they in fact want to get commitments from the staff. That means sometimes by the end of the first year, roughly, as I listen to what you are saying. It is not inconceivable that this could be done if the staff dedicated some of its best people and gave them sort of the power to act with the staff and to have a back and forth on it, but that is not usually the way these things do proceed.

If you did decide that way, in fact, for Westinghouse, then the other question that we pose to you is, would you have accomplished the same level of whatever it is you are seeking on reviews that were more fixed, and even if they were not more fixed, if someone came in with a plant that was not a large dry PWR, some other thing, how would you achieve what I will call some

level of consistency?

Can you rely on PRA's to do that, in view of, you know, all of the questions about uncertainties and so forth? That, I think, is one of the major questions that the subcommittee, the committee, I think, did in February, and I know I in particular have. If I could see a way whereby the subcommittee that reviews plants could meet the overall desires and get some kind of necessary consistency in the major things, I would really be an enthusiast for it, but up until now I don't quite see how it gets there.

MR. MATTSON: The Commission had exactly the same difficulty with 82-1. There weren't any signals on 82-1 on those kinds of things you list, filtered vent, dedicated heat removal, base mats, and they said, take the list in 2BA to the task action plan, which is the severe accident rulemaking of the task action plan, send signals on all those things. We came down to you in February and said, here are the best signals we know how to send. Tell us how you would change them. We didn't get anything from you. We sent those signals in 82-1A the best we could.

We talked yesterday about how we may have screwed one up on the filtered containment vents, and will make some modifications in that before we go out

with it. If you have a signal you want to send that you think you are able -- that we should be making a judgment that we are too light on in 82-1A, which ones? The Commission wants those signals, too. Which ones are you capable of drawing a consensus of opinion today sufficient to support a policy judgment to send a signal? Our contention is that we have done the best we can in 82-1A. It is not very good, and it is left with a decision process that has got all these uncertainties in it. It is a lot less uncertain than the one we set the general design criteria with, but we've still got uncertainties in it.

MR. OKRENT: There is an alternative which might be picking up that last paragraph that Dr. Moeller said to see whether working cooperatively one can develop, let's say, an improved set of signals over what you have in 82-1A. In other words, we are not forced into a now or nothing. There are other alternatives.

MR. EBERSOLE: Roger, may I get a point of clarification? I was trying to read and understand your first bullet there. It only mentions consequence mitigation. I was trying to say to myself, what is the severe accident? Is it the integral accident beginning at the point of initiation and terminating in the severe accident, or is it the culmination of whatever sequence

was generated to produce the severe accident?

From the context up there, it is only the terminal events, if you are talking about mitigating something that has happened some way, and that is all it is. Dave just got through talking about the prevent aspect of severe accidents. If we are talking about both aspects, both prevent as well as mitigate, isn't that first statement up there sort of fundamental?

MR. MATTSON: It is caused by my being too close to the forest to see the trees. In addition to that bullet having to do with core melted, core melt consequence mitigation features, which is about all that treats, the unresolved safety issues and the other issues are predominantly prevention issues.

MR. EBERSOLE: They are. That is what he was talking about. Heat removal, et cetera.

MR. MATTSON: There should be a bullet for completeness that says, if we knew how to close those, we could close them today, too.

MR. EBERSOLE: And maybe additional regulations are appropriate now for the new designs, because most of those are preventive in character, the features of them.

MR. MATTSON: We do not intend to license a new standard design without an answer for every unresolved

safety issue applicable to that design. It will say, this unresolved safety issue no longer applies because it was shown to the risk assessment to be of miniscule importance or a design change was made to bring it into conformance with the requirement.

MR. EBERSOLE: If you made another bullet, that might be best.

MR. MATTSON: That was another place where I used a different term. I accept the criticism. Well, that's my summary.

MR. AXTMANN: I have a question about the words in SECY 82-1A on the source term. On Page 13 -- this is a paraphrase -- it says recent research NUREG-0772 indicates that radioactive releases and major accident sequences are likely to be substantially lower than predictions based on current assumptions, current licensing requirements. Recent research, our subcommittee on radiological effects probed this a little bit with the staff some months back, and I think we got an admission that recent research meant observations at TMI.

Now, the staff has programs at Sandia and I guess at Oak Ridge looking for physical evidence of the mechanisms that people can imagine having observed little releases at TMI, but that is rather speculative,

I think. Page 29 of SECY 82-1A says, new source term information will be available in the spring of '83.

As I recall the programs at Sandia and Oak Ridge extend to '85, and the first experiment, data from the first experiment will be available late this year or maybe early next year, but I am not sure that this may all work out precisely as one's instincts would like it to, but I don't think the optimism is really justified by hard data nor facts, and some of your earlier remarks, satisfaction with new standardized designs, indicate that maybe they aren't finished once and for all. That is, if the research programs do not exactly turn out the way everyone hopes they will.

MR. MATTSON: Well, the statement on Page 13 has the deficiency that is like what you are getting at. The statement of recent research is not the way to say it. We should be saying the current understanding is that source terms are likely to come down. Another thing that is wrong with this statement is, they do not come down as much for all sequences. So some qualification that for the ones that are of at least current interest to PRA today, the slow overpressure of containment, that is the place where they look like they are coming down, and that is the one where they can significantly reduce risk, according to today's

understanding.

We need to hone that statement a little bit. We would use today's transcripts to get your thoughts into it today, too. The comment on the research program is a good comment on whether or not there is close coupling between what is in 0900 and what is in here. I have a couple of signatures from research that tell me it is, but I will go back and look at it.

Let me try to summarize. The staff is of the view that source terms are overestimated today, significantly overestimated for accident sequences that are very important in determining total risk.

MR. AXTMANN: That may well be.

MR. MATTSON: We are doing our darnedest in the research program to do that.

MR. AXTMANN: But as I understand the research program, it is not something that is going to be settled very promptly.

MR. MATTSON: Well, I think --

MR. AXTMANN: And will be done in a laboratory, not in a reactor where the best experiments would be done.

MR. MATTSON: Well, there is information necessary for decision-making, and there is confirmation, and one may not be the same to you as it

is to me, but a lot of that stuff longer term in source terms is confirmation.

MR. OKRENT: One of the comments that one of the Sandia experts made in connection with source term was that the process by which one accomplishes dispersal of a core melt below the vessel in a reactor like Zion, assuming that the dispersal occurs in a manner roughly that is predicted in the PRA, that is an if in his mind, if this occurs, that same process tends to put quite a bit of radioactivity into the containment atmosphere, sort of like a modest steam explosion kind of thing, more than you would have from, let's say, TMLB'.

Now, if that should have the misfortune to be associated for some reason with an absence of containment integrity then, that you stop and think, there are sources not just a single one, you, I think, quickly find that you need to achieve some rather low probability of this early absence of containment integrity in a sizable amount at that point, or you have not really reduced the total risk even though there may be factors of 100 or more in some sequences.

MR. MATTSON: I agree. If that sequence has low enough probability, as you said, not to be the dominant one, then the statement that the important ones are still coming down is valid.

MR. OKRENT: You will have to watch what becomes dominant. Some of these sequences that were not looked at hard, or hardly at all in prior PRA's may really have to be looked at now, and when you look, they may in fact be somewhat more frequent than you might have guessed, and while in terms of the previous PRA was not too important because you already had some things contributing to significant releases, they now may be quite important. So, I just want to urge caution by the staff in jumping not only onto the plank, but almost off the plank before there has been sufficient study.

I think it is not improbable that when people start looking for ways in which early losses to containment may occur, they may be able to add up several ways that end up being not trivial in their quantification.

MR. MATTSON: I do not know how to counter the continuing written and verbal charges that we are jumping off the cliff and we have no basis. But I encourage you to look at the Indian Point testimony when DSI files their testimony on the matter of source term. I think we are looking. There are technical studies that underlie these judgments. We are not making them off the top of our heads.

MR. EBERSOLE: Dave, what I heard you say is the thing that disperses the core may also be the thing that opens the containment.

MR. OKRENT: It will put a lot of fission products in the containment at that time. And if for some reason you have at that time -- and it is not necessarily the -- in fact, it is probably not -- the small coolant interaction. When I say "small," I mean small enough not to go run into the containment. It is not that big. But if you start thinking about ways in which you could lose containment and leak tightness to a large degree, there are many things that at least you

have to think about. And up until now they have not been given very sophisticated or detailed scrutiny.

MR. SHEWMON: Are we through with Roger's presentations and our questions for him?

MR. OKRENT: Well, I do not know whether there are other questions from the committee members.

(No response.)

MR. OKRENT: Let me maybe see if a few points that came up in the subcommittee exist that are particularly relevant or wheher other committee members may want to talk to Roger. We did talk at some length about whether there was in this new version of SECY 82-1A an approach to operating reactors and reactors seeking operating licenses that was, whatever the word is, sufficient or sufficiently well defined. I think Roger thinks he has something in there that addresses that, but I just wanted to note that this was a matter of some discussion.

MR. MOELLER: A question, Dave. Enclosure D to this SECY 82-1A applies to the issues in backfitting. Is this enclosure -- maybe Roger could help me. Is this enclosure -- how does it relate to what we heard on backfitting earlier today?

MR. MATTSON: It does not at all. The thing you heard earlier today generates from a task force at

the Commission level done outside of our cognizance. This was a statement by us on bckfitting that they did not review, and we had no knowledge of what they were about to say when we wrote this.

The Staff offices reviewed it and concurred in it, and it went up to the EDO. But from the EDO on down, at least as they were able to factor it into this paper when it was signed, if anything, it is an interesting -- might be an interesting -- exercise in the context of the Staff's view and Mr. Tourtellotte's view being quite different.

MR. MOELLER: Dave, did your subcommittee's group have any time to look at that?

MR. OKRENT: We did not talk about it at the subcommittee meeting. I read it, and it seemed to me, in a sense, when the Staff said that in the safety goal approach one should consider economic costs, off-site and on-site, as well as health costs, they were saying a similar thing to what is here. It is -- what they have written here is well said, and I support their proposal. But we did not talk about it at the subcommittee meeting.

I do not know whether you have any comments on it.

MR. MOELLER: Well, I note one thing

immediately. It says the numerical guidelines make no explicit distinction between new plants, operating plants, and plants under construction. Well, that is not compatible, is it, with what we have been talking about?

MR. OKRENT: No, but the implementation plan does make a distinction as drafted in June.

MR. MOELLER: Also, like on page D2 it talks about including the cost, if any, of occupational exposures. Well, in the implementation or action plan where the policy statement is, it indicates that by 1983 or 1984 or something they hope to have worked out a plan for the assessment of occupational exposures.

MR. MATTSON: Dade, let me remind you of something I said this afternoon. This paper is not attempting to set the policy on backfit; it is attempting to narrow whatever the current policy is on backfit.

We thought that the major initiative coming through the safety goal tries to have more strong language about the Staff views, and we obviously stayed a little bit out of step with our own development and implementation plan, as Dave points out. But we would mean to keep it consistent. I know the occupational exposures are important to you. And we try to keep that

thing coming to the fore in all matters involving backfit.

MR. OKRENT: The cost estimates I have seen, I must say, indicate that when you look over the specturm of accidents or even if you look only at what I will call TMI-2-like accidents, you would include on-site economic effects. The occupational health effects, even with the big dollar value of man-rem, are not a big factor. That is according to some Sandia studies.

MR. MATTSON: It is interesting, you know, we keep saying that the safety goal is not the only factor in a decision and what have you. In some circles the simple statement that there are large occupational exposures associated with the backfit will sway a large number of people whether or not you can monetize it, put it in the equation, and have it swamp the equation or not. It has significant weight. Maybe people are jumping at straws not to backfit something. I do not know.

MR. MOELLER: Well, what value do you use for an occupational person-rem? To me, the $1,000 should cxcrainly not apply here. It should be much higher.

MR. MATTSON: I remember being pn a podium with somebody from the utilities that said it would be $35,000 per man-rem.

MR. MOELLER: Yes, it should be several thousand per man-rem, and it could be $35 million or $100 million.

MR. MATTSON: I do not think we are putting any particular number on it.

MR. OKRENT: I guess if I can cull out one other aspect of this, I think it is fair to say that there would be a pretty heavy reliance on PRA in decision making if we follow the approach of SECY 82-1A for new plants. Is that fair, Roger?

MR. MATTSON: Well, being one of those who likes to talk about PRA but distrusts it, I have difficulty finding a way to defend myself against that. I tried this afternoon to slip in some words on the presentation. Let me emphasize them.

There is going to be a place where the PRA will fail you; you are not going to be comfortable making judgments on the basis of PRA. You will then fall back to some kind of traditional engineering analysis, some kind of comparison to what we have in the current regulations. Is this something that you want to do that is markedly different than that or not? Or is it somehow consistent with it? Or, if all of that fails, you will do what we like to use euphemistically as, well, make a policy decision, we will do the right

thing, whatever the right thing is.

There are going to be places where this PRA framework will fail. As you try to make the decision today, there are more places it would fail than if you made it 2 years from now because there is a lot of money being spent to remove some of those uncertainties. In some of those uncerainties, there is no prayer of removing them, they are always going to be there.

MR. OKRENT: Okay. Well, I think that is a fair statement of your position. Again, it gets to the question of is there some intermediate position between making policy decisions today which I am not sure who is advocating -- I do not think anyone at the ACRS is advocating making up today -- or whether you make the policy decisions in connection with the individual reviews when you feel that PRA is inadequate, which may be in many important issues, or whether you try to make some of them some time between now and then as you are able to.

I think those are sort of the three alternatives. It may be possible, at least in my mind, that the third one of those is the one we should explore before we take the one proposed in SECY 82-1A.

MR. MATTSON: It is interesting when you think about it. I just said there are some policy judgments

that have to be made in '84. There are probably more that have to be made today. You just talked about making some policy decisions on some of those things. We will try to find a middle ground.

Are there any policy makers in the room? I am in the line organization, implementing the Standard Review Plan. I certainly am not the policy maker.

Whatever group, whatever institutional arrangement we come up with for removing it from here, has got to be different from the one here today because you wrote a letter on this in February and you will write another one on it in September, and that is a long lead time for policy makers.

Not to condemn anything, but all of us have not yet come up with the right combination of factors to be satisfying on making these decisions.

MR. SHEWMON: Roger, would it be unfair to say that your position or the positions you have presented for 82-1A here is that with the aid of current regulatory rules as perhaps embodied in the Standard Review Plan, what we have put together through TMI-2 Action Plan and what we would get out of the PRA on a new standard design, we would have the basis for coping with saying whether they are safe enough with regard to Class 9 accidents as well as the other 8 or severe

accidents? I think that is what I see on what you have got on that vuegraph.

MR. MATTSON: If you understand that in deciding what to do with those USIs and those design features that have to be considered in the framework of that PRA, that those are really tough decisions and not everyone is going to agree on. So there is some uncertainty in exactly what we are going to do with these designs. Then I think I agree with what you are saying.

MR. SHEWMON: Those are the tools you will use.

MR. MATTSON: Yes. Sometimes the PRA fails, which is what I said a minute ago.

MR. SHEWMON: Okay.

MR. OKRENT: I do not know. Are there other questions?

(No response.)

MR. SHEWMON: Fine. I would suggest that while we are ahead of schedule on this -- but that is no sin -- could we go to the future ACRS activities and then worry about writing letters for a while before we break for the evening, or reading letters?

MR. OKRENT: Right. As long as we have one reading of the draft on SECY 82-1A in order to get some response today. It does not matter when you do it as

long as it is tonight.

MR. SIESS: We have another draft on backfitting ready.

MR. SHEWMON: Well, it is somewhat arbitrary which we do first. I assume there are more people here who can go home after we get done with the advanced, the future agenda. But I am open to suggestions or comments either way on that. Let us take up future agenda items.

(Thereupon, at 5:10 p.m., the Subcommittee was reconvened in executive session.)

NUCLEAR REGULATORY COMMISSION

This is to certify that the attached proceedings before the

_____

in the matter of: ACRS/269th General Meeting

Date of Proceeding: September 9, 1982

Docket Number: _____

Place of Proceeding: Washington, D. C.

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

M. E. Hansen

Official Reporter (Typed)

M. E. Hansen

Official Reporter (Signature)

NUCLEAR REGULATORY COMMISSION

This is to certify that the attached proceedings before the

---

in the matter of: ACRS/269th General Meeting

Date of Proceeding: September 9, 1982

Docket Number: _____

Place of Proceeding: Washington, D. C.

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

Jane N. Beach

Official Reporter (Typed)

Jane N. Beach

Official Reporter (Signature)

PROPOSED POLICY STATEMENT ON SEVERE ACCIDENTS AND RELATED VIEWS ON NUCLEAR REACTOR REGULATION (SECY 82-1A)

- SUMMARIZES THE POST-TMI DEVELOPMENTS IN RULES AND LICENSING PRACTICES RELATED TO SEVERE ACCIDENTS
- REPLACES THE LONG-TERM GENERIC RULEMAKING WITH SEVERE ACCIDENT RULEMAKINGS DESIGNED TO CERTIFY SPECIFIC STANDARD PLANT DESIGNS FOR REFERENCE IN FUTURE CP APPLICATIONS
- SCHEDULES A SEVERE ACCIDENT DECISION FOR ORs IN EARLY 1984
- SPECIFIES TREATMENT OF SEVERE ACCIDENTS ON ONGOING LICENSING PROCEEDINGS
- PROVIDES COUPLING AMONG RELATED POLICIES, E.G., STANDARDIZATION, SAFETY GOALS AND USE OF PRA

17

SPECIFIC STANDARD PLANT RULEMAKINGS

- GESSAR II - FDA REVIEW UNDERWAY
- WESTINGHOUSE - PDA APPLICATION 1984
- CESSAR - FDA APPLICATION 1983

IMPLEMENTATION GUIDELINES FOR SEVERE ACCIDENT POLICY
(CONDITIONS FOR STANDARD DESIGNS FOR REFERENCE IN FUTURE CP APPLICATIONS)

- COMPLIANCE WITH CURRENT COMMISSION REGULATIONS, INCLUDING TMI REQUIREMENTS IN 10 CFR 50.34
- COMPLETION OF A PRA BEFORE SD APPROVAL THROUGH RULEMAKING AND COMMITMENT TO MEET THE REQUIREMENTS FOR DESIGN FEATURES FOR PREVENTION, MANAGEMENT, OR MITIGATION OF SEVERE ACCIDENTS SHOWN TO BE COST-EFFECTIVE IN THE COURSE OF THAT RULEMAKING
- USE OF UPDATED VERSION OF SRP (NUREG-0800)
- CONSIDERATION OF ALL APPLICABLE USIs
- COMPLIANCE WITH CP RULE REQUIREMENTS

TREATMENT OF SEVERE ACCIDENTS IN ONGOING LICENSING PROCEEDINGS

- NO ADDITIONAL REGULATIONS ON SEVERE ACCIDENTS REQUIRED NOW, BECAUSE NO SIGNIFICANT NEW INSIGHTS INTO CONSEQUENCE MITIGATION FEATURES SUFFICIENT TO SUPPORT FURTHER REGULATORY CHANGES, NOR INDICATION FOR CLEAR NEED TO ADD SUCH FEATURES

- WE NOW HAVE:
  - ONE FINAL AND ONE PROPOSED RULE ON HYDROGEN CONTROL (DEGRADED CORE ACCIDENTS) AND RELATED MATTERS (46 FR 58484, 12/2/1981 & 46 FR 62281, 12/23/1981)
  - ONE FINAL RULE FOR PENDING CPs, I.E., THE CP/ML RULE (47 FR 2286, 1/15/1982)

- PROGRAM(S) TO OBTAIN SUFFICIENT INFORMATION IN $\sim$ 2 YRS. TO COMPLETE POLICY DEVELOPMENT AND DECISION MAKING ON SEVERE ACCIDENTS FOR ALL CLASSES OF PLANTS
  - RESEARCH ON SEVERE ACCIDENTS (NRC/IDCOR)
  - REVIEWS OF PRAs ON I.P., ZION, LIMERICK, GESSAR-II, ETC.
  - STAFF STUDIES OF CONTAINMENT FAILURE MODES FOR A REPRESENTATIVE SAMPLE OF OPERATING PLANTS AND PLANTS UNDER CONSTRUCTION AND FOR ALL FUTURE DESIGNS
  - CLOSE INTERACTION WITH ACRS AS TECHNICAL INFORMATION BECOMES AVAILABLE

- INDIVIDUAL LICENSING PROCEEDINGS NOT APPROPRIATE FORUMS FOR BROAD EXAMINATION OF SEVERE ACCIDENT REQUIREMENTS

T9

Westinghouse Electric Corporation
Water Reactor Divisions
Box 355
Pittsburgh, Pennsylvania 15230

September 3, 1982

NS-EPR-2654

Dr. Paul Shewmon
Chairman
Advisory Committee on Reactor Safeguards
Nuclear Regulatory Commission
1717 H Street, N. W.
Washington, D. C. 20555

Dear Dr. Shewmon:

Westinghouse notes that the Committee, in considering the NRC's recent severe accident policy development as promulgated by SECY-82-1A, may have some concern with the general direction of the Staff's approach. It is our understanding that the full Committee will further consider this matter in session in the very near future. Westinghouse has a major interest in this policy matter insofar as to its particular relevance to future standard plant design applications. In that regard, we think it appropriate to share certain of our views on SECY-82-1A for the Committee's consideration prior to it's adoption of a final Committee recommendation.

As the Committee may recall from an earlier Westinghouse presentation this past December, we are currently engaged in a major new zero-based plant design development program and associated licensing application leading to a self-standing final plant design certification for one-step licensing by 1987. This effort is expected to result in important and fundamental improvements in certain major systems and plant configurations as compared to current generation design. Our intent is to directly involve both the Staff and the Utility industry in the evaluations of alternate design approaches currently under consideration.

We view the Staff's proposed policy stated in SECY-82-1A as consistent and supportive of our development program and intended licensing approach. In that regard, Westinghouse is in general agreement with and supports the directions of that policy. In particular, our interpretation of SECY-82-1A indicates a close correspondence with our program objectives in that,

1. the policy encourages the use of self-standing final standard plant designs,

2. the policy suggests a comprehensive addressment of current regulatory issues as a condition for standard design approval, and

T8

3. the policy recognizes that specific regulatory guidance in certain areas is premature due to either ongoing R&D efforts or lack of practical experience needed for effective definition and implementation. Examples are severe accident design considerations and the use of probabilistic risk assessment vis-a-vis safety goal objectives. Westinghouse agrees that such issues require a studied approach and are best considered in the context of a review of specific design features as opposed to premature guidance based on abstract considerations.

Westinghouse would welcome an early opportunity to discuss this matter directly with the Committee should the Committee feel that our views may be pertinent to a formulation of it's position.

Very truly yours,

WESTINGHOUSE ELECTRIC CORPORATION

for E. P. Rahe, Jr., Manager
Nuclear Safety Department

/hs

cc: Mr. J. J. Ray
Vice Chairman
Advisory Committee on Reactor Safeguards

Dr. W. Kerr
Chairman
ACRS Class 9 Accident Subcommittee

Dr. O. Okrent
Chairman
ACRS Safety Philosophy, Technology, & Criteria Subcommittee