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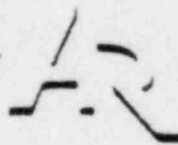
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In the Matter of: ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
SUBCOMMITTEE ON THE SAFETY RESEARCH PROGRAM

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1 UNITED STATES NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

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SUBCOMMITTEE ON THE SAFETY RESEARCH PROGRAM

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Room 1406

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1717 H Street, N.W.

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Washington, D.C.

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Wednesday, August 11, 1982

13

The Subcommittee met, pursuant to notice, at

14

8:35 a.m.

15

ACRS MEMBERS PRESENT:

16

C. SIESS, Chairman

17

J. C. MARK

18

D. A. WARD

19

D. OKRENT

20

M. BENDER

21

P. G. SHEWMON

22

M. PLESSET

23

D. W. MOELLER

24

DESIGNATED FEDERAL EMPLOYEE:

25

S. DURAISWAMY



1 MR. SIESS: The meeting will come to order.  
2 This is a meeting of the ACRS Subcommittee on  
3 the Safety Research Program.

4 I am Chester, Subcommittee Chairman. The  
5 other members present today, starting on my left, are:  
6 Carson Mark, Dave Ward, Dave Okrent, Bill Kerr, Paul  
7 Shewmon, and Dade Moeller.

8 The purpose of the meeting is to discuss the  
9 format, the content, and the approach to the NRC's long  
10 range research plan for FY-85 through FY-89.

11 The meeting is being conducted in accordance  
12 with the provisions of the Federal Advisory Committee  
13 Act, and the Government in the Sunshine Act. The  
14 Designated Government Employee is Mr. Sam Duraiswamy, who  
15 sitting on my right.

16 The rules for participation in the meeting  
17 were announced as part of the notice previously  
18 published in the Federal Register on Wednesday, July  
19 21st.

20 A transcript is being kept and will be made  
21 available as indicated in the Federal Register Notice.  
22 It is requested that every speaker identify himself or  
23 herself, speak with sufficient volume, and use the  
24 microphone.

25 We have received no written statements from

1 members of the public, and no requests for time to make  
2 oral statements from members of the public.

3           The meeting is being held for a couple of  
4 reasons. We reviewed the first long range research for  
5 '83 through '87, NUREG-0740 in April of 1981, and wrote  
6 a letter to the Chairman at that time. The draft plan  
7 for '84 through '88, NUREG-0784, we looked at, made a  
8 limited review, and wrote a letter on that in April of  
9 this year.

10           We discussed the question of reviewing the  
11 long range research plan with the Commissioners at a  
12 meeting. Since they have requested our review, it  
13 became a part of the process, and a document referred to  
14 as COMJA-6013, whatever that was, the procedures for  
15 endorsing research contracts.

16           As I said, research to develop a long range  
17 research plan was based on programs that we believe  
18 should be initiated and used for office needs. In  
19 February of each year, the ACRS will review and comment  
20 on the plan, and the Commission would review the plan  
21 for approval.

22           That particular requirement gave us a problem  
23 of timing -- various problems. One was that it has  
24 never met the February schedule, although the next one  
25 presumably would, and the other was simply the process

1 of the committee formally reviewing and commenting on  
2 anything having to do with research would have to be  
3 done through the process of subcommittee reviews.

4           We discussed this with the Commissioners in  
5 June, and said that we would rather not be involved that  
6 formally in the review and comments on the plan.  
7 Chairman Palladino asked if we would write him a note to  
8 explain that to him, and we did that in a letter dated  
9 June 7.

10           We said, we propose that we discontinue our  
11 formal report to the Commission on the long range  
12 research plan. However, we expect to continue to  
13 receive the plan, both in draft and final form, and we  
14 plan to utilize it in our review of and report on the  
15 NRC Safety Research Program for the budget and for the  
16 report to Congress.

17           We have not, to my knowledge, had a response  
18 from the Commissioners or from the Chairman on that  
19 proposal. I have heard a rumor to the effect that they  
20 still wanted us to review it, that is why I put down as  
21 one item on the agenda the role of ACRS, and it says  
22 here in the NRC Safety Research Program, but I suppose  
23 it should be the long range plan document, I think.

24           We made a promise that we would meet with  
25 Research at about the time you were starting to work on

1 the next long range research plan, and gave you the  
2 benefit of our advice on format, arrangement, content,  
3 etc., and that is really the purpose of this meeting.

4           It is still clear to us, since we have not had  
5 a response to our letter from the Chairman, as to just  
6 what exactly our formal role is. It has been my  
7 position, in fact backed to some extent by the committee  
8 to the extent that we have discussed it, that this  
9 formal role is almost impossible to carry out within the  
10 framework of your time table and ours.

11           I think you know that for us to do a complete  
12 review and comment on the long range research plan, we  
13 have to refer it to the various subcommittees which are  
14 knowledgeable about the program. Even if they have a  
15 continuing contract with the research program and the  
16 needs, they still will have to have at least one  
17 meeting, and prepare some comments, and there are  
18 between six and ten subcommittees involved in this.

19           To get those meetings scheduled, and then a  
20 full committee meeting, a full committee letter, and so  
21 forth, we are talking about two or three months, and  
22 your schedule does not allow two or three months for  
23 ACRS review and comment on anything.

24           I think the Commission had some idea that our  
25 review and comment on the plan before they got it would

1 somehow ensure the plan being better, or would be an  
2 endorsement of the plan and fit into this "endorsing  
3 research project" concept. Anything you can say about  
4 that during the course of the morning's discussion would  
5 be helpful.

6 We started off about a year ago, or a few  
7 months ago, realizing that we were reviewing the  
8 research plan formally about three times a year, and  
9 that in my opinion was at least two times too often. We  
10 review it for the Commission, the Congress, and the long  
11 range plan.

12 Would you like to say something, Bob, before  
13 we get into the remaining part of the advice, and so  
14 forth, about what you think or what Research thinks the  
15 role of the ACRS should be in regard to the long range  
16 research program, the approval, and the endorsement type  
17 of process?

18 MR. BERNERO: If you don't mind, I would like  
19 to lead right into the opening thing, because this is  
20 exactly what I would like to address right now.

21 MR. MARK: Could I ask a phrase to your  
22 question of what the role should be and by that, I at  
23 least would think from your point of view, what would  
24 the most useful role be, as opposed to what might be  
25 defined by some memorandum.



1           MR. BERNERO: Indeed. I think to a very great  
2 extent the Commission's requests of the committee are  
3 tempered by what we can suggest to the Commission or the  
4 committee can suggest to the Commission as a useful use  
5 of the committee's time and attention.

6           As Dr. Siess just said, we review it about  
7 three times a year, which is at least two times too  
8 many. I sometimes find it a blurred distinction to  
9 separate the one, the two, and the three times per  
10 year. From the staff's point of view, we seem to be  
11 trooping in and out, and I lose track of which budget,  
12 or which long range plan edition we are talking about.

13           We, too, recognize the difficulty that for a  
14 responsible comment by the committee, you have to use  
15 your subcommittee structure, and we have to cooperate  
16 with that subcommittee structure in a coherent way. And  
17 this blurring of activity -- are we reviewing this  
18 year's budget or last year's budget, or this edition of  
19 the long range research plan -- pervades down to our  
20 interaction with the subcommittees.

21           I think that one fundamental truth that we  
22 have before us is, there is too confused a relationship  
23 and interaction of comment and advice right now. It has  
24 to be clarified. I don't think that we have right now,  
25 the Research staff at least, a clear understanding of



1 the optimum way to do it.

2           What we wanted to talk about today is an  
3 approach to the long range research plan in particular,  
4 and how that relates to our interaction with the  
5 committee in general, where you have even statutory  
6 responsibility to advise the Commission or the Congress  
7 on budget. Perhaps from the interaction today, and  
8 following today, we can develop a much more effective  
9 way to do this.

10           Many times, I know, members of the committee  
11 are concerned that we are rejecting your advice or, as  
12 would argue, when you give us advice, we say, "Oh, yes,  
13 we agree," and then go on and do otherwise anyway. The  
14 committee represents a singular group of technical and  
15 scientific comment on the research program that should  
16 not be wasted.

17           MR. KERR: Don't ignore the accumulated wisdom  
18 and good judgment.

19           MR. BERNERO: I will go so far.

20           (General laughter.)

21           MR. BERNERO: Sam has some copies of the  
22 viewgraphs, but I don't know that you will have to refer  
23 to them. I have tried to put together a statement of  
24 the role of the ACRS in the Research Program that  
25 combines both what I perceive as a functional, useful

1 role, and an organizational role that you have put on  
2 you by Commission procedures, and even by the Congress.

3           Basically, if I look at the technical side, I  
4 see the two functions of the ACRS as technical and  
5 policy advice on needs and directions -- where are the  
6 risk significant uncertainties, where are the areas of  
7 research relative to nuclear safety, material safety,  
8 waste management safety. Whatever the area of  
9 jurisdiction of the agency, the committee is in a  
10 position, by the way you are selected and empaneled, to  
11 provide useful technical advice on where research ought  
12 to be done.

13           Secondly, and this is a very important part,  
14 the committee, often very effectively through its  
15 subcommittee structure, can provide a technical critique  
16 of results. The Research Program is not an  
17 instantaneous thing. One does not go out and set up a  
18 big program, do it in the closet, and come in here with  
19 an answer. It is an iterative process.

20           The programs go on for several years, and the  
21 committee is in a position to provide directly through  
22 its members, and with the consultants that you can  
23 marshal through your subcommittees, to provide  
24 technical critiques of results that are very useful.

25           So those are the two areas where we need the

1 advice, we want the advice, and we want the oversight of  
2 the committee in an efficient way. Now, the vehicle by  
3 which you provide this advice, the vehicle by which the  
4 committee as a whole reacts with us, are first of all  
5 what you are mandated to do.

6           The Commission, of course, has you as a  
7 federally constituted Advisory Committee, and the  
8 Commission has given you the task of providing annual  
9 advice on the research budget. In addition, the  
10 Congress four or five years ago, it seems, called on you  
11 to provide direct advice to the Congress on an annual  
12 basis concerning our budget.

13           These are activities that you cannot casually  
14 manipulate, and even before we had a long range research  
15 plan in being as a further chip on the table, there was  
16 the problem of dealing with the review of the budget for  
17 the Commission, and dealing with the review by  
18 Congress. So there was already the beginning of some  
19 blurring there, and that problem I think remains. It is  
20 not so severe as having this third thing, the long range  
21 research plan in the bargain as well.

22           Then two years ago, the staff prepared its  
23 first long range research plan, and I forget the number  
24 of it, but I think --

25           MR. SIESS: NUREG:-0740.

1           MR. BERNERO: It was 0740 or 0784, or  
2 something like that. We prepared our first long range  
3 research plan, and although we look back on that with  
4 some dissatisfaction, I think it is worth singling out  
5 some of the strengths of it, the things that we don't  
6 want to lose.

7           It was a comprehensive display of current and  
8 future programs. If you look at it, it represented that  
9 I look back on with some pride, a major activity in the  
10 agency of putting into a single document, albeit  
11 imperfectly, a statement of everything or practically  
12 everything that it was doing.

13           It makes it very useful for all parties, the  
14 user offices, the administrative offices, the  
15 Commission, the outside world, to see in one single  
16 place what is going on and what is expected to go on in  
17 the next few years. I will talk about some of the  
18 deficiencies of that display shortly.

19           By having that single display, we are also  
20 wide open for comment and advice, and it facilitates  
21 constructive advice about the overall program, the  
22 overall objectives of research, because there is in this  
23 one place this comprehensive display of programs.

24           I will just single out one example that we can  
25 come to again and again. When you are commenting on

1 risk flood work, the risk analysis flood work, you can  
2 also flip a chapter and look at the flood phenomenology  
3 research for its relationship, for the sense of the  
4 overall direction of the program. At least it is  
5 there. It may not be well put there. It may not be  
6 coherently analyzed, and coherently presented, but at  
7 least it is there, and it is open for comment and  
8 advice.

9           Lastly, you have here a display of programs  
10 and activities that is coordinated with the budget  
11 cycle, so that one is not forced to deal with a  
12 necessarily truncated budget presentation.

13           I sometimes wonder why the Government uses  
14 E-38, you know those budget forms that end up being  
15 collections of jargons, and repeatedly edited  
16 paragraphs. I find them almost distasteful. They  
17 really explain the program. They don't give any logic.  
18 They are far too terse and they are far too loaded with  
19 super-edited jargon.

20           So having a document that at least has the  
21 possibility of going into a more intelligent display of  
22 the overall program, having that document coordinated  
23 with the budget cycle, is a strength that ought to be  
24 taken advantage of. But let's be candid, and let's talk  
25 about the weaknesses.



1           As you know, the first two long range research  
2 plans went out and put together all the programs, but  
3 they did just that. They put together programs, and not  
4 plans. In fact, we should have called them the long  
5 range research program description, rather than the long  
6 range research plan.

7           Basically, they lacked clear planning for  
8 regulatory issues, for the definition of the regulatory  
9 process -- Where are we trying to go? What are we  
10 trying to do with an individual program? What is the  
11 fundamental regulatory need?

12           They also lacked clear definition of  
13 objectives, sufficient technical information to make a  
14 rule, sufficient technical information to put aside a  
15 concern. They just lacked that.

16           We tried in the second plan to superimpose an  
17 editorial structure by going into the plan and forcing  
18 the authors to at least state their objectives and their  
19 regulatory needs, and so forth, but frankly I don't  
20 think that was very successful.

21           It helped in some regard, but you could not  
22 sit back with our second year plan, let alone with the  
23 first, and see overall problem analysis, regulatory  
24 analysis, saying, this is what this research is intended  
25 to do, and here are the priorities and the objectives of



1 it. This was not clear. It was clearly a compendium of  
2 programs worked backwards. It was a bottom-up plan.

3 We also divided it according to our budget  
4 decision units and organizational structure, and as you  
5 know that tends to bend people to put the plan in narrow  
6 categories. You will find as a result some overall  
7 issues are divided, and I will use that same example  
8 again.

9 If you go in last year's program plan, and you  
10 want to ask about a regulatory issue I know this  
11 committee is interested in, you want to ask about  
12 flooding research, where would you find it. I can tell  
13 you. You go to Chapter 10, and you will find the guys  
14 who were paid under the risk decision unit fiddling away  
15 with their part of flooding research. Then you go into  
16 Chapter 9, and you will find the Geo-Science Group, Leo  
17 Beratan's group in Frank Arsenault's division, talking  
18 about what they do. But you don't find a coherent  
19 address of the problem.

20 You find the activities divided according to  
21 the budget decision units, which fund the activity, and  
22 the management structure which controls the activity.  
23 You don't find a coherent cross-cut or a coherent  
24 analysis of the problem.

25 The organization of the plan is such,

1 following budget and management structures, that it puts  
2 that burden out there that there must be a cross-cut.  
3 There was an additional burden, and we didn't carry the  
4 burden last year. That example, I think, is a singular  
5 case of it.

6           The third item that I have here needs some  
7 explaining. It is incompatible with program and policy  
8 guidance input, it can only follow program and policy  
9 guidance output.

10           What I mean by that is, the Commission  
11 consists of five human being with significant  
12 responsibility, you cannot give them a 200-page document  
13 and expect them to analyze it, to go through it, and to  
14 turn back to the staff and say, "In your next approach  
15 to these areas, let's say research, here is some  
16 coherent guidance from the Commission itself." It is  
17 too indigestible a blob, it is too incoherent a blob,  
18 they would have to analyze it.

19           The result is that there is only a very  
20 limited and very, I would say, informally conducted  
21 dialogue between the Director of Research, and his upper  
22 staff, and the Commission before the PPG is generated,  
23 and as you now it addresses only one or two or three  
24 aspects of research at the most.

25           It is very general, and very vague. It is not

1 offered a coherent menu of possible directions on which  
2 to comment and, therefore, the Commission, not having an  
3 adequate staff document before them, is not able to give  
4 what I would consider adequate policy and planning  
5 guidance. We, of course, having gotten the Commission's  
6 policy and planning guidance can act on it, but it is a  
7 very limited influence on the generation of the plan.

8 MR. SIESS: Bob, since you mention PPG, in the  
9 last budget material I got there was a section called  
10 "cross-cuts on PPG." Do you know what I am talking  
11 about?

12 MR. BERNERO: I believe so.

13 MR. SIESS: It divided up into operating  
14 plants, near term licensing, regulatory requirements, do  
15 you know what I mean?

16 MR. BERNERO: I think so.

17 MR. SIESS: It listed the effort in dollars  
18 across the Commission, and it listed Research. About  
19 three-fourth of the research budget was accounted for in  
20 those cross-cuts, and about one-fourth wasn't. As I  
21 looked at it, it says that a quarter of what Research is  
22 doing is not in response to PPG guidance. Is that what  
23 it says?

24 MR. GILLESPIE: Bob was not involved in  
25 putting those cross-cuts together. Besides looking at

1 the cross-cut number itself, you have to look at the  
2 definition that went with the term. Sometimes the  
3 definitions were narrow, and sometime they were broad.  
4 As an example, one of the cross-cuts was scientific code  
5 development, code validation work, and in some cases it  
6 was not included under that category.

7           The definitions became really tricky in those  
8 cross-cuts, and in some cases some of our money is  
9 double-counted because it fit in two areas. So the  
10 cross-cuts are not going to add up to anything.

11           MR. SIESS: What the heck are they good for?

12           MR. GILLESPIE: That came out of a Commission  
13 meeting.

14           MR. SIESS: That was to satisfy the  
15 Commission?

16           MR. KERR: Mr. Siess, as you know, cross-cuts  
17 are part of any careful planning these days. You have  
18 to have cross-cuts

19           MR. GILLESPIE: It was something on the order  
20 of 20 projects. The question came up, does risk  
21 assessment go under severe accident, or does risk  
22 assessment go into these other things, if you are asked  
23 the question of how much money are you spending on risk  
24 assessment. The decision was made to put it in both  
25 places, so that people can see what we are spending.

1           MR. SIESS: In what I have, risk assessment  
2 went under improved regulatory tools. The thing that  
3 bothered me was that only three-quarters of the program  
4 could be accounted for in PPG, where was the other  
5 quarter justified?

6           MR. BERNERO: In a way you are making a case  
7 for what I was trying to say. The PPG has the character  
8 in its present format for the Office of Research of "Go  
9 do good things in an area." It is very general. It is  
10 very, very limited.

11           It does not have singular and coherent  
12 regulatory objectives because we don't offer the staff  
13 work for the Commission to react to, or to choose from  
14 that would enable them to give us that kind of advice.

15           MR. BENDER: I wanted to raise two points that  
16 you may cover, but I will anticipate that you are not  
17 going to cover them. One is the question of what can be  
18 accomplished with a given amount of money.

19           It seems to me that the logic of developing a  
20 research program has to deal with the matter of given so  
21 much money, can you get to a specific answer with that  
22 money. If you can't, you may be just throwing money  
23 away because you are not going to get very far. The  
24 other is the timeliness of the need. You may be going  
25 to cover both of those.



1           MR. BERNERO: We are going to come into this  
2 because one of the crucial things in going into the  
3 simple delineation of programs the way we have in the  
4 past, it is not an effective vehicle for addressing  
5 these questions, unless you start from the top down with  
6 a statement of what am I trying to achieve.

7           You can't coherently and properly address  
8 questions like: Can I even get there from here in a  
9 timely way: What are my priorities? Are the tools  
10 available to me suitable and affordable to go that way,  
11 because we could well reject the research objective.

12           There are a number of reasons that we might  
13 decline to do research. One, of course, is that it is  
14 not our job, it is DOE's job, or the industry's job.  
15 Another is that there is simply not enough money in the  
16 world to do it, or it is not cost effective to do it.

17           We have this problem, and it is the subject of  
18 vigorous debate now, on the fission product played out  
19 or attenuation in the reactor coolant system. We all  
20 have very strong feelings about how and where fission  
21 products from core melt might be transmitted through the  
22 reactor coolant system toward some exit, but is it  
23 feasible to do a definitive research program that would  
24 give the distribution of fission products by individual  
25 nuclides, by categories, and by individual accident



1 sequences.

2           It may be horrendously expensive. By looking  
3 at our regulatory needs from the top down, then we are  
4 in a much better position to speak to the real issues of  
5 a program like that. Is it affordable? Is it  
6 sensible?

7           MR. OKRENT: You have something called basic  
8 and specific objectives, and the implication from the  
9 slide is, since it says previous LRRP's weaknesses, that  
10 this has now been dealt with in the current version.

11           MR. BERNERO: No, by the current version, you  
12 are referring to 0784.

13           MR. OKRENT: That is right, the one that was  
14 handed out this morning, or are expected to have had by  
15 now.

16           MR. DURAISWAMY: That is the one we looked at  
17 and mailed.

18           MR. OKRENT: So there is a future one?

19           MR. BERNERO: We are talking today about how  
20 can we approach the third long range research plan to  
21 avoid these weaknesses. The weaknesses I refer to, 0784  
22 that you have in your hand has them, and the previous  
23 one has them in a slide.

24           MR. OKRENT: I thank you for clarifying that  
25 point.

1           MR. MARK: This is a trivial point, but when  
2 you said that the Commission couldn't be expected to  
3 take a 200-page document and draw its conclusions from  
4 it, this is a 300-page document.

5           MR. BERNERO: There is one other thing that  
6 enters into this. I was there at the time, and I really  
7 don't know how we got into this approach, but we got  
8 into a long range planning approach that had a very far  
9 horizon.

10           If you go to the first two long range research  
11 plans, you find that they deal with two years of  
12 programs by way of status. They say, you need to know  
13 what is going on, and what is going on is the year we  
14 are just going into and next year, and those budgets  
15 have already been dealt with.

16           Then in the long range plan, the actual scope  
17 of the plan is the two-year budget cycle which is now  
18 the third year out and the fourth year. We get our  
19 five-year scope by adding three more future never, never  
20 years after that. We get these very high numbers. We  
21 get these very long range, far off horizon things.

22           Now, this is a problem, and this is going to  
23 lead into Frank's Gillespie of what we are trying to do  
24 with the new plan. I made a little sketch to better  
25 understand this. If you look here, in the coming fall

1 of 1982, in the old scope of the long range research  
2 plan, you would be covering the budget years '83 and  
3 '84, fiscal 1983 and 1984. This is merely a status, yet  
4 you are at the very beginning, or the threshold of  
5 FY-83. You are in the throes of argument about whether  
6 or not you will continue BPF phase II or things like  
7 that.

8           Very crucial research programs and decisions  
9 are in this status. You are talking about the '85 and  
10 '86 budget, but the scope of the long range research  
11 plan spans way out to 1989, and who of us is a sharp  
12 enough seer to see that far out, or can make any  
13 meaningful comment about it.

14           An alternate scope that might be considered  
15 is, as I bracketted it underneath here, taking the two  
16 existing years already budgeted, but subject to limited  
17 reprogramming, and the two budget years after that as  
18 companions, and then a year beyond. Then, there are  
19 subsets that you could shift one year and compromise the  
20 difference.

21           I would like to use this as the lead-in to  
22 Frank Gillespie's discussion of the mechanics now of how  
23 can we approach this new plan and how can we make it  
24 work, so that we can keep the strengths and solve the  
25 weaknesses.

1 MR. BENDER: Put the slide back that you just  
2 had a minute ago, I want to make an observation.

3 I think you are right that we can't look out  
4 to 1989, but there are some intermediate steps that have  
5 to be defined in the long range research plan as a basis  
6 for judgment. I think a little bit of discussion of  
7 that ought to show up in the plan.

8 MR. BERNERO: Yes, I think Frank is going to  
9 address that, because in a way it is important to  
10 recognize this, when you are speaking of the objectives,  
11 of regulatory needs, and where we are going from here,  
12 this sort of a scope makes a whole lot of sense. But  
13 sooner or later, we must get to the compatibility or the  
14 utility of programs to get there, and that is when the  
15 focus of attention and the real need comes to this group  
16 here.

17 We have this incompatibility. We need the  
18 vision, and that is exactly what it would be. It would  
19 be statements of vision or projections, and not  
20 statements of programs. What we tried to do in the  
21 first two editions was, we tried to make statements of  
22 programs out here, without the vision. That, of course,  
23 lacks utility.

24 Let me turn the floor over to Frank.

25 MR. GILLESPIE: I will not use the viewgraphs,

1 unless I have to.

2           In looking at the long range plan this year,  
3 the basic decision was that if we can't recover anything  
4 from the last formats, then we will try starting from  
5 ground zero again, that is not necessarily on content,  
6 but on format, also recognizing that the long range  
7 research plan tended to duplicate the budget, because  
8 you don't like reading twice.

9           The other thing we wanted to get into was the  
10 early submission of the long range plan and to get  
11 comments from the Commission to get to the Commission  
12 before they write their PPG guidance, so we have an  
13 opportunity to input to them.

14           In doing this, we are actually saying now that  
15 we are not going to duplicate the budget in the long  
16 range research plan. We are making the conscious  
17 decision that the long range research plan will serve  
18 one purpose and the purpose another, and not duplicate.

19           So the purpose of the long range research plan  
20 is intended to define the regulatory goals and what  
21 information we want to develop from a research program  
22 to meet those goals. We are going to try to get  
23 agreement of the parties on the program goals as best we  
24 can prioritize them.

25           We want to get agreement on the information



1 that is needed to fill them. A goal may require a  
2 revision of a particular part of the standard review  
3 plan. It may indeed lead to a rule. We want to get  
4 agreement that that is something that is in fact  
5 needed.

6           We want to get agreement that this type of  
7 information, if the research program generated it, would  
8 fulfill that need. If we gave that information to NRR,  
9 it would satisfy their needs. Where we ourselves could  
10 write the rules and do what was needed with it.

11           Another thing we would like to do is stimulate  
12 technical advice on how to achieve the information.  
13 What we don't want to do with the plan is have infinite  
14 detail on how we are going to get the information. That  
15 is intended to be in the budget. If we get agreement  
16 that this information is needed to fill these needs,  
17 then in the budget planning process, we would detail how  
18 we are going to do that.

19           Inherent in the decision on priorities, is the  
20 need for some kind of estimated cost. So, indeed, there  
21 will be a money figure with each of milestone that we  
22 are expecting to reach in the research program for  
23 purposes of prioritization -- we would expect that this  
24 is worth \$10 million, and this is worth \$5 million, or  
25 this is worth a half a million dollars.



1           MR. WARD: Wait a minute, Frank. You say that  
2 you are going to estimate this as worth \$10 million, or  
3 do you think that it is going to cost \$10 million?

4           MR. GILLESPIE: How much is it going to cost  
5 based on information that we have. PBF costs \$16  
6 million a year to run. If our intent is to use PBF to  
7 get this piece of information, then we automatically  
8 know that there is a base cost of \$16 million, and other  
9 things are much, much cheaper.

10          MR. BERNERO: Excuse me, Frank. I think there  
11 is something worth adding.

12                 In certain area, when one looks at the  
13 long-range plan and one looks at the budget, there can  
14 certainly be a need for more detailed programmatic  
15 discussion and planning at a much deeper level.

16                 The approach with the budget and the long  
17 range research plan doesn't preclude having a detailed  
18 program plan for severe accident research, or heavy  
19 section steel research, or something like that, where  
20 you need to go into a specific area, go in deeply.

21                 We can have separate supporting documents that  
22 can be treated by reference, but we don't want to have  
23 them in the long range plan and end up with 374 pages,  
24 because then it is an unusable document, and it is going  
25 to miss its real point or the overall objective.

1           MR. GILLESPIE: That is the objective, our  
2 audience, which becomes very important. We have written  
3 a very voluminous document which has failed in its  
4 reaching of the Commission. It is too long for Office  
5 Directors to generally spend much time with it. Then we  
6 get the complaint from the staff, particularly NMSS,  
7 that it lacks sufficient detail for them to comment on  
8 it. So we have missed both audiences. We fit in the  
9 middle and satisfied no one.

10           We made a conscious decision this year that  
11 this plan is intended for Office Directors and above.  
12 It is intended for agreement on need, agreement on  
13 information that is required to fulfill those needs and  
14 program direction.

15           MR. MOELLER: Excuse me, but that is a point  
16 that I would like to discuss.

17           You have listed your purposes and I think  
18 those are well specified, or spelled out here. But as I  
19 went through the material that we were provided, and as  
20 I read Martin's comment on waste management or  
21 Cunningham's comments, I have no way of knowing in  
22 fact. The only conclusion I can reach is that you did  
23 not get agreement on goals and needs, and you did not  
24 get agreement on priorities.

25           Now maybe there has been a lot that has

1 occurred since those memos were written, and I am sure  
2 there has been. But how am I to know how successful you  
3 have been on these goals and purposes? Are there  
4 subsequent memos from Cunningham and Martin that say, we  
5 agree fully with what is in it?

6           MR. GILLESPIE: In general, there is not.  
7 What has happened is that Minogue has met with Davis,  
8 and they have worked it out at the Office Director  
9 level. Then through the budget review process, it got  
10 worked up to Dircks, and then through to the  
11 Commission. So the process itself worked it out without  
12 a written record of each step.

13           MR. MOELLER: Like in the Dircks memo that we  
14 were given, the SECY document of May 2nd, it says in  
15 there that all of the problems have been worked out.

16           MR. GILLESPIE: The problems were not worked  
17 out with Martin and Cunningham. They were worked out  
18 between Minogue and Davis.

19           NMSS, I don't know why, but they are always  
20 different from NRR. NRR, we seem to be able to deal  
21 with the division level, and the Office Director seems  
22 to always agree.

23           MR. MOELLER: He says, "RES believes that most  
24 of the significant comments received have been addressed  
25 and resolved."

1           MR. GILLESPIE: Indeed they were, and it meant  
2 going higher than Cunningham and Martin.

3           MR. PODOLAK: Ed Podolak of the staff.

4           There was a memo from Martin to Minogue, which  
5 said that the comments on the long range plan gave the  
6 impression that the programs were not well coordinated,  
7 when in fact they have been well-coordinated, and the  
8 comments were on details.

9           So there was a memo to document that, and I  
10 think it underlies your point that the feeling of the  
11 staff at NMSS was that there was not enough detail in  
12 the long range research plan for them to evaluate it  
13 from a staff level. That underlines your comment.

14           MR. GILLESPIE: Yes, but Martin never wrote  
15 back and said that he agreed with the priorities. He  
16 agreed on the basis of what his disagreement was. He  
17 agreed that we had a well-coordinated program, but he  
18 didn't agree with the priorities. So what happened was,  
19 we missed both audiences.

20           MR. KERR: Does this mean that he agreed that  
21 you had a well-coordinated lousy program?

22           MR. GILLESPIE: Or we had a well-coordinated  
23 good program, but he didn't say it either way that  
24 either letter. We have a well-coordinated program, so  
25 we are satisfying his needs within the money we have got

1 in there. He stands by the fact that he would like to  
2 have four or five more people put in waste management to  
3 write standards, which was his biggest gripe.

4 MR. SIESS: There are two themes to this  
5 meeting. One is what should be in the long range  
6 research plan, and the other is what should the role of  
7 the ACRS be.

8 In connection with the letter, to make clear  
9 what I am talking about, it is an interesting point, if  
10 the ACRS provides comments to the Commission on the long  
11 range research plan -- I make a distinction between  
12 comments to the Commission and comments to the staff, or  
13 advice to the Commission and advice to the staff -- do  
14 we concern ourselves with only what we think should be  
15 in the research program or the research plan, or do we  
16 concern ourselves with what the user offices think  
17 should be in there?

18 That is, do we start looking at what the  
19 offices say their needs are, evaluate those needs, then  
20 evaluate the program against those needs? Or, do we  
21 simply come in and say, this is all right, this is not  
22 all right, based on our own views?

23 Do you get the distinction, because there is  
24 one?

25 If we are going to look at how Research



1 responds to user needs, I think we have to look at the  
2 expression of those user needs, because they may not be  
3 good needs, which means a lot of involvement with user  
4 offices -- why do they need something, what are they  
5 using now? I just wanted to bring that point up.

6 MR. GILLESPIE: I think what we would be  
7 looking for is independent technical advice.

8 MR. SIESS: Let me go back and point out  
9 something which was in a memo I wrote sometime ago for  
10 the committee.

11 We have been doing two different things. We  
12 have been interacting with the Research staff, or what I  
13 say, giving advice to the research staff. In our  
14 reports to the Commission, and in our reports to  
15 Congress, major portions of those are addressed not to  
16 the Commission or to congress, but to staff. All of our  
17 oral interchanges are directed to staff.

18 In addition, we give advice to the Commission  
19 on the budget at a certain time of the year, and advice  
20 to the Congress. Our advice to the Commission and  
21 advice to the Congress is not the same as our advice to  
22 the staff, and the staff response to our advice,  
23 frequently with a time lag of one year to infinity. The  
24 response from the Commission or the congressional  
25 response is something entirely different, if it exists.

1           So I have always made a distinction between  
2 our advice to the staff and our advice to the Commission  
3 at a particular point in time, on a particular budget or  
4 program, and our advice to the Congress. The same is  
5 going to be true about the long range research plan.

6           MR. WARD: Chet, what do you mean by advice to  
7 the staff? I was interested in Bob Bernero's first  
8 chart where he talked about the role of the ACRS.

9           Bob, you did not mention at all advice to the  
10 staff. You talked about the advice, needs, and  
11 directions, and then you said that the advice came  
12 through the reports to the Commission on the budget, and  
13 the report on the budget to the Congress.

14          Chet is saying that there is some mechanism,  
15 he thinks, working for advice to the staff. Do you feel  
16 that there is a mechanism for advice to the staff?

17          MR. BERNERO: I was intending the first two of  
18 those items as being primarily advice to the staff, and  
19 the second advice to the Commission.

20          MR. WARD: How do you perceive that you get  
21 that advice?

22          MR. BERNERO: By interaction.

23          MR. SIESS: Take our report to the Congress, I  
24 consider all of Part II of that report to be addressed  
25 chiefly to the staff. I doubt that the Congress pays

1 any attention to it.

2 MR. BERNERO: That is exactly it. The formal  
3 mechanisms which the ACRS uses to communicate with the  
4 Commission, whether it be in a licensing case or the  
5 research budget, or something like that, it is the staff  
6 that is here, that is in the dialogue with the ACRS, and  
7 the first fruit of that is advice to the staff on  
8 technical detail.

9 MR. OKRENT: Since you are talking about the  
10 ACRS' role, I would like to raise two rather different  
11 points for consideration.

12 The first is, is our interaction with the  
13 Commission what it should be? When I read the  
14 transcript of the staff meeting with the Commission on  
15 the budget, and I read the discussion of ACRS comments  
16 and the response that the staff makes to these, I myself  
17 do not feel that the ACRS position has been adequately  
18 dealt with much of the time.

19 The committee, of course, writes a very  
20 cryptic comment and it doesn't usually write even half a  
21 paragraph on an item, and maybe it should.

22 MR. SIESS: The staff has spokesman, and we  
23 have to speak for 15.

24 MR. OKRENT: Let me go on, if I may.

25 Nevertheless, what happens seems to be that

1 the Commissioners pick up some of the comments, or many  
2 of the comments, the staff responds in certain ways  
3 which I think would be different, or at least the  
4 overall discussion would be different on many issues if  
5 there were an ACRS representative there to interject a  
6 comment now and then.

7           So if we are going to spend all the time that  
8 we do reviewing these things, maybe we should carry it  
9 one step further. This is the thought I want to leave,  
10 and that leads me into the second point.

11           In my opinion, we have gotten way out of  
12 balance from the point of view of time that we spend  
13 reviewing the Safety Research Program and the time that  
14 we spend trying to develop, as well as react to  
15 technical positions on major regulatory questions like  
16 implementation of safety goals or severe accident  
17 rulemaking, and so forth.

18           Finally, it seems to me a thing that we have  
19 done only on an ad hoc basis, and might want to consider  
20 is that we, in fact, try to look at the various  
21 functions that the regulatory staff does in its  
22 regulatory role, and see whether we have any comments  
23 along these lines.

24           What we do, it seems to me now, is look, let's  
25 say, at the unresolved safety issues. There may be a

1 detailed look for a period of time at decay heat  
2 removal, or pressurized thermal shock, but we don't have  
3 in effect the kind of, at least once through, somewhat  
4 systematic look at the regulatory aspects of things.

5           That is a big package to swallow, but I would  
6 like to raise these points all quite seriously.

7           MR. SIESS: They are both good points, Dave.  
8 The first one does present us with the problem of having  
9 a representative that can speak for the group. I speak  
10 from experience, because I have had to go up to the  
11 Congress two or three times and presumably speak for the  
12 ACRS on the Research Program. Again, I am trying to  
13 speak for the ACRS, which is difficult.

14           The point Dave made is a good one. We put  
15 down a recommendation in writing, and it is filtered  
16 through the committee. Bob Minogue can come back as  
17 individual and spoke to that much more strongly than we  
18 could, and it is hard to rebut.

19           MR. BERNERO: Because you are not speaking at  
20 all.

21           MR. SIESS: The other point, which is exactly  
22 why we are in this meeting, I wrote a memo for the  
23 committee a year ago, or thereabouts, saying that we  
24 were doing this thing too many times, and we were  
25 spending too much time reviewing the research program



1 with a lot of formalities.

2           We wrote a letter to Joe Palladino in October  
3 of 1981 where we proposed to cut down on that. He  
4 agreed to cut down on the report to the Commission in  
5 July, but he still wanted a review of the long range  
6 research plan. His response came back and said, yes, we  
7 realize that you and Research, both, are devoting too  
8 much time, but he still wanted a review of the long  
9 range research plan.

10           I will come back to that because he still  
11 wants it, and he wants it in a schedule that is  
12 impossible to review the long range research plan and  
13 the budget at the same time, when they are covering  
14 different periods, etc. As I said at the beginning, we  
15 don't want to do that. We have not gotten the word back  
16 from the Commission agreeing to it.

17           I am thoroughly in agreement with Dave that we  
18 are not devoting a tremendous amount of effort to this,  
19 but I don't see where would find the time to do so, and  
20 still be devoting time to other things. I think that we  
21 have more contact than we need with Research.

22           MR. BERNERO: I would like to remark on what  
23 Dave has said, and back up to the question that you  
24 raised that triggered this discussion about, should you  
25 address what is in the research program, or should you

1 as well address the user needs.

2           If we go back and ask ourselves what are the  
3 regulatory needs or the regulatory programs of the  
4 agency, we don't really have a long range regulatory  
5 plan or program approach of some sort for the user. In  
6 other words, NRR doesn't public annually some sort of  
7 long range plan that provides a vehicle whereby those  
8 who advise the Commission, where the Commission and  
9 others can comment on directions and objectives and  
10 priorities.

11           The fact that there is a research plan that  
12 incorporates significant elements of regulatory  
13 directions, I think forces you to address not only what  
14 is in the plan and your own views of what is in the  
15 plan, but by extension your own views on what NRR or  
16 NMSS should be looking for.

17           I think that you have no choice, it is the  
18 only game in town. That is the only place you can go.

19           MR. SIESS: That expands what we are doing  
20 because we have our ideas, and sometimes they don't  
21 agree with what NRR thinks.

22           Then sometimes NRR has something that they  
23 think is important that we don't know about, and we have  
24 to then sit down with them and understand what their  
25 needs are. That is an extension of this, and it is even

1 more interaction with the staff.

2 We will sit in a meeting, and we will have  
3 George Knight come up and present a few comments, but  
4 that is not an in-depth review with the NRR people as to  
5 what they think the problems are, why they think they  
6 are problems, and why they think there is a high  
7 priority on them. Unless it is obvious, we don't go  
8 into that depth, I am talking about right down into the  
9 \$2 or \$3 million items.

10 MR. BERNERO: Let me go back to the example  
11 that I cited.

12 MR. SIESS: We have not talked to NRR about  
13 serious accidents that much.

14 MR. BERNERO: That much, but you have talked  
15 about them.

16 MR. SIESS: Some, but we have not heard them  
17 list the alternatives to rulemaking, or the alternative  
18 decisions that they need this information for.

19 MR. BERNERO: The only vehicle you have is the  
20 research in severe accidents in SECY-82-1 and 1A.

21 MR. SIESS: They tell us a lot about what they  
22 want to know, but not why they want to know it, or why  
23 they need to know it.

24 MR. BERNERO: I think if the committee is  
25 looking at the research program, and confines itself to

1 addressing what is in the plan, and what the committee  
2 affirms should be in the plan, and what the committee  
3 says should be in the plan but is not in the plan. If  
4 you just take that narrow a view, as you defined it, not  
5 looking at the user needs, I think there is a vacuum  
6 then, because the example I cited on floods, the  
7 committee has expressed a strong priority for flood  
8 related research that would lead to a better regulatory  
9 basis for floods.

10 NRR, on the other hand, has expressed a much,  
11 much lower priority for that, and you have what amounts  
12 to a substantive difference of views about regulatory  
13 objectives and priorities, and the only vehicle in which  
14 you can address this difference is the research  
15 program.

16 MR. OKRENT: There are other vehicles. We  
17 could write something saying, on this particular plan,  
18 we think they had better go back and look at the design  
19 basis for floods. If you write this several times, and  
20 suggest that it is an unresolved safety issue, this may  
21 get their attention, even though they came noting  
22 something different to you.

23 MR. BERNERO: But is that an effective way to  
24 do it?

25 MR. OKRENT: It may be more effective.

1 MR. MOELLER: I wanted to comment on one  
2 thing.

3 I agree with what Dr. Okrent has said. Yet,  
4 when I look at the long range research plan, and note  
5 that in FY-88 you project a total budget of less than 65  
6 percent of that for FY-84, I don't know to interpret  
7 that, but one way to interpret it is that you do not  
8 have a long-range research plan.

9 In other words, all you are doing is taking  
10 the projects that are currently underway, and you are  
11 showing that you hope to complete them, and they are  
12 going to phase out, but that is not a long range  
13 research plan.

14 MR. SIESS: We made that point before, I think  
15 in our first letter, of the projection of current  
16 projects and current needs.

17 MR. MOELLER: But the budget clearly brings  
18 that home.

19 MR. BERNERO: If I could add to that. On the  
20 bottom up plan, you bound to show that where you merely  
21 tabulate current programs and show them winding down  
22 completely. You are going to have that kind of a budget  
23 tail-off.

24 It merely displays that the current activities  
25 will phase out. There is no evident planning of future



1 activities that would absorb or call for further  
2 budget. However, if the plan were done from the top  
3 down, as we hope this next version is, there might be  
4 explicit address of that very thing.

5           One of the hidden facts in current trends is  
6 INPILE test capability, and the NRC research program is  
7 winding down, it is going to disappear in about a year  
8 and a half to two years. It is projected to stop and  
9 that would have that kind of a budget effect, because  
10 these are big overhead programs. If that is explicitly  
11 planned, it should be there and you should be able to  
12 see it. It should be spoken to directly.

13           MR. SIESS: Dade, I want to tell you  
14 something. In our report that we just wrote to the  
15 Commission on the 1984-85 budget, you will recall that  
16 we propose no increase in the total amount for 1984, but  
17 we did propose that the 1985 number be increased by \$6.5  
18 million, chiefly because we thought some anticipation of  
19 future problems needed to be included. The Commission  
20 did accept that advice, and that was our first step  
21 toward just what we are talking about here. I just  
22 thought I would let you know that the Commission didn't  
23 accept too much of our advice, but they did accept  
24 that.

25           MR. MOELLER: I would say, too, to contrast

1 this plan, and I am not using this as the perfect  
2 example, but I recently read through EPRI's long range  
3 research plan, which I found very exciting, interesting  
4 and well-developed, and so forth. I don't remember  
5 their specific budget figures, but I would venture to  
6 say that they didn't follow the pattern that yours do.

7 MR. BENDER: Bob, there are some other aspects  
8 of this business of matching budget with anticipated  
9 programs that might be cranked into the points you are  
10 making.

11 Of course, if you are going to phase out some  
12 big facilities, and that is what is in the plan, it is  
13 easy to show that the budget should be cut back. But  
14 among the things that I have always thought were  
15 important was to make some early showing or to take some  
16 position on what kinds of expertise are being maintained  
17 by the Commission through its research program, and that  
18 never comes out in the program.

19 It may not be political to identify it, but  
20 nevertheless it seems to me that if you are expecting to  
21 have a certain number of people there to answer  
22 questions, you have to be able to say, we are  
23 establishing a center somewhere, which we intend to  
24 continue for X years in order to have that knowledge.

25 MR. BERNERO: You can only find that now in a

1 few areas. I guess in nuclear reactor research plan,  
2 you will find that explicitly, that there is a certain  
3 amount of activity that has that character. It is  
4 keeping expertise in place.

5 That same question can be asked about test  
6 capability, thermo-hydraulic test capability, and INPILE  
7 test capability, and so on. Again, if one merely  
8 tabulates projects, you don't have the proper vehicle to  
9 make that priority statement.

10 You have heard many times the Ross criteria  
11 for research, that is an explicit criteria to maintain  
12 capability.

13 MR. BENDER: I don't think that point came up  
14 previously in this discussion, and I wanted to make sure  
15 that it wasn't ignored when the long range research plan  
16 report was developed.

17 MR. SIESS: I would like to point out that in  
18 1972, when we were arguing with the then Chairman of the  
19 Atomic Energy Commission for research capability on the  
20 regulatory side, that was one of our arguments.

21 MR. BEACH: Bill Beach from the Division of  
22 Accident Evaluation.

23 Year after year we have tried to get just  
24 exactly what you have suggested, continuing expertise in  
25 certain areas. Whenever we do that without having a

1 specific user need for it, we get shot down in the  
2 budget process so fast that it makes your head spin. We  
3 are not even allowed to say that we want to do that.

4 MR. BENDER: The tone of the Commission's  
5 approach changes from year to year. You have a  
6 different make up in the Commissioners now, and a  
7 different budgetary process. No matter whether you have  
8 been able to do it before or not, I think that is a  
9 defeatist attitude to say that you are going to quit  
10 trying.

11 MR. BERNERO: Stifle yourself.

12 MR. BEACH: It is from the OMB that we get  
13 this reaction.

14 MR. BENDER: God Bless their soul, but keep  
15 trying anyhow.

16 MR. MARK: I would like to complicate this  
17 line of thought slightly.

18 In reading the comments from NRR, I was really  
19 offended and alarmed by such phrases as "this work  
20 should be done if consistent with the completion of the  
21 rulemaking." If you can do it by the time that they  
22 want it, then they want it, and if you can't, then you  
23 might as well save the money.

24 This is their line of thought, they are not  
25 interested in research, they are interested in

1 rulemaking, and they have a self-imposed schedule for  
2 completing this rulemaking, so only the work that you  
3 can accomplish prior to that date is worth doing.

4 Now these kinds of remarks, which don't come  
5 in every paragraph, but they come in a fair number, do  
6 they influence you?

7 That is, equipment qualification, you know  
8 that it is worth doing, and you know that it will take  
9 time, you don't know how much time. They say that the  
10 LRRP should be consistent with their plan to stop the  
11 work in 1984. Do phrases of that sort have any  
12 influence on the form of the long range research plan,  
13 they shouldn't, of course.

14 MR. BERNERO: They do.

15 MR. MARK: Then I would think that an ACRS  
16 function, not perhaps through talking to you, might very  
17 well be to say that this is the wrong way to think of  
18 things.

19 MR. GILLESPIE: In some of the occasions where  
20 they have put remarks like that, that gives us a feel  
21 for the product. If it means that something needs to be  
22 cut, or something is going to be boosted up to get it  
23 done faster if that possible. Sometimes pouring more  
24 money doesn't get something done faster either.

25 MR. MARK: If it means taking more money for



1 that reason, and cutting down something which you  
2 perfectly well is going to take longer and should be  
3 funded, then it is having the wrong effect.

4 MR. GILLESPIE: George Knight is over here,  
5 and he would like to get a word in.

6 I don't know of an occasion when we said that  
7 we weren't going to do something that we thought needed  
8 to be done because it was not going to meet an  
9 arbitrarily self-imposed date. What we would do is make  
10 every effort to get it done by that date.

11 MR. MARK: But you have a limited budget, so  
12 something has to give to do that.

13 MR. GILLESPIE: Normally, NRR gives us a list  
14 where they try to give us their higher and lower  
15 priority items, and we will get letters even during the  
16 year that will say, "We need to get this thing done. If  
17 you have to take it from some place else, take it from  
18 over here." We get that kind of input from NRR, and I  
19 think that it is useful input. It gives us an idea of  
20 what they are willing as a user not to have rapidly in  
21 order to get something else faster.

22 George, do you want to add to that?

23 MR. KNIGHT: George Knight, NRR.

24 I thought I might respond. Remember that the  
25 letter you are reading is a letter from Denton to RES,

1 presenting NRR's needs in the licensing process. This  
2 is not necessarily NRC's needs in performing their  
3 duties.

4 Mr. Denton, when he reviewed the needs, which  
5 form something on the order of 80 to 85 percent of the  
6 research budget, has to try to direct their attention to  
7 his real needs and his real priorities, and that is why  
8 the words are in the letter that you see there. If this  
9 work has to be done, and it is very expensive, but it is  
10 directed to the successful conclusion of the hearing and  
11 address whatever is it, and not go off into longer and  
12 deeper studies of fuel damage, let's say, that aren't  
13 pertinent to the hearing.

14 MR. SIESS: I hate to think at the hearings  
15 are driving the research program.

16 MR. GILLESPIE: No, but it is one input.

17 MR. MARK: It is 80 to 85 percent of the  
18 research as we have just heard.

19 MR. GILLESPIE: No. NRR requests deal with 80  
20 to 85 percent of the research budget, but 80 to 85  
21 percent of the budget is not driven by those comments.

22 MR. MARK: I hope not.

23 MR. KERR: Let me add that I can find repeated  
24 instances in which we have encouraged the staff to  
25 define needs which exist because of licensing and

1 rulemaking considerations, and use those needs in  
2 planning their research. What we are saying is, the  
3 staff ought to do good research independently.

4 I want to put myself on the other side of the  
5 question. I think that one can do good research in  
6 response to these, if the needs are well defined.

7 MR. SIESS: Let's go back to where we were.

8 MR. GILLESPIE: Basically, we are saying that  
9 we are aiming the long range research plan this year at  
10 a particular audience, Office Directors and above.  
11 Below the Office Director level, the companion document  
12 will be the budget. It is not our intention to repeat  
13 all the same information twice.

14 MR. OKRENT: Whoever the audience is, are you  
15 going to in some way provide a meaningful evaluation of  
16 whether the research you are planning is really going to  
17 give the information that you needed?

18 MR. GILLESPIE: We are going to try this year  
19 to go from the top down, and go the other way to develop  
20 the list of needs, and then design what information is  
21 needed to do that, to fulfill those needs. Then we get  
22 to the question now, can we realistically expect to  
23 develop that information. If the answer is no in the  
24 prioritization of it, then that is kicked out. Or if it  
25 would be incredibly expensive to do it, it would be

1 kicked out.

2 MR. OKRENT: What is it you are throwing out?

3 MR. GILLESPIE: What we are trying to get from  
4 the plan and hopefully it will be clear as I go through,  
5 what the basically chapter outline would contain is a  
6 definite agreement of what are ther regulatory needs  
7 that need research to provide information to answer  
8 them.

9 What type of research results, what kind of  
10 information -- information from an integral test,  
11 information from INPILE experiements -- is needed to  
12 fulfill that need, we want to get agreement on that  
13 before we go designing a real detailed program.

14 If we state a need to support some particular  
15 rulemaking three years from now, and the Commission  
16 says, no, that is not a very important rulemaking, and  
17 NRR tells us, we don't think that is needed, or we don't  
18 need that to license plants, we don't need a revised  
19 code, then we want to know that before we get into the  
20 budget process.

21 MR. OKRENT: Let me follow up, if I can, but  
22 in 1700 there was a need to measure the speed of light  
23 from the physics point of view, but people didn't know  
24 how. So to identify the need, and then to put it in the  
25 1701 research plan would not have meant very much. They

1 could have gotten a lot of interesting information for a  
2 hundred years or even two hundred years, and have spent  
3 a substantial part of the national budget, as it were.

4 MR. SIESS: Let me put it this way. You agree  
5 that there is a need. You agree that there is certain  
6 information required. Now on some basis you decide that  
7 there is no way that you are going to get that  
8 information. Now what do you do? You tell the user  
9 office that, and say, figure out a way to get around  
10 it?

11 MR. GILLESPIE: We would work with them to try  
12 to figure out a way to get around it, yes. That is what  
13 we have to do.

14 MR. SIESS: Would that show up in the research  
15 plan, or would that kind of stuff be eliminated before,  
16 it ever gets to us?

17 MR. BERNERO: Let me try to use an example and  
18 modify it. The need could be stated, thermo-hydraulic  
19 uncertainty in response to certain class of plants. The  
20 long range plan, with the depth to which we see it  
21 going, can identify the need, can identify the timing,  
22 can identify a basic program and dollar values, \$25  
23 million over a period of three or four years to resolve  
24 that need.

25 There is still necessary a detailed discussion



1 and investigation of the Girda System, and that you  
2 can't do the job for \$25 million, but you can do a job  
3 for \$55 million. So you are left with the dilemma that  
4 it is either \$55 million, or a conservative bound as a  
5 fallback position, some regulatory resolution that moots  
6 the research. That is still necessary, and that will  
7 not necessarily show up in the long range plan.

8           That debate we have it in spades on the long  
9 range severe accident plant. There is much debate about  
10 what can you do in PBF, or what can you do with SCRR, or  
11 what can you do with many of the big ticket research  
12 programs, and there is still going to be a need related  
13 to the long range research plan for much more specific  
14 address of the actual viability of individual research  
15 programs and their effectiveness in getting information,  
16 their effectiveness in satisfying the stated need.

17           MR. OKRENT: If I can remake the point. If I  
18 were an Office Director, or a Commissioner, and so  
19 forth, it seems to me I would want to know not only what  
20 are the objectives of the research plan, and what are  
21 the information needs that arise from trying to deal  
22 with these objectives, but realistically can I get this  
23 information, and if not what should I do, and so forth.  
24 If that part is not given to the Office Director, it is  
25 a very incomplete picture.

1           MR. GILLESPIE: Part of what we intend to have  
2 in here is a schedule of when that information would be  
3 achieved, so that if it were measuring the speed of  
4 light in 1700 and you wrote a plan that said you are not  
5 going to achieve that until 1900-something, then someone  
6 can make the decision that it is not worth messing  
7 around with now. It is just not worth doing at this  
8 stage in history.

9           We intend to have -- We are looking for input  
10 in this, this thing is not cast in stone, we only have  
11 12 pages written so far. We intend to have a timeline  
12 or schedule under each major program which would show  
13 what information would be available to satisfy what need  
14 that was listed based on the judgment of the Research  
15 staff.

16           If there is a need which could never be  
17 achieved, then I would think that possibly that need is  
18 not going to show up in the plan. If it is a need that  
19 could be achieved with a very large expenditure of  
20 money, but still not unreasonable, that would show up in  
21 the plan to offer the Commission an alternative.

22           The next step you are asking for is an  
23 analysis of the alternative to those things that are  
24 prohibitively expensive, or unachievable. It wasn't our  
25 intent right now to include an analysis of alternatives

1 on those things identified as either prohibitively  
2 expensive to do or impossible to do, and how do you meet  
3 it halfway.

4           MR. KERR: I get the impression in reading  
5 some of the memoranda on the plan that in those cases in  
6 which it may be difficult to determine whether  
7 information can be gotten better by research, an  
8 approach which carries is to hire a contractor and ask  
9 him to find out whether an answer can be gotten by doing  
10 research.

11           I am not being critical, I am saying that that  
12 is what I see indeed in some cases, tell us if by doing  
13 research we can get information in this field. Is that  
14 an approach?

15           MR. BERNERO: That approach is used.  
16 Obviously, you would go to an experimentalist to say, in  
17 two years, for a reasonable amount of money, and you  
18 might give him some bounds, can you give me a good heat  
19 transfer coefficient for that kind of a situation. He  
20 will tell you what facility is available, the manpower,  
21 the people, the state-of-the-art, whether it is feasible  
22 or not, and that is a logical thing to do. I don't see  
23 why one would quarrel with that.

24           MR. KERR: It is a logical thing to do, but I  
25 am not sure that it is always a logical thing to do,

1 unless you make certain that the person who is answering  
2 you is not the person who is going to do the research.  
3 I don't mean that people are dishonest, I don't in  
4 general think that people are, but if you put a lot of  
5 pressure on somebody, if you live by research funding,  
6 and you go to him or her for this research, you may just  
7 not get an answer that is the proper one.

8 MR. SHEWMON: Another part of this thing, they  
9 can take this approach today, and on other days we have  
10 been known to say, go do us a study on systems  
11 interaction before we will grant you a license. If the  
12 operator says, we don't know how. We don't think it is  
13 productive. Then, we would say, try harder.

14 So I suspect that if we look real hard at the  
15 report to Congress and to the Commission, we might find  
16 a few examples where the committee has said to staff,  
17 "Gee, you may have looked at this before, but you really  
18 ought to try harder, because you say that you don't  
19 think that it is productive research that would be  
20 cost-effective. But we are sure that if you looked  
21 under enough rocks, you would find the right kind of  
22 something or other. So one can take either side.

23 MR. KERR: That is different.

24 MR. OKRENT: You are correct, and the  
25 committee has supported what I will call exploratory

1 research. There are times when you don't know in fact  
2 whether the research will be productive.

3           You have, let's say, either a concern that  
4 there is a problem, and you don't know how to deal with  
5 it; or that there is an area where there may be a  
6 problem, it is an area that has not been explored, and  
7 so forth. So that exploratory research, but not the  
8 grandiose, is one of the uses of safety research funds.

9           MR. SHEWMON: What you were talking about was  
10 not exploratory research.

11           MR. OKRENT: I think when you are getting into  
12 large programs, whether it be in loss of coolant  
13 accident, or in systems analysis, reliability analysis,  
14 or fuel behavior, and you are talking about large  
15 commitments of funds, one should devote a considerably  
16 greater effort to trying to ask himself what is the  
17 purpose of this program; what are the needs I have; what  
18 is the information that meets these needs; can I really  
19 get important information, or information from this  
20 program, not just useful information, because you are  
21 talking about substantial parts of the budget.

22           MR. SHEWMON: When we talked about seismic  
23 safety marginal probability and risk assessment, it is  
24 worth exploratory research to see if we can't cope with  
25 these things better.



1           MR. OKRENT: In some cases, you have to do  
2 scoping work. But on the seismic safety thing, for  
3 example, the committee has questioned whether the fairly  
4 extensive computational system that was developed was  
5 necessarily the best way to go in view of the  
6 anticipated large uncertainties that might arise at  
7 various steps.

8           That it might make sense to understand better  
9 what these uncertainties are, and where to put your  
10 emphasis. Not to try to go into the whole, let's say,  
11 super-calculation.

12           MR. SHEWMON: My main point is that there is  
13 always an element of luck and guess that is worth its  
14 salt as to whether you are going to be successful. So I  
15 think in a sense we are urging the Research people to  
16 exhibit judgment, but we can always second guess them  
17 on, "Gee Whizz, you should have known better," or "I  
18 disagree with that."

19           MR. OKRENT: I think you are correct that  
20 research, especially if it is into an area where you  
21 have far less than complete knowledge, is not frequently  
22 subject to a guarantee of results. However, there are  
23 many research programs which you can look at, at their  
24 initial stage, and even if you do a very good job, the  
25 information is not going to have a big impact on an

1 important issue. If you can do that, I would say, you  
2 will have to ask yourselves, is it worth substantial  
3 effort, even if it is good research.

4 MR. KERR: Mr. Chairman.

5 MR. SIESS: Dr. Kerr.

6 MR. KERR: Bob, I don't know how to put this  
7 question, and I know even less how to put the answer,  
8 but I would be interested in some sort of candid  
9 comments on how useful ACRS comments are to research.  
10 Not in terms of an absolute standard, but is there some  
11 way that our advice could be more useful or the process  
12 could be more useful.

13 I am groping for a way to put the question  
14 because I am trying to put myself in your position  
15 occasionally, and I don't know how you decide which of  
16 the advice you get from us to listen to. It is clear  
17 that you get a lot of different directions.

18 I guess I will ask my colleagues later on, but  
19 I am curious as to what fraction of our advice we can  
20 expect to be followed. I would be concerned if I  
21 thought you listened to everything we say, and I mean  
22 listening in the sense that you went ahead and did it.  
23 But I don't think you should address that question.

24 MR. BERNERO: I will not address the question  
25 then, other than to give you assurance that we won't

1 listen to everything that you say.

2           The type of advice that the ACRS can give is,  
3 I think, best viewed by comparing to the other advice we  
4 get. The Research staff is trying to see in its own  
5 mind what are the real needs of the agency; what are the  
6 regulatory needs; what information is needed to either  
7 affirm or change the current safety review process; the  
8 current standards for safety.

9           When we deal with the user offices, and I  
10 speak from experience, as many of you know, I spent a  
11 good part of my time in this agency as a licensor in  
12 both NRR and NMSS. When we deal with the user offices,  
13 we can always see their sense of urgency, that is driven  
14 by being in the trenches, confronted with hearings,  
15 confronted with licensing decisions. They find it hard  
16 to take a long view.

17           The ACRS, on the other hand, though it follows  
18 licensing casework as it has for many, many years, has  
19 the benefit of distinct steps of detachment from that,  
20 and the ability to see a long view, to raise and resolve  
21 issues, while we are continuing to license plants  
22 without consideration of that safety question or that  
23 one. You can look at the research program in that same  
24 way by seeing a broader view.

25           Now when one has that benefit, a knowledgeable

1 body, diverse experience, diverse backgrounds, and in  
2 particular a fair body of credentials in research  
3 itself, that can be the most valuable comment. A  
4 detached long range view from a mixture of expertise in  
5 the field at issue here, safety research. I think that  
6 is the heart of the value of the ACRS comments on the  
7 research process.

8           Obviously, you won't always be listened to,  
9 because we do have to satisfy those people in the  
10 trenches. They do have needs, and they are real needs,  
11 and they may end up making regulatory decisions with  
12 imperfect knowledge, putting bounds on things, or just  
13 making judgments. The research process, on the other  
14 hand, has to keep trying to give them better  
15 information.

16           I think if the ACRS focuses on the unique  
17 position it has of being separated by that substantial  
18 step from the immediate regulatory decisions of the  
19 agency, and able to take a longer view, and uses the  
20 expertise that is deliberately selected into this body,  
21 then you can give us the best advice.

22           Now, we have to give you some planning. We  
23 have to give you some lucid statement of what we are  
24 trying to do, what are these directions we are trying to  
25 follow, and that we haven't done.

1           MR. KERR: One additional question. Do you  
2 feel, from our sometimes cryptic comments, that you  
3 understand in most cases what we have in mind?

4           I ask this because as I read the responses,  
5 for example, to this year's most recent comments, it is  
6 clear that the commentor either didn't understand what  
7 we had in mind in some cases, or chose to ignore it. I  
8 don't know which, it could be either.

9           But is there enough interaction that maybe in  
10 spite of what we write, Research has a fairly good idea,  
11 in your view, of what we are have in mind?

12          MR. BERNERO: I think so, to me. To practical  
13 about it, when you write us a comment on our budget that  
14 we don't intend to follow fully, there will frequently  
15 be an attempt to gracefully give you the stiff arm and  
16 to say, that was a very nice idea, but forget it. Many  
17 times, you will see what appears to be a dissembling  
18 response, we agree with you, but -- Perhaps that is not  
19 a well-written, graceful attempt.

20          You certainly know and have criticized where  
21 we are obviously not taking your advice. In the areas  
22 where we have had argument or debate with the ACRS, we  
23 have had enough communication that I know what you  
24 mean.

25          MR. KERR: I was not getting at the other



1 question, only this. Is it your feeling, at least from  
2 the interaction and the written material, that you have  
3 a fairly good idea of what we have in mind?

4 MR. BERNERO: Yes.

5 What I wish that we had had in the past, and  
6 would have before us now, is a much more logical  
7 presentation of what we are doing and where we are  
8 going, to facilitate that exchange of information. I  
9 think we suffer from that lack. But once in the  
10 dialogue, whether it is at the subcommittee level or the  
11 full committee level, I think there is no doubt.

12 When I go to Dave's subcommittee, and I argue  
13 about flood research, there is no doubt what our  
14 differences are, at least in my mind, and what the  
15 agreements are.

16 MR. WARD: It strikes me as though this whole  
17 process suffers because the emphasis on long-range  
18 planning within the Commission seems to be exclusively  
19 on what we call research. I have trouble in using that  
20 term research.

21 There isn't a corporation plan and if you look  
22 at the business enterprise model, the business  
23 enterprise has some R&D activities, and a certain  
24 fraction of the R&D activities are driven by what the  
25 researchers perceive as interesting to pursue, because

1 some good things come out of that, it keeps the creative  
2 juices, and so forth.

3 But also the R&D plan has to conform itself to  
4 some sort of corporation plan -- where is the  
5 corporation going in 1989. It doesn't make much sense  
6 to talk about what research is needed, if you don't know  
7 where the corporation wants to go in 1989.

8 So it seems to me that all this carrying on of  
9 activity might be better spent by having NRR, and I  
10 guess NMSS, come up with long range plans for  
11 regulations, which is the business of the NRC, and  
12 whether or not there would need to be long range plan  
13 for research or not maybe is questionable.

14 I think that the emphasis is in the wrong  
15 place. Researchers are going to tend to do the things  
16 they know how to do, or are scientifically interesting,  
17 and certain good comes out of that, but that isn't any  
18 sort of comprehensive plan for where the agency is  
19 going.

20 I think if some fraction of this effort were  
21 spent on an agency plan, a lower level of effort, fewer  
22 than a 370-page research plan might kind easily fall out  
23 of that.

24 MR. GILLESPIE: I think you will find -- We  
25 have not gone past my first page, but let me answer

1 Dave's question, which I haven't answered yet, that he  
2 asked a while ago. The feasibility of accomplishing  
3 something with research, this is something that we will  
4 definitely have to address in prioritizing what will be  
5 in the plan, a justification of why we want to do it.

6 I am saying, I agree with what you have said,  
7 and that does have to be addressed if we expect to be  
8 successful in doing it, or what we expect to be the  
9 chance of success in accomplishing something that we are  
10 going to spend \$50 million on. The answer to that is,  
11 yes, we will have that.

12 If there was an agency plan which listed the  
13 various needs of the agency to fulfill its mission, as  
14 the mission stays the same until 1989, you are right, we  
15 would not have to, as part of the research plan, detail  
16 what needs we are trying to fulfill because the needs  
17 would be there. But given that we are the office that  
18 is writing the five-year plan, and the research is  
19 supporting the direction of the Commission, we are  
20 proposing to write down as best we can, and coordinate  
21 with the other offices what that direction is.

22 What we are trying to get on the line range  
23 plan is direct agreement on direction, and then with the  
24 budget. Then when we have agreement on the direction  
25 and the priority of what is needed to achieve that

1 direction, then with the budget detail down to the  
2 individual lines, down to the million dollar or less,  
3 how we are going to achieve that objective.

4           So we are definitely separating it. You might  
5 say that we are attempting to do, as best we can, what  
6 the agency could in fact do as a whole.

7           MR. PLESSET: Has research look into a point  
8 of some interest, which is, is the money reasonably  
9 spent. For example, there are people in NRC who very  
10 zealously trying to keep on going, and the minimum they  
11 got to now, if they get a lot of help from abroad, they  
12 go out for six or seven years with big money. As  
13 Research looked at this and said, this is great, or this  
14 is terrible, because that is the biggest thing you have  
15 in your budget, I think.

16           MR. GILLESPIE: FBF is pretty close to being  
17 even.

18           MR. PLESSET: I think the ACRS has indicated  
19 that they don't think it is worthwhile, that is the  
20 starting point. Has Research looked at that? Did they  
21 have ideas about it or not?

22           It seems to me that it is terribly important  
23 when we are talking about a long range plan. What are  
24 some of the big ticket items that are in there, and can  
25 they be redirected to be more useful.

1           MR. GILLESPIE: That is part of what Bob and I  
2 talked about last night, do we want to maintain a  
3 facility, a center of expertise. Is there justification  
4 for keeping something going at such a price.

5           MR. PLESSET: That is a big ticket.

6           MR. GILLESPIE: It has never been accepted in  
7 the past as a justification for keeping something.

8           MR. PLESSET: But does Research really look at  
9 this, or leave it at "we don't give a damn!".

10          MR. BERNERO: Research has. I have  
11 participated in one group a year ago last winter, the  
12 LOFT Special Review Group, that was drawn from other  
13 people as well as Research, and we looked at LOFT and  
14 what was worth doing. We concluded that the sensible  
15 thing to do was wind it down.

16          We came up with a test matrix that was sort of  
17 a compromise, and Research looked at it and said, even  
18 that is more than is justified, and came up with an even  
19 shortened test matrix. It expressed the intent, and it  
20 established a program to phase out LOFT. Other factors  
21 force us to do other things, congressional directives  
22 and stuff like that.

23          MR. BENDER: I want to go back to Dave Ward's  
24 point.

25          I hate to use this analogy, but when the



1 Commission decided to deal with the safety goal  
2 business, to develop the safety goal policy, and then it  
3 developed an implementation plan to go with it. It  
4 seems to me that the staff ought to try to get a similar  
5 kind of a document developed, something which provides  
6 policy, which the Commissioners can agree upon, and that  
7 can form the basis for the plan. I think that would  
8 satisfy the kind of thought that Dave has.

9 I am not a believer in the offices themselves  
10 being able to look ahead and decide what the  
11 Commissioners want to do, but I think you put something  
12 in front of the Commission separately and say, "Here is  
13 the policy we want you to give to us," and let them  
14 react to it.

15 MR. GILLESPIE: If I can get to that slide, we  
16 intend to try to do that.

17 MR. SIESS: Let me go back to your first  
18 slide. You said the LRRP purposes, and you have listed  
19 four purposes. Since we have said, and there has been  
20 some agreement that there really isn't a long range  
21 plan, but simply a projection into current programs,  
22 would not all these purposes be achieved equally well if  
23 it were a two-year plan rather than a five-year plan?

24 MR. GILLESPIE: They could be.

25 MR. BERNERO: I would question the adverb.

1 They could be achieved, but equally well, I am not  
2 sure. I think you would need a longer horizon.

3 MR. SIESS: To state the goals and needs, and  
4 the priorities and the information needed to satisfy the  
5 needs, to stimulate technical advice, I don't see how  
6 you need to look any farther ahead than two years. In  
7 fact, you ought to be able to do everyone of those  
8 things for one year ahead. It has been one of the  
9 problems that it has not been meant for one year.

10 MR. BERNERO: Which two years are you talking  
11 about?

12 Remember that the long range plan is  
13 associated with two budget years. If you are talking  
14 about those two budget years, I will agree with you.

15 MR. SIESS: I am saying, if you want to agree  
16 on goals, priorities, and so forth, you need that kind  
17 of an agreement on the FY-83 year, and certainly on the  
18 '84 and '85, which is the budget coming up now. You are  
19 talking on a plan for '85 through '89, which is the one  
20 you are starting on, and one of our hang-ups, a minor  
21 one, is when it gets to looking at five years which will  
22 be two years from now.

23 It seems to me that all of these purposes  
24 relate to a research program, and not necessarily to the  
25 long range aspects of it. They relate to the very

1 immediate aspects of it.

2 MR. GILLESPIE: That is true.

3 MR. SIESS: You don't need the five-year plan  
4 to meet these purposes. This information is needed for  
5 the current program.

6 MR. GILLESPIE: What we are looking for is, do  
7 we have general agreement that four years from now or  
8 five years from now, that this is possibly a need,  
9 unrestricted to this year's PPG.

10 MR. SIESS: I don't think that that is what  
11 you are doing. You get an agreement now, or a prior  
12 agreement, because you are looking at a year or two  
13 ahead, and I don't see that it is very important to have  
14 an agreement that it is going to take five years to get  
15 the answers.

16 MR. GILLESPIE: You change your mind each  
17 year, so it ends up being start.

18 MR. SIESS: None of this, or practically  
19 nothing in the long range plan deals with something that  
20 is starting four or five years from now.

21 MR. GILLESPIE: It has not in the past.

22 MR. SIESS: You have very few items in there  
23 that don't come up until 1988 or 1989.

24 As I said, it is a minor point, but I think  
25 that five-year continues to be a hang up in some of our

1 thinking. I can't buy that decreasing budget and a  
2 realistic plan. It is not a long range plan.

3 MR. BERNERO: My argument has been for  
4 sometime that the two years before us, now in the fall  
5 of 1982 and we are talking about fiscal '83 and fiscal  
6 '84 which is right behind it. Those two years are of  
7 necessity part of your agreement or revised agreement on  
8 goals, needs, and priorities, because you are going to  
9 reprogram. All you need for a plan is two budget years,  
10 which you are forced to by the OMB procedures, and throw  
11 in that extra year.

12 MR. SIESS: We don't have the document that  
13 states those agreements.

14 MR. BERNERO: And you need it.

15 MR. SIESS: We need it for now.

16 MR. GILLESPIE: I understand that you need it  
17 for now, but we are still groping with how you do it for  
18 the out years for programs that do not in and of  
19 themselves continue out that far.

20 MR. SIESS: I have a feeling that the out  
21 years don't concern most of us very much. We are much  
22 more concerned with what is going to be done in 1984 and  
23 1985.

24 MR. GILLESPIE: Getting back to Dave's comment  
25 of a little while ago --

1           MR. SIESS: It is a little difficult to worry  
2 about '86, '87, '88, and '89.

3           MR. GILLESPIE: On the corporate goals of  
4 Commission, I stated them generally, they are dealing  
5 with the licensing and regulation of the current  
6 generation of reactors. Then you are going to answer  
7 certain big questions, you are not going to need large  
8 facilities. Most of our decision units had increased  
9 budgets overall, but it went down because we were  
10 decreasing on the singularly large facility.

11           As you answer the question, the Commission is  
12 not like a company which is in the business of doing  
13 future research to make more money on a new and better  
14 product. We have a fixed thing, and that is regulation  
15 of the current generation of reactors, and that is how  
16 last year's plan was written.

17           MR. SIESS: If you recall, we had a comment  
18 frequently about LMFBR or advanced reactors, where the  
19 Commission says, we are not going to do anything,  
20 whereas another arm of the Government is spending  
21 hundreds of millions of dollars to develop those.

22           Maybe the NRC is not the company in the  
23 Government that is looking to the future, but somebody  
24 in the Government is looking to the future, and if we  
25 are going to have to regulate them, and if it is our job



1 to see that they are safe, then it seems to me that we  
2 would be looking into the future, and the five year  
3 research plan would have something in there about the  
4 contingency items.

5 MR. GILLESPIE: It will be in this next one.

6 MR. SIESS: That is what we have been hearing  
7 for the last two years.

8 MR. GILLESPIE: The plan has generally been  
9 driven by the current year PPG. This intent this year  
10 is to have the part of it done needed to give to the  
11 Commission before they write the PPG, so they can give  
12 us direction based on taking choices and alternatives.

13 MR. SIESS: So far the arguments are in favor  
14 of a shorter term plan, at least your responses have  
15 been.

16 MR. BEACH: I guess I wind up being the memory  
17 of RES, since we have been around for a long time. The  
18 original reason that we made it a five-year plan, and  
19 that reason may have gone away now, was that the  
20 Congress kept asking us in their budget deliberations  
21 what sort of a mortgage are we buying into with XYZ  
22 research program -- if we authorize you to go ahead with  
23 this, how long is it going to take for you to finish it,  
24 and what is it going to cost us in the long run. Maybe  
25 we should not try to do that.

1           Most of our programs, as you very well pointed  
2 out, are short programs, and we really only need to look  
3 at two years -- is this the place, or should we go to  
4 some other place -- to outline those very few programs  
5 which will result in a mortgage of some kind. I don't  
6 know.

7           MR. SIESS: I think the plan that indicated  
8 something about the duration of a project, without  
9 necessarily being complete for all of those out years,  
10 that was not the major point. But we do get hung up on  
11 that five-years every once in a while.

12           Do you want to go to the next slide?

13           MR. GILLESPIE: Yes.

14           I am going to go to the chapter outlines.

15           MR. SIESS: Let's go to the schedule because  
16 that brings us back to the question of the ACRS role.

17           MR. GILLESPIE: For one thing, the plan is  
18 intended to fill a different purpose this year than it  
19 did in the past. We are going to try to focus on one  
20 level.

21           What we have gotten so far from everything but  
22 one division, is statement of purpose, which is another  
23 slide that is out of order, to define the areas or  
24 chapters of the plan for this year. It is not intended  
25 that the plan will follow either the organizational

1 structure or the decision unit. It will follow  
2 programmatic areas.

3           The way the schedule is set up, I would expect  
4 to meet now with George Knight at NRR next week, having  
5 gotten from our Division a definition of the various  
6 areas that we picked, and the areas were picked based on  
7 things like Commission interests, Commission cross-cuts  
8 that were asked for. The selection of the chapters was  
9 in and of itself a cross-cut.

10           We have those under each of those program  
11 elements, program areas. Various elements have been  
12 identified. I am going to meet with George, hopefully  
13 next week. NRR has a prioritized list, in their view,  
14 of what their requests of us are. I want to take that  
15 list and see how it matches up with our area.

16           Then we are going to go back out to the  
17 Division Directors and ask them, under each of the  
18 elements they have identified, given that we have NRR's  
19 input, to identify the particular needs under that area  
20 they are going to look at.

21           One example would be, one of the programmatic  
22 areas that we have selected was aging, and aging is  
23 steam generator research. Under steam generator  
24 research, we would expect to see multiple regulatory  
25 goals that are to be achieved, a new MDE criteria, new

1 criteria possibly on chemistry. These things are  
2 entered and are contributors to the standard review  
3 plan. They are intended to contribute to rule  
4 development, and eventually end up in a new rule, and  
5 change to a rule.

6           Then we are going to go back again to NMSS and  
7 to NRR, which should be at the beginning of June. At  
8 that point, we have a statement of the broad areas --

9           MR. SIESS: You lost me, was that June?

10           MR. GILLESPIE: We are down to September 3rd,  
11 a statement of what the elements are, what needs are  
12 going to be fulfilled under that are. Then we are going  
13 to back to NRR and back to NMSS. We are going to make  
14 it so that we can get a copy -- not have a meeting, but  
15 get the material here, when the committee meets in  
16 September, so that they can have it if they want to  
17 comment on it.

18           At that point, we have the option, whether we  
19 take it or not, we are not sure yet, to go to the  
20 Commission and say, "Now we feel that we have defined  
21 the programmatic areas. We feel we have defined the  
22 elements in those areas, and the needs we want to  
23 fulfill."

24           MR. SIESS: Where are you on this schedule?

25           MR. GILLESPIE: I am still on September 6. We

1 are going to take this document, and definitely request  
2 comments from NRR, NMSS, and ACRS.

3 MR. SIESS: Let's stop right there and refer  
4 to the ACRS' role again. These are comments from the  
5 ACRS to the staff.

6 MR. GILLESPIE: Yes.

7 MR. SIESS: Whether or not we do this, we  
8 still have that question hanging of when, how and  
9 whether we make comments to the Commission.

10 MR. GILLESPIE: Yes.

11 MR. SIESS: That is different from the staff,  
12 and I want to go over that with the committee because  
13 the Commission has given us all sort of advice about how  
14 to use these things. Our last letter said that we  
15 didn't want to review it formally.

16 What do you expect to get from the ACRS on  
17 September 6? The ACRS is a collegial body. Do you  
18 expect a letter from the ACRS to the EDO, which is our  
19 means of communication?

20 What kind of a document will you have, is it  
21 something that can be reviewed?

22 MR. GILLESPIE: Let me tell you what we are  
23 expecting to send you because that may be greatly form  
24 what you would send us. What we are sending you is a  
25 fairly brief, we are hoping something of 50 pages or



1 less, a statement of what the goals we intend to  
2 achieve, and what the program areas are.

3           What we would like to get back through  
4 whatever vehicle, from individual members, from  
5 subcommittees, or from the full committee, is opinions  
6 or suggestions on -- Are these goals needed? Are they  
7 realistic? Do we need a rule, or research to support a  
8 rule on package integrity for high level waste? We  
9 would try to have maybe a date in there.

10           MR. SIESS: We have been through this. First  
11 of all, you don't get comments from individual members,  
12 except orally.

13           MR. GILLESPIE: What I am saying is that oral  
14 comments are fine.

15           MR. SIESS: You don't get comments from  
16 subcommittees as such. Very often, anything you get  
17 from the ACRS, other than meeting with them for two  
18 hours, would be a formal letter, and you have worked for  
19 that.

20           Do you think the comments you could get  
21 sitting around with this group around the table, which  
22 is not the entire ACRS but is a big chunk of it, or do  
23 you think this is something that the individual subcommittees  
24 ought to meet, and meet with the appropriate people from  
25 Research and user offices?

1 MR. GILLESPIE: User offices are very  
2 important things.

3 MR. SIESS: If it is a letter where you can  
4 get well-informed comments, it certainly won't be a  
5 consensus within the subcommittee.

6 You are talking about waste management, and  
7 Dade can convene his subcommittee, with its consultants,  
8 and I am sure you will get a lot of advice. I don't  
9 know how consistent it will be, but he has some good  
10 people there. But that takes time.

11 MR. BENDER: Chet, the thrust of what you are  
12 saying really is directed at how much advice we can  
13 provide to NRR, how much do they want, and then how much  
14 can they reasonably expect to get from us.

15 MR. BERNERO: Let me try a chop at it.

16 The content of what would be before you at  
17 this time is something that you will formally comment on  
18 later.

19 MR. SIESS: No, not if we have our way.

20 MR. BERNERO: In order to comment on the  
21 budget.

22 MR. SIESS: That is a year apart. You see, we  
23 told the Commission in the June 7 letter, that we  
24 discontinue our review of the program plan, but we still  
25 expect to receive the program plan, in draft and in

1 final form, and we expect to utilize it in our review  
2 and report on the NRC Safety Research Program budget for  
3 the Commission and the Congress.

4           The LRRP is a very important document for us  
5 to have because it does put all of this in one place,  
6 and it puts it in perspective. It is something that we  
7 have never had. We have never had a decent overview of  
8 the program, except if somebody wants to read through  
9 all the budget items, which you have already pointed out  
10 isn't the best thing. So I would expect to use the  
11 document.

12           However, the document that we are going to be  
13 seeing in September is FY-85 through FY-89.

14           MR. BERNERO: Not if I have my way. It is  
15 going to be FY-83 through FY-87. It will speak to the  
16 same budget you are speaking to. It will be directed  
17 toward the same ends, objectives, and regulatory needs.  
18 Then when you comment on the budget to the Commission  
19 formally, you are commenting in the framework of stated  
20 needs and stated objectives that you agree with or you  
21 don't.

22           MR. SIESS: That might work. The thing is  
23 that we don't comment to the Commission until July. The  
24 Commission indicated in one of our exchanges of  
25 correspondence that when they got the thing in December,

1 that is the final one they are talking about, "A  
2 thorough review by ACRS at this stage should provide all  
3 of the background material needed to allow fulfillment  
4 of your obligations to the Congress -- that would be  
5 true if it covered the same budget years, -- and it  
6 would be sufficient to provide my fellow Commissioners  
7 and me with the benefit of your advice for our review."

8 I am not sure that our congressional comments  
9 would reference specifically the research plan. I would  
10 think of it as a resource to us, and not something that  
11 gets specifically commented on.

12 MR. MARK: If I understood what Frank said,  
13 and I am not disagreeing with what you are saying, we  
14 are going to be looking at what he hopes will be a  
15 completely new layout document. It will not be suitable  
16 even for some subcommittee breakdown. It certainly will  
17 not be suitable for budget item discussion.

18 MR. GILLESPIE: That is right.

19 MR. MARK: What he is hoping is that on  
20 September the 6th, we will be so delighted and wildly  
21 extatic that we will write a spontaneous letter to the  
22 Commission saying, that is the way to go.

23 MR. SIESS: I see your point. It would be  
24 possible to have a meeting of this committee in  
25 September sometime, and get our comments both on the

1 content, the format, and the approach, and whatever.  
2 That would be useful.

3 MR. GILLESPIE: Let me suggest that we will  
4 have it to you in September, but the meeting would be  
5 more like at the beginning of October. That allows a  
6 month.

7 MR. MARK: But it would not necessarily word  
8 by word be the basis for the kind of discussions we are  
9 used to.

10 MR. BERNERO: That is right.

11 MR. GILLESPIE: The content is going to be  
12 drastically different. At that point, you will be  
13 seeing about 30 percent of it.

14 MR. BERNERO: I think you ought to be very  
15 careful throwing it to the subcommittees, because this  
16 won't track the subcommittee.

17 MR. SIESS: When we review the budget for the  
18 Congress, our intent now is to make the report to the  
19 Congress a comprehensive report which will include a lot  
20 of advice to the staff along part 2. It will be based  
21 on subcommittee reviews.

22 Our report to the Committee in July, we are  
23 going to continue to keep short and budget oriented.  
24 The Congress one is budget that we put down in Part I.  
25 Part II is more detailed.



1 I would expect that the subcommittees, when  
2 they start meeting in October, November, and December,  
3 to prepare a detailed report to the Congress, to be  
4 looking at the long range plan, to look at the program  
5 in that area, using the long range plan as background as  
6 they review the budgetary proposals in that particular  
7 project. That is the way I would expect to see us use  
8 it.

9 MR. BERNERO: If need be, at that stage, a  
10 report challenging the budget on the basis of its stated  
11 flaws, if our directions are wrong, or our directions  
12 are inadequate.

13 MR. SIESS: I deal with structures, I look at  
14 projects right now, I can do that, it is a small area.  
15 But the long range plan could be focused together with  
16 dollar amounts, and so forth, and that is the way I  
17 would like to see it. It will not be subcommittee  
18 oriented, I guess your point.

19 MR. WARD: Let me ask you. Do you plan to  
20 review this long range plan every year?

21 MR. BERNERO: Yes.

22 MR. WARD: Why?

23 MR. SIESS: Updated is the word.

24 MR. GILLESPIE: We start with a basic list of  
25 what we are trying to achieve. Hopefully, we can cross

1 some things off the list each year and say that we have  
2 achieved that, and add some new ones.

3 MR. BERNERO: Just like we do with our budget  
4 activities, we plan and we program, but when you get to  
5 that fiscal year when you are actually going to spend  
6 the money, it frequently is quite different from what  
7 you budgeted.

8 MR. WARD: But you have the budget planning  
9 for two years to take care of that type of thing. It  
10 seems to me that it is a different way of looking at the  
11 long range plan. If you consider whether it is  
12 necessary to update it every year, if it is, then I  
13 guess you begin to wonder about whether it is really a  
14 long range plan.

15 MR. BERNERO: Once properly done, it ought to  
16 look very much the same from year to year, reflecting  
17 subtle changes, not dramatic changes. Otherwise, you  
18 are right, it would just be the long range plan du  
19 jour.

20 MR. GILLESPIE: It is reviewed with the policy  
21 guidance received.

22 MR. SIESS: You are going to update it with  
23 the supplement.

24 MR. WARD: Getting to that, with the high  
25 priced effort that goes into developing it every year,

1 maybe every other year there ought to be an agency plan  
2 developed.

3 MR. BERNERO: It won't be that much effort  
4 once you have it done right in the first place. Once  
5 you have it done right the first time, it will be a  
6 relatively rapid turnaround for us, and it will be a far  
7 easier job for others to review it, because you will be  
8 able to see the differences, they are going to be  
9 flagged.

10 MR. GILLESPIE: One of the questions that  
11 becomes very dependent on it, our intention was to keep  
12 the plan brief, that the entire thing would be more like  
13 150 pages long. It would deal with broad questions that  
14 the Office Directors want to read. That amount of  
15 detail can be contracted or expanded, depending on how  
16 much detail you want.

17 When we take the plan to the Office Director  
18 and above, we are deliberately deleting a lot of detail  
19 that is currently there for the moment, because they  
20 don't want that detail for the most part. Their staffs  
21 do, and the budget would have that kind of detail in  
22 it. We are going to have to greatly expand our budget  
23 write up, which is short term and does change from year  
24 to year.

25 You always take a chance, when you start from

1 ground zero on anything, of reformatting. The policy  
2 guidance of the Commission is pretty consistent from  
3 year to year, and we pick the regulatory needs fairly  
4 closely. So there should not be drastic changes, other  
5 than crossing off things -- we finished this, this, and  
6 this -- and adding new things in.

7 MR. SIESS: I expect that the ACRS, and that  
8 means the subcommittees, consultants as well as members,  
9 will have views varying from that of the Office  
10 Directors, down to any level that you want to go to.

11 MR. GILLESPIE: Yes.

12 MR. SIESS: But the long range research plan  
13 is sort of part of that, and the budget review that we  
14 would do in the fall would serve the other part.

15 MR. GILLESPIE: Yes. But the plan, then,  
16 should not change significantly from year to year.  
17 Indeed, it may make sense, if it comes across with the  
18 success that we are anticipating, for it to come on a  
19 two-year cycle. It would be something that corresponds  
20 to a two-year budget cycle.

21 MR. SIESS: What would be more valuable would  
22 be an annual update, as a separate document, so somebody  
23 could tell where the changes were without having 150  
24 pages.

25 MR. GILLESPIE: Why don't we go on.

1           MR. WARD: Before we go on, I would like to  
2 restate my view as I see it. You perceive that the the  
3 Research Office has been charged with developing an  
4 agency plan on the oblique, in essence, by drawing out  
5 of the user offices its long term needs by informal and  
6 interative methods, I guess.

7           The user offices never really write down their  
8 long term needs, which in fact should be in their long  
9 term plan. As a result, you draw these out and you  
10 build a research plan, and buried in there, implied in  
11 their research plan, is a long range agency plan.

12           I would just like to register the comment that  
13 I don't think that is a good way for the agency to do  
14 its long range plan.

15           MR. BERNERO: It is not nearly so oblique as  
16 it seems because, among other things, the agency did  
17 recognize that regulatory requirements, the long range  
18 consideration of them is not fundamentally and solely in  
19 the licensing process itself.

20           When they combined research and standards in a  
21 single office, I think that was one of the reasons that  
22 drove that. This office might be called the Office of  
23 Regulatory Requirements, or something like that, but I  
24 think it is a convenient vehicle to do just what it can  
25 do.



1           MR. SIESS: I think we are due for a break,  
2 then we will get back on whatever schedule we were on.  
3 Let's return in about ten minutes.

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1 MR. SIESS: The meeting will reconvene.

2 We will go on with the presentation, Frank,  
3 from where we think you were when we interrupted you.

4 I think you were down to September 6.

5 MR. GILLISPIE: Yes. From September 6 on it  
6 is an assembly project.

7 MR. SIESS: When do you expect it to be out?

8 MR. GILLISPIE: We are shooting for the last  
9 work day in October, October 29.

10 MR. SIESS: When is NUREG-0784 going to be  
11 out?

12 MR. GILLISPIE: We may beat it. We may beat  
13 it with this year's.

14 One thing you will notice on the schedule, we  
15 agreed in a letter to the Commission pretty much with  
16 your letter which said that the formalization of your  
17 comments on the long range plan could be handled with  
18 the letters to the EDO, the recommendations, what is it,  
19 the points of interest recommendations kind of letter,  
20 that that would be a fully -- we do want to get your  
21 comments, that that would be an acceptable way, that it  
22 doesn't need the formality of going to the Commission  
23 with it, that we are the people that need the  
24 information.

25 Consistent with that is that we would not

1 intend -- hopefully we will hear from them -- we would  
2 not intend to hold up publication of it for comments.

3 MR. SIESS: I think what the Commission needs  
4 to realize is that even if we went to a formal review  
5 process on the long range plan, we would indicate areas  
6 of agreement and disagreement, etc., but I don't think  
7 we would ever write a letter saying we endorse it  
8 completely and therefore now you have our endorsement  
9 along with the user offices.

10 By the time you send it to the Commission, we  
11 are supposed to have everything resolved with the user  
12 offices, but there is nothing that says we have to have  
13 everything resolved with the ACRS.

14 MR. GILLISPIE: Yes, and realizing that, we  
15 would, if the Commission will answer your letter and our  
16 letter, our intention then would be to go ahead and  
17 publish it because the comments we get are comments that  
18 will then be used on the budget, so that they will  
19 flavor, then, the budget input.

20 Getting back to the timeline, I am going to go  
21 back to the general comment of each of the program areas  
22 that we selected and where we stand so far in the  
23 schedule.

24 We feel we have defined the program areas, but  
25 we are more than happy to accept suggestions, and

1 indeed, we've already changed the thicker packets, which  
2 is not with the slides. What is not in here but would  
3 be in here is either a separate chapter or as an  
4 appendix, and right now we have it listed as potential  
5 areas for research where we could write up an LMFBR  
6 program supporting fuel cycle program. If the decision  
7 was made to go with it, here is the beginning of what  
8 would have to be done to support generic research on  
9 LMFBR work or on fuel cycle work in support of that. It  
10 is kind of an add-on way to get the future in there.

11 We are really open to suggestions on how  
12 better to integrate it in.

13 MR. SIESS: Appendix A on USIs, would that  
14 cross-list those back to the other items somewhere?

15 MR. GILLISPIE: Yes.

16 What we are intending to do --

17 MR. SIESS: They are included in that 1  
18 through 15?

19 MR. GILLISPIE: Appendix A is a  
20 semi-crosscut. 1 through 15 ends up coming up to about  
21 45 percent of our budget, and then there are other  
22 things we do which do not fit into the context of one of  
23 these flashier names, current day terms.

24 For USI we continue to ask questions on them.  
25 We would intend to have anywhere from a half to one-page

1 write-up on each USI that we are supporting, that we are  
2 doing research in support of the research program in  
3 USI, in NRB. We list the research sources, when we will  
4 complete it, and how it will contribute to the  
5 resolution of it.

6 For those already included under pressurized  
7 thermal shock, for example, we would just reference the  
8 pressurized thermal shock write-up and not repeat the  
9 words. So that appendix is more for completeness than  
10 anything else, and for easy identification of the USIs  
11 and how much resource is going into each one of them and  
12 how they fit into the rest of the program.

13 So it is really a USI crosscut and catch-all.

14 MR. SIESS: I don't see an item that says  
15 siting.

16 MR. GILLISPIE: You're right.

17 MR. SIESS: That would be under severe  
18 accident, external events?

19 MR. GILLISPIE: Right now we have got -- I'm  
20 trying to think where we stuck that.

21 MR. PODOLAK: I think it's under external  
22 events. I'd have to turn back.

23 MR. GILLISPIE: We just finished this last  
24 night.

25 What we have to do now is go through the major



1 program areas and the elements they put under it for  
2 completeness. That is the step for it right now. We  
3 have gotten the first input. We are going to meet with  
4 NRR and see what their priorities are and check and make  
5 sure that we have everything in here, that we have  
6 covered everything. We may not agree with them on where  
7 it should be or how high a priority, but that we have  
8 covered the subject matter they want, and make sure we  
9 have a complete package.

10 We will do that before we go into writing any  
11 more.

12 MR. PODOLAK: It is scattered around. It is  
13 under external events, a little bit under radiation  
14 protection, and a little under risk analysis.

15 MR. GILLISPIE. One of the suggestions we are  
16 still open for, and one of the reasons we are going to  
17 meet with NRR, should citing be in and of it self a  
18 separate area? And should things like floods, external  
19 events, include those things which support siting or the  
20 siting rulemaking?

21 MR. SIESS: You can make your crosscut so many  
22 different ways.

23 MR. GILLISPIE: The crosscut we -- the index  
24 we provided here is one crosscut. The index itself is a  
25 crosscut.

1           The other thing in this whole thing was that  
2 when we state we are going to do work in human factors,  
3 and we state the elements and the needs, we fully expect  
4 to give a projection when we are going to fulfill the  
5 need, that when we put something down, that it has to be  
6 done and that we are going to start working on it, that  
7 we also put down when we expect to finish working on it  
8 in an attempt to not have everything open-ended.

9           MR. BENDER: Is this plan still going to have  
10 a certain amount of fragmentation in it, a piece here, a  
11 piece there, a piece somewhere else?

12           MR. SIESS: It's got to. There are so many  
13 pieces.

14           MR. GILLISPIE: There again, do you put siting  
15 by itself, or do you put siting under the things --

16           MR. BENDER: I'm not trying to argue for or  
17 against it, but I think if you are going to do that,  
18 then it might be helpful to develop some kind of  
19 matrix.

20           MR. GILLISPIE: That's the other -- I've got a  
21 slide of questions. The matrices -- what we've  
22 attempted here to do is go along with the need areas  
23 that the Chairman and the Commission were most  
24 interested in, the things it appears Congress is asking  
25 most of the questions about. So the crosscut is

1 provided by the index and is the most popular crosscut.

2 We definitely need other crosscuts for  
3 specific needs. NMSS wants a siting.

4 MR. SIESS: It may be a three-dimensional  
5 matrix.

6 MR. GILLISPIE: It could come out to that.

7 MR. BENDER: If you get too many of them, you  
8 are obviously going to get in trouble, but it seems to  
9 me some general set of categories which would fit the  
10 pieces.

11 MR. SIESS: That's the first list.

12 MR. GILLISPIE: The first list is our first  
13 shot at the categories that we got asked the most  
14 about. These are the things we were asked about.

15 If you look under plant aging, you will see a  
16 separate element is steam generator work, which is a  
17 second order thing that we are always asked, what are  
18 you doing on steam generators?

19 MR. SIESS: This list, this crosscut, if you  
20 wish, is influenced to some extent by your decision unit  
21 set-up, which isn't bad.

22 MR. GILLISPIE: Or you can go the other way in  
23 that inadvertently, although not written down, the  
24 decision unit was influenced by the work needing to be  
25 done. It depends on which came first. Actually, the

1 work was there but it was not listed like this. So I do  
2 not think it is really totally surprising that the major  
3 portion of the work in any one of these areas is  
4 probably in one of our decision units. It is not that  
5 far off.

6 MR. SIESS: I would think that given choices,  
7 other things being equal, you would cross cut by  
8 decision units.

9 MR. GILLISPIE: Yes, that's a definite  
10 crosscut.

11 MR. SIESS: Since they are reasonably logical.

12 MR. GILLISPIE: Yes, yes.

13 Okay.

14 We have got right now a statement of purpose  
15 for each of these program areas and a list of elements  
16 under that major area. The order of these is no  
17 particular order right now.

18 So under aging we've got reactor vessel work,  
19 steam generator work, piping, electrical-mechanical  
20 components, and nondestructive examination.

21 MR. MARK: Will that discuss, for example, the  
22 age of a diesel generator after 1400 experimental  
23 starts?

24 (General laughter.)

25 MR. GILLISPIE: The increased risk due to

1 overtesting, the intent there is everything done in  
2 steam generators, including Benero's work, Arlotto's  
3 work, would all be under that steam generators. It is  
4 all going to be categorized. There will be one  
5 timeline. Here is a set of needs dealing with the  
6 subject matter.

7 MR. SIESS: Just this general category of  
8 aging, it seems to me you have methods of examination  
9 and testing, and on your first sentence it says time  
10 related issues such as aging and degradation.

11 Doesn't maintenance come in there somewhere?

12 That's a time related issue. By maintenance,  
13 you can maintain the plant independent of age. That is  
14 one of the objects of maintenance, maintenance  
15 replacement schedule, etc.

16 MR. GILLISPIE: Yes. That will come in under  
17 electrical and mechanical components.

18 MR. SIESS: Okay.

19 MR. GILLISPIE: That's the approach we're  
20 taking. That's where we've gotten so far, the first  
21 step in the schedule.

22 Hopefully we will get agreement with NRR on  
23 these are the programs, this is how they would like to  
24 see it laid out. We are very receptive to adding or  
25 deleting or combining these things right now. An



1 example is No. 6, LOCA and transient analysis. We are  
2 thinking very seriously -- I think we are going to go  
3 this way -- of taking large break LOCA work and breaking  
4 that out as a separate chapter. I hear arguments from  
5 different people when I bring that up.

6 Does that make sense to do it? It is a big  
7 chunk of our budget. Is it a drastically decreasing  
8 program?

9 MR. SIESS: In effect, you did that with  
10 decision units when you pulled out LOFT, didn't you?

11 MR. GILLISPIE: We did, and I think we're  
12 going to go back. This is going to attempt to be  
13 consistent with that break.

14 MR. SIESS: Do you have any goal as to the  
15 number of categories you wanted?

16 MR. GILLISPIE: No. We created -- it was  
17 really the creation of a strawman based on the crosscuts  
18 you mentioned before, the topics on those crosscuts the  
19 Chairman has asked for, congressional questions. It is  
20 indeed probably picked -- we sent it out, we got some  
21 comments back. The LOCA and transient one, depending on  
22 which version of comments that you see together.  
23 Someone had split apart -- this is not the original  
24 list. The original list was somewhat longer. This has  
25 been shortened up. People wanted to see it contracted a

1 little more. So this has gone -- the list has gone  
2 though one mutation. This mutation has gone through one  
3 crosscut in-house. Then we are going to go through NRR  
4 and through another tuning.

5 MR. WARD: When I go through this and I look  
6 for the important what must be a subtopic somewhere of  
7 approved decay heat removal systems, I don't find it.  
8 Where does that fit in?

9 MR. GILLISPIE: That is probably specific  
10 enough, that would be under severe accident, it is  
11 specific enough not to be there yet. That is what we  
12 are searching for now.

13 Is there something that is going to be -- if  
14 it is not there now, it is a lower subset than what we  
15 have got.

16 MR. SIESS: I look at the subset under severe  
17 accidents. Which one of those would you consider decay  
18 heat removal systems, or let's say containment heat  
19 removal systems, to fall under?

20 MR. GILLISPIE: Under containment analysis.

21 MR. WARD: I shouldn't think improved decay  
22 heat removal systems would fall under severe accidents.

23 MR. KERR: You don't think it would?

24 MR. WARD: I don't think it would.

25 MR. BEACH: Right now we don't have a decay

1 heat removal system research plan. That may be a  
2 comment that you would want to make.

3 MR. SIESS: We have made it.

4 MR. BEACH: Yes. Improved reactor --

5 MR. GILLISPIE: That's in improved reactor  
6 safety.

7 MR. KERR: There is an unresolved safety issue  
8 something or other. It is not research, I guess.

9 MR. WARD: It was a Task action plan, but I  
10 guess there's not -- I thought there was some research  
11 which was parallel with that, though.

12 MR. SIESS: Decay heat removal systems is  
13 under USI? We don't use reactor safety as a category  
14 anymore. If we did, severe accidents would be under  
15 it.

16 MR. KERR: No, elimination of severe  
17 accidents.

18 MR. GILLISPIE: The first round, what we are  
19 looking for now is those types of comments, what are  
20 not -- what is not there? Is it incomplete? Are we not  
21 covering something? Because if we are not, it probably  
22 means we are not doing research there at this level.

23 This came out of the typewriter last night  
24 about 5:00 o'clock, so it has not been reviewed for  
25 completeness. This is going to NRR, back to our

1 divisions to review it for completeness now.

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1           MR. PODOLAK: On the first list, pressurized  
2 thermal shock is under Bernero, not Arlotto, and that  
3 quality assurance is one of the topical programs that  
4 has been added under 15. You will notice that in the  
5 text, in the text in the back. That shows you how this  
6 was revised just last night, and forgive us, there are a  
7 few pages that show editorial changes on it. We  
8 couldn't get those changes made.

9           MR. SIESS: I am looking at human factors.  
10 Where is training and simulators?

11           MR. BEACH: We are not doing research on  
12 training.

13           MR. SIESS: You are not doing any research on  
14 training?

15           MR. BEACH: I'm sorry. Forgive me. I spoke  
16 wrong.

17           MR. GILLISPIE: We are.

18           MR. BEACH: But on plant analyzer, you will  
19 find that somewhere else.

20           MR. GILLISPIE: What we have not got yet, the  
21 questions you are asking me are, if you look at the  
22 schedule, the next step on the schedule is to go out and  
23 define the elements that are right now only listed as  
24 human factors engineering, licensee qualification  
25 management and plant procedure and human reliability.



1 We have not yet defined those areas. First we are  
2 looking topically to see if we have gotten all the  
3 topics. Carl Goeller may choose to put it under one of  
4 these topics at the top.

5 MR. SIESS: Just looking at that, I see plant  
6 procedures. I know that's an NRR activity. Is there a  
7 research activity in that now?

8 MR. GILLISPIE: Yes, yes. In maintenance  
9 procedures particularly.

10 MR. SIESS: That is what it means by  
11 maintenance.

12 MR. GILLISPIE: That is really pointed at  
13 maintenance procedure work that is going on right now.

14 MR. SIESS: And not emergency operating  
15 procedures?

16 MR. GILLISPIE: It may include that, but to  
17 answer your question, are we doing it on maintenance  
18 procedures, the answer is yes.

19 MR. SIESS: That's a user office need and a  
20 research program, now?

21 MR. GILLISPIE: For a research program, yes.  
22 This is a statement of what we are doing right now.

23 MR. KERR: Does the term "safeguards" under 15  
24 include efforts to investigate designs that would  
25 decrease the probability of sabotage? I'm not quite

1 sure what "safeguards" means in this context.

2 MR. GILLISPIE: Yes.

3 MR. KERR: It does include it?

4 MR. GILLISPIE: Yes.

5 MR. WARD: It doesn't really say that in the  
6 text, I don't think.

7 MR. GILLISPIE: One of the problems --

8 MR. WARD: It's abbreviated, I realize.

9 MR. GILLISPIE: It's very abbreviated. What  
10 we need, the next step for going out is to answer the  
11 particular questions that you are asking now. It is to  
12 define under that chapter element -- that would be  
13 physical protection -- is to define what is meant by  
14 physical protection. What need is there? So it might  
15 be development of design, a statement of a specific  
16 thing they expect to accomplish, develop design criteria  
17 to inhibit sabotage. That is the next step in the  
18 iteration, is now to go back to the divisions and ask:  
19 now, specifically what are you going to do under  
20 physical protection? In the case of safeguards, that is  
21 one thing they are going to do under physical protection.

22 MR. SIESS: What does the heading for 15  
23 really mean?

24 MR. GILLISPIE: It really means other. It is  
25 the programs whose funding has dropped to the point

1 where it is not an integrated program as far as going  
2 across, for the most part, significantly going across  
3 divisional lines. Emergency preparedness, for example,  
4 is funded at about \$600,000. Safeguards, it is at  
5 \$1 million. Quality assurance is -- Sue, help  
6 me -- \$3 million?

7 VOICE: \$300,000.

8 MR. GILLISPIE: \$300,000. They are very much  
9 abbreviated because in the sense of resource  
10 expenditure, they are not as significant. That is not  
11 to say that the subject matter isn't important.

12 MR. SIESS: It seems to me plant instruments  
13 and controls could fit in somewhere else other than  
14 "other."

15 MR. GILLISPIE: Part of plant instrumentation  
16 and control is under equipment qualification. It is  
17 also under the USIs.

18 MR. SIESS: Part of it is under human factors?

19 MR. GILLISPIE: As I said, that is what we are  
20 going through now, is to ensure completeness. Part of  
21 it is under equipment qualification, part of it is under  
22 plant aging, part of it is under the USIs, and for lack  
23 of anywhere else to put the leftovers, the leftovers are  
24 just under topical subjects.

25 MR. PODOLAK: It also could graduate from a

1 topical program. It is a less perjorative statement  
2 than others. It could graduate to a chapter in coming  
3 years.

4 MR. GILLISPIE: Yes, it could be upgraded to a  
5 chapter in coming years or it could be upgraded to a  
6 chapter depending on what we talk to NRR about and how  
7 much visibility do they want to give that area. Again,  
8 do we want to crosscut that out as an individual item?

9 MR. BENDER: Where do things like the  
10 structural assessment of piping systems and pipe  
11 supports and the SSMRP showing up.

12 MR. SIESS: SSMRP would be external events,  
13 phenomena.

14 MR. GILLISPIE: Abe, where did you intend for  
15 the structural work to be?

16 MR. EISS: Abe Eiss. Division of Technology.  
17 Structural work would be in the containment area under  
18 severe accident programs.

19 MR. BENDER: Well, of course you can put  
20 things anywhere, but it doesn't match very well.

21 MR. GILLISPIE: That is the type of  
22 information we are very open to right now. We can cut  
23 the pie any way.

24 MR. SIESS: I guess if you don't have a severe  
25 accident or you don't have an external event, you don't

1 worry too much about containment structures. We can put  
2 that in two places.

3 MR. BENDER: Well, there are various ways to  
4 look at this. It is hard to develop a systems  
5 orientation from this particular cut, but that is just  
6 my own opinion.

7 MR. SIESS: Maybe they should buy a set of 3  
8 x 5 cards and let everybody else organize them.

9 [Laughter]

10 MR. GILLISPIE: If I could continue on, that  
11 is one of the questions we are still groping with. That  
12 is, is there a need or is there not a need, and what  
13 should be some kind of overstructure we try to fit these  
14 things into?

15 MR. SIESS: Well, you see, if I had my way I  
16 would organize them according to the ACRS subcommittees  
17 and that would facilitate our review. Another  
18 possibility is to reorganize our subcommittees to fit  
19 your categories, but you change them every year.

20 MR. BENDER: Do I look under equipment  
21 qualification to find out about qualification for fire  
22 resistance?

23 MR. GILLISPIE: Yes.

24 MR. SIESS: And seismic resistance?

25 MR. BENDER: Seismic is here and environmental



1 and functional is here, but I didn't know whether that  
2 was necessarily fires. I'm just trying to get a feeling  
3 for it right now, though. I'm not trying to --

4 MR. SIESS: What does environmental and  
5 functional mean? It is supposed to function under the  
6 environment, isn't it?

7 MR. BENDER: At the same time, where you have  
8 qualification, the aging business will have some  
9 qualification aspects of it. You probably ought to look  
10 at that.

11 MR. SIESS: Aging is a form of qualification,  
12 but your qualification would be a part of aging, then.

13 MR. BENDER: One way or the other.

14 MR. PODOLAK: I would just like to interject  
15 that where there is a particular program that belongs  
16 more under a certain category, we are not going to  
17 spread it to the winds. We are going to put it under  
18 the category where the most belong and identify it  
19 through cross-cuts.

20 MR. GILLISPIE: Yes. What we have attempted  
21 to do in the first go 'round is to put those things in  
22 the areas where they seem to most relate to most of the  
23 questions we get asked. We are not going to satisfy  
24 everybody all of the time. We are trying to satisfy the  
25 majority. And we are totally open. We are really

1 flexible on where we put something right now.

2 MR. SIESS: It seems to me you certainly don't  
3 want to split a project between two categories, but an  
4 area that involves several projects, some of which may  
5 relate to one thing and some to others, could easily be  
6 split.

7 MR. BENDER: That is correct.

8 MR. GILLISPIE: Yes.

9 MR. SIESS: And of course, as you start to  
10 write your chapters you are going to find some of these  
11 do not work anyway. You will logically discuss what you  
12 have here and you will have to move things around  
13 because as you try to write it up, they won't fit.

14 MR. GILLISPIE: That is fully expected because  
15 as we start to write we will start to see the  
16 cross-connections between areas and we will have to  
17 write in the relationships.

18 MR. SIESS: So I don't think that is as  
19 important as making sure everything is somewhere.

20 MR. GILLISPIE: Our first step now is to make  
21 sure everything is somewhere. Then how it gets shifted  
22 around from there is really being more influenced by  
23 general public opinion.

24 MR. SIESS: This is still bottom up. We are  
25 going to try to test it top down as you write it up,

1 right?

2 MR. GILLISPIE: What we have done is we have  
3 generated a list just to start with a structure. We had  
4 to have something to put it in. The list that initially  
5 got generated was based on topics of interest in  
6 present-day times, the things we were asked most about:  
7 what are you doing in this area, what are you doing in  
8 that area. It also does coincide, as it should, with  
9 the things we are doing if you group them that way.

10 MR. SIESS: Yes.

11 MR. GILLISPIE: Now what we are doing, we  
12 wanted a statement of purpose, and hopefully in the  
13 broad area, in any of these areas, aging, pressurized  
14 thermal shock, that related to something better than  
15 just a general motherhood statement, but something like  
16 what are you doing in aging and why are you doing it;  
17 that there would be a short concise statement that would  
18 be an introduction of generally what we are doing in  
19 that area and why we are doing it. It is fulfilling a  
20 regulatory need, that we list the elements and then  
21 under each element we would list a specific need we  
22 intend to fulfill. That need could be providing  
23 information to make a decision two years from now.  
24 That's a valid need for us to fulfill.

25 MR. SIESS: The point was that since the

1 program didn't develop starting with basic needs and  
2 then going down step by step, it didn't --

3 MR. GILLISPIE: We are in the middle.

4 MR. SIESS: It was developed by some other  
5 process.

6 MR. GILLISPIE: Yes.

7 MR. SIESS: Now you are trying to organize it  
8 into a more logical framework and see what happens.

9 MR. GILLISPIE: Yes. We are starting in the  
10 middle.

11 MR. SIESS: There is an inherent assumption  
12 that if you are doing something, there must be a reason,  
13 so you are going to find someplace to put it.

14 MR. GILLISPIE: That is definitely going to  
15 happen. People are going to -- then we come to the next  
16 step. Now we have hopefully a complete list of  
17 elements. We have coordinated that with everyone who  
18 needs to be coordinated with. We have specific  
19 regulatory needs under each element in each broad area,  
20 and we are going to ask the people who supply us with  
21 the specific regulatory needs that they think are needed  
22 with a justification of why each one of those needs is  
23 important.

24 Now we get into do we turn up any favorite  
25 sons. We are looking at the need, now how you do the

1 research, but is this need valid.

2 MR. SIESS: Everybody thinks there is a need.

3 Let's take one of our favorite subjects,

4 micrometeorology or macrometeorology.

5 [Laughter.]

6 MR. SIESS: I think the meteorologist thinks

7 there is a tremendous need for that.

8 MR. GILLISPIE: Which is why the intent of

9 this document is not for the need of the meteorologist

10 but it is for the office director and above. The first

11 filter --

12 MR. SIESS: He is going to have to ask the

13 right questions of the people under him.

14 MR. GILLISPIE: Yes, but the people under him

15 have to make -- the first thing they need to do is make

16 the need sound like it's a valid need. Then he has to

17 ask the right question, does this make sense. Then we

18 are going to go one step further. We are going to ask

19 that the needs under each element be prioritized since

20 it is probably each element that will be written by each

21 author. So we will ask the author to prioritize his own

22 needs based on three items, and I have got another slide

23 for that, risk significance, regulatory significance,

24 which is going to be user office, and cost effectiveness.

25 MR. KERR: What sort of mechanism exists for



1 -- I guess the term I am looking for is integrated  
2 meteorology research, which reminded me as an example of  
3 the question I'm trying to ask. The reason one wants  
4 this information, presumably, is because one wants to  
5 estimate doses either in normal or emergency  
6 situations. Meteorological information is one  
7 component. The source or the leakage or whatever is  
8 another component. How does one make certain -- and I'm  
9 just using this as an example -- that the accuracy being  
10 looked for in the meteorology is maybe ridiculously poor  
11 or ridiculously good compared to the accuracy with which  
12 one can measure the source term? I am not asking for an  
13 answer to that specific question, but who is it that  
14 looks to make sure that somebody has a total picture in  
15 mind rather than focusing on meteorology as an end in  
16 itself or source terms as an end in itself?

17 MR. SIESS: Those will be in different  
18 chapters.

19 MR. GILLISPIE: The way this is organized now  
20 is the individual author of an element would prioritize  
21 within his own work. We have added on an Appendix D,  
22 prioritization strategy, which will be the office view  
23 of how all the elements fit together. And that  
24 is -- Bernero ducked out on me just when we get to the  
25 meat of what he really should be talking about, your

1 item on the agenda of how we are going to prioritize  
2 from there.

3           We are going to attempt to come up with a  
4 quantitative means or a quantitative-qualitative means  
5 of prioritizing the elements against each other. Now,  
6 if we can't do it -- I don't believe we have the vehicle  
7 to do it waste management against severe accident work,  
8 or mill tailings against severe accident work. Certain  
9 research has to be done to answer certain regulatory  
10 questions.

11           We are going to, though, in the context of  
12 that explain in this plan how we picked what is  
13 important. We want to address the thing I mentioned:  
14 risk significance. If it is possible to do it  
15 quantitatively than to have something quantitatively.

16           I went through with Bernero yesterday  
17 afternoon, since he will take the lead on putting  
18 together the prioritization, a matrix that they had used  
19 in the severe accident plan where they went from  
20 initiation of an accident all the way through core  
21 melt. Is that Charley? They went through the whole  
22 sequence.

23           He feels that he can put a significant portion  
24 of our work into that sequence and at least get some  
25 relative feeling of risk reduction and reduction of

1 uncertainty in risk. We are going to attempt to  
2 actually write that up this year so that people can  
3 understand the question they keep asking us: how do you  
4 use PRA? PRA isn't all of it. There will be a  
5 subjective judgment in cost effectiveness: can you even  
6 do it.

7 MR. SIESS: Are you suggesting there is no  
8 subjective judgment in PRA?

9 MR. GILLISPIE: There is subjective judgment  
10 in PRA. But besides the subjective numbers, we may have  
11 to go to putting some type of weighting factor on user  
12 endorsement: how important, how much does Denton really  
13 want this when we look at its regulatory implications,  
14 given that he wants something else more? Then, how much  
15 is it going to cost us as a research program to do it?  
16 It may be better to do four cheaper things, risk-wise,  
17 in the whole scope of things than one expensive thing  
18 that costs the same, although you have to look at them  
19 individually and cumulatively to do comparisons.

20 We are going to attempt to have that  
21 straightforward and written up so that people can  
22 understand how the priorities are drawn and how the  
23 choices were made.

24 MR. SIESS: But I think we have something in  
25 one of our letters about how should resources be

1 allocated between research to convince the NRC Staff the  
2 plant is safe, research to convince the Atomic Safety  
3 and Licensing Board and the public that the plant is  
4 safe. Is that something you might consider?

5 MR. GILLISPIE: That would be -- as best we  
6 could, that is what we are intending to do.

7 MR. SIESS: There was a question about the  
8 difference between research to reduce real risk and  
9 research to reduce perceived risks if these should be  
10 different.

11 MR. GILLISPIE: Again, yes.

12 MR. BENDER: If you get this scheme worked  
13 out, you will probably be a candidate for Mr. Stockman's  
14 job.

15 [Laughter.]

16 MR. GILLISPIE: Well, I am really hesitant on  
17 committing to this scheme because I am not sure how good  
18 it is going to be, but we are going to have written down  
19 in black and white our first attempt at it. So we will  
20 have written down something for people to criticize  
21 versus receiving the criticism we don't have anything  
22 written down. So now we will have something written  
23 down and we will probably get criticized worse.

24 MR. BENDER: I think it is the right thing to  
25 do.

1           MR. SIESS: I think it is definitely a step in  
2 the right direction, whether it works the first time or  
3 not. That is what I thought about the first long-range  
4 research plan.

5           MR. GILLISPIE: So we are going to attempt to  
6 do that and we are going to do that at the individual  
7 element level. So it is going to be a grouping and it  
8 is going to be somewhat -- it is going to be less than  
9 exact, and I don't think Bernero has quite worked out  
10 the details. He knew I was getting to this.

11           MR. SIESS: He had a better excuse than that.

12           MR. GILLISPIE: He had a CRGR to go to, so he  
13 did have to duck out.

14           On the schedule, we are intending to have the  
15 appendices worked out once we decide what the needs are,  
16 once we get through that, towards the end of December.

17           MR. SIESS: Incidentally, there was a little  
18 discussion about CRGR during the break where people have  
19 to go to justify the need for a new regulation. They go  
20 before a senior group and have to present documentation  
21 and argue for what they think is needed. Would there be  
22 any advantage in having a similar system on research  
23 needs of a senior review board that people had to go  
24 before and justify their needs?

25



1           MR. GILLISPIE: I think effectively we have  
2 that. They just don't sit all in the same room at the  
3 same time. For one thing, if you read last year's  
4 research plan, I'm not sure that that is straightforward  
5 about what needs we're trying to fulfil. So this year  
6 we are attempting to filter it down so that an office  
7 director can read it, the Commission can read it, and  
8 say, okay, these are the needs we're trying to fulfil,  
9 these are the ones I agree are needed, these are the  
10 ones with which I disagree.

11           We will have to have a short justification  
12 written in there, and I would not think it inappropriate  
13 for Denton to write back and say: Your justification  
14 isn't detailed enough, I need more words on why this is  
15 needed. And then we would beef up the justification.  
16 Or, I disagree with the justification, or I agree with  
17 the need and your justification is the wrong thing.

18           Now, whether all of those people sit in the  
19 same room or do it individually -- first, I would like  
20 to see if we can successfully write the needs down.

21           MR. SIESS: It's going to be interesting to  
22 see just how much involvement you can get at the high  
23 levels in the offices, because when we have looked at  
24 programs and gotten into arguments about whether it's  
25 floods or meteorology or so forth, we didn't have very

1 high-level people coming in trying to tell us that they  
2 needed it.

3 We had the meteorologists explaining why they  
4 needed to improve their prediction by a factor of  
5 three. But we didn't have anybody in that was able to  
6 look at that in relation to uncertainties in the source  
7 term or uncertainties in the leak rates and say, yes,  
8 from an agency point of view we do need to have that  
9 knowledge.

10 So you're hoping to get that kind of level of  
11 review.

12 MR. GILLISPIE: Yes, we are hoping to get that  
13 level, that level of review. And we're hoping to  
14 facilitate it by only giving that information needed to  
15 do that level of review.

16 I think the 370 pages from last year scared  
17 off that level of review. So one of the things we are  
18 hoping to achieve by shortening it is to get that level  
19 -- to only have that level of detail necessary to give  
20 us the information back or to ask us the questions that  
21 we need to be asked.

22 MR. SIESS: It seems to me one of the best  
23 ways to get a really careful review of the user needs is  
24 to tell somebody, we cannot meet all your needs, you  
25 have got to tell us which three-fourths of them you

1 really want.

2 MR. GILLISPIE: We are -- that's the purpose  
3 of prioritization, to tell us which ones. It's obvious  
4 we're going to have a research program. We are going to  
5 have a budget of something. I think it would be not  
6 unrealistic to say that that budget will for the  
7 foreseeable future be \$180 million as a minimum, and  
8 therefore the importance of prioritization is really  
9 that last 20 percent.

10 That last 25 to \$30 million worth of  
11 prioritization becomes very important, because those are  
12 the projects that may indeed get cut and not get done.  
13 We are going to ask that question this year, to have  
14 that incorporated in from the beginning: What is the  
15 least important need we have written up in this plan?

16 MR. SIESS: Obviously, there are some  
17 priorities that are very difficult to establish  
18 relatively, work on materials versus work on reactors,  
19 waste management versus reactors, et cetera. And those  
20 will be decisions that will have to be made, certainly,  
21 at a higher office level because they have multiple  
22 offices.

23 Will the Commission give you guidance on  
24 that?

25 MR. GILLISPIE: We are attempting through this

1 vehicle to make a first cut at it. Bob Minogue has not  
2 yet really decided how he will convey this in September  
3 to the Commission. We don't want a writeup of research  
4 need for programs we're going to be shut down on. We  
5 would like to get it in before the PPPG guidance comes  
6 up.

7           So from our outline, we are hoping to have  
8 numbers one and two complete and to send that package  
9 without a research program description, to send that  
10 package, that definition of goals, to the Commission and  
11 ask them, are these the right things that we should be  
12 looking at from the overall agency point of view.

13           Now, we are tentatively wanting to do that in  
14 September, before we go any further. We're envisioning  
15 something like a 50-page document that will convey that  
16 information. Then if they say, yes, this realistically  
17 appears to be the goals, this is where you should be  
18 going, this is consistently the policy, those are the  
19 needs we need to fulfil, then we would add on the  
20 research program to that. We would add on number  
21 three.

22           MR. SIESS: You always have needs. But  
23 suppose somebody came back in and told you that you are  
24 only going to have \$100 million?

25           MR. GILLISPIE: Yes, that's why we want to

1 prioritize. We fully expect to write this plan.

2 MR. SIESS: How do you prioritize? For  
3 example, do you say cut everything in half, cut out  
4 everything on waste management, materials safety, and  
5 concentrate on 100 operating reactors, throw out  
6 advanced reactors?

7 MR. GILLISPIE: No. That is when it becomes  
8 --

9 MR. SIESS: It seems to me that that's almost  
10 a Commission-level decision.

11 MR. GILLISPIE: It is, it is. We would go to  
12 that and we would, by way of the prioritization we would  
13 have done, we would make a recommendation. We are going  
14 to give them something to decide upon that they can  
15 disagree or agree with.

16 So we would expect that we would make a  
17 recommendation of a priority list. Again, what we are  
18 looking for is, what is the bottom fraction that is in  
19 that area of cut-ability. You're going to have a  
20 baseline program that you do not really need to put  
21 things in front of another.

22 So the answer is, yes, we're going to go to  
23 the Commission and ask their advice at that time. We  
24 would anticipate that the plan would be written with  
25 needs that are far in excess of our resources to



1 accomplish.

2           We expect only to have \$200 million in a given  
3 year, and we would fully expect that this agency has  
4 more research needs than that and we would have them all  
5 here to provide alternatives. The Commission can decide  
6 whether we prioritized things right or wrong. If they  
7 disagree, we can switch them around.

8           MR. SIESS: They can only decide that at  
9 pretty broad levels.

10           MR. GILLISPIE: That's what I'm saying. We  
11 want to send them a broad level document, so that we can  
12 get some direction out of it, versus immersing them in  
13 the detail of whether we should use ACRR or PBF or  
14 attempt to do it with LOFT or use NRU. We're not  
15 looking at that level of detail from the Commission at  
16 this stage.

17           So we're going to try to do what you said. We  
18 are going to try to present the Commission with a longer  
19 list than we probably feel we could finance, a  
20 recommendation on the priorities of it. And they would  
21 then either agree or disagree with us.

22           If we could keep it short and address the  
23 needs in terms that they are used to, then we might be  
24 successful at getting their early involvement in the  
25 whole thing. Once we got past that step, then we would

1 do paragraph 3, which is research program description by  
2 element.

3 MR. SIESS: What document are we looking at?

4 MR. GILLISPIE: It's the one that says  
5 "Chapter Outline" on it.

6 MR. DURAISWAMY: They don't have that.

7 MR. GILLISPIE: I apologize.

8 MR. SIESS: Do you have a vugraph? If you do,  
9 just throw it up there.

10 (Slide.)

11 MR. MOELLER: While we are moving on that, on  
12 aging, I didn't -- or I would like to know to what  
13 degree the research will involve actual reviews of plant  
14 experience. It seems like what you had listed is mainly  
15 research outside the operating plants.

16 MR. GILLISPIE: Okay, yes. I think under --  
17 which one was it?

18 MR. SIESS: Steam generators.

19 MR. MOELLER: Well, it could be. You know,  
20 they could take --

21 MR. SIESS: I see what you mean.

22 MR. MOELLER: -- metals and check them.

23 MR. GILLISPIE: We have not yet gotten to that  
24 much detail.

25 MR. MOELLER: I see.

1           MR. GILLISPIE: Which is why we want to make  
2 this whole process very iterative before we write a  
3 whole lot. Right now we are to the point of having done  
4 number one. That is as far as we have gotten. The  
5 technical people have given us number one. They have  
6 given us a list of elements, but they haven't done A, B,  
7 C, and D that we have under there.

8           Now we are going back to complete number two.  
9 We are going to work with NRR at this point to see what  
10 their needs are, NMSS. We expect to complete number two  
11 by the first week in September. From that we hope to  
12 generate something on the order of a 50-page document.  
13 That is when we would want to go to the Commission.

14           We would also want to have an appendix that  
15 would prioritize these things or give some scheme for  
16 doing it. We would fully expect that we would have more  
17 specific regulatory needs than we could finance, and  
18 that way we could provide the Commission with the  
19 choice.

20           We are not restricted by PPPG guidance in the  
21 long-range plan. What we put in the budget, we are, but  
22 not for the purposes of this plan. Once we get  
23 Commission guidance on have we picked the right needs,  
24 are these the elements that we want to look at in the  
25 next few years, then we will go back and we will do

1 number three, where we will very briefly -- and I mean  
2 very briefly, because we don't want to duplicate the  
3 budget process -- describe the program, more importantly  
4 the major milestones, the major deliverables, how they  
5 relate to the needs we have already mentioned in a time  
6 line, when we expect to get the deliverable to fulfil  
7 that need.

8           For prioritization purposes we have to address  
9 cost at this point, although we don't put a lot of  
10 details in the program. The larger programs, like if  
11 you know you are going to get information and you have  
12 to use SEMISCALE to get that information, you can get a  
13 good ballpark of the cost. You're going to have \$12  
14 million program.

15           Cost becomes less significant as you go down.  
16 Suddenly, if you are down \$5 million, cost has a much  
17 less significant bearing on whether you do the research  
18 or not on risk reduction, uncertainty in risk, safety  
19 importance. NRR becomes the driving factor.

20           Those kind of weighting factors are what we  
21 have to build into our prioritization.

22           MR. SIESS: Frank, you've got the words  
23 "program area" up there. Vis a vis the 15 topics?

24           MR. GILLISPIE: Yes.

25           MR. SIESS: And program elements?

1 MR. GILLISPIE: Are a subset under those.

2 MR. SIESS: How far down does that go? Is  
3 that the kind of things we had listed?

4 MR. GILLISPIE: That's just the kind of things  
5 that are listed under there, just the list of four or  
6 five items under each chapter.

7 MR. SIESS: Now, at what point do you get to  
8 where you can express what you call the needs in terms  
9 of researchs?

10 MR. GILLISPIE: That's --

11 MR. SIESS: I'm assuming deliverable is an  
12 answer to a question?

13 MR. GILLISPIE: Yes. And whether we would  
14 format that as a question or a statement of what  
15 deliverable is expected, it will be the same  
16 information.

17 MR. SIESS: Now, at what point in this will  
18 there be discussion of -- let's see. You start off, you  
19 need to know something, there's a need to know  
20 something.

21 MR. GILLISPIE: Yes.

22 MR. SIESS: There is an assumption that you  
23 can get an answer.

24 MR. GILLISPIE: Yes.

25 MR. SIESS: You need to know whether anybody



1    els, is working on it. That's the first question.

2                   MR. GILLISPIE: Yes.

3                   MR. SIESS: What do we know, is it likely  
4 someone else will get an answer.

5                   If nobody else is working on it, should they  
6 be.

7                   MR. GILLISPIE: Yes.

8                   MR. SIESS: If they are not and they shouldn't  
9 be, then we should, right?

10                   MR. GILLISPIE: Well --

11                   MR. SIESS: Is that process involved here?

12                   MR. GILLISPIE: Yes.

13                   MR. SIESS: Who should do what, who is doing  
14 what?

15                   MR. GILLISPIE: That would be at the last  
16 level, at number three. Our first question is, is this  
17 an agency need? Is this needed by the NRC? We want to  
18 state what the needs of the Commission are.

19                   If it is something not needed by the  
20 Commission, then it is not something research would be  
21 doing. So that is the first step.

22                   MR. SIESS: There are things the Commission  
23 needs that it doesn't have to do itself.

24                   MR. GILLISPIE: Yes. Now, when we look at the  
25 research program, how we're going to achieve that end,

1 one of the things we have to state in there, would we  
2 look at DOE, would we look at EPRI? In the program plan  
3 description, that kind of information would be  
4 detailed: what others are doing, what the other related  
5 projects are.

6 MR. SIESS: To what extent have you or will  
7 you look at this DOE effort now to define research needs  
8 in light water reactors? It will probably involve  
9 something we just got the first report on, containment  
10 hydrogen.

11 MR. GILLISPIE: Well, we will review it and if  
12 we agree --

13 MR. SIESS: They have gone through those steps  
14 and they have indicated who is doing what, what needs to  
15 be done, and some of the things you are doing are in  
16 that list. The NRC is doing them.

17 MR. BEACH: We have people on each one of  
18 those DOE groups and those would be the same people who  
19 would be preparing in step three, so they would be able  
20 to integrate those two in step three.

21 MR. MARK: Probably I just don't understand  
22 the way the words are used in some cases. I wish there  
23 were something in your paragraph 2 which read a little  
24 like "need to know." Is that covered in the regulatory  
25 need somehow?

1 I read "regulatory" to think of regulations  
2 we're working on, hearings and rulemakings. There are  
3 some things which you say, we have to know to know  
4 whether there should be a rule.

5 MR. GILLISPIE: Yes. The need to have  
6 information to make a decision is a valid regulatory  
7 need. That has been made clear to all the divisions.  
8 So that is inherent in this.

9 MR. MARK: Fine. I began to understand that  
10 from reading it over. It had to be there if it was  
11 anywhere, and I was hoping it was somewhere.

12 MR. GILLISPIE: In much of Bassett's work in  
13 the experimental work, it is to provide information for  
14 Bernero to put in his risk assessments, to make a  
15 decision whether they should do anything more.

16 MR. MARK: Whether an unsuspected regulation  
17 might be called for.

18 MR. GILLISPIE: Yes, that is considered a  
19 valid need in the office.

20 MR. WARD: Frank, did I understand you said  
21 this would be such a comprehensive listing that if a  
22 need is being met by research somewhere else, DOE or in  
23 the industry or somewhere else, that that will be  
24 included here?

25 MR. GILLISPIE: Yes.

1           MR. WARD: It is really going to be top-down,  
2 in that sense?

3           MR. GILLISPIE: Intended in our program  
4 description, the details we are writing up to give out  
5 to the divisions to write this up, instead of having a  
6 separate section on what others are doing, that if  
7 others are doing something that satisfies us and we're  
8 depending on EPRI for a piece of work, or IEEE or  
9 something, that we would just say, EPRI is scheduled to  
10 have this done, we're going to use this work to satisfy  
11 this need.

12           So that would be written right in, with even a  
13 diagram with it, hopefully, of some kind that shows a  
14 time line, and then a description of the major  
15 milestones and deliverables, whether we do it or not.  
16 If we're going to use them, then we would say we're  
17 going to get it from someone else.

18           Ed?

19           MR. PODOLAK: I would like to add that we're  
20 going to take a first cut of that under 2C,  
21 justification of importance of identified need.  
22 Included in that will be what piece of the work we are  
23 doing. For example, on steam generators we may only be  
24 doing 25 percent of the research work in steam  
25 generators.

1           You should have that information in September  
2 when you see our regulatory need. So the first little  
3 part of that will be in 2C.

4           MR. GILLISPIE: The intent on the research  
5 program description is really to be a very brief  
6 description, with the emphasis on the list of major  
7 deliverables, no matter where they are from, which we  
8 are going to use to fulfil a need, to relate it all back  
9 to the needs.

10           That is where the volume of the report gets  
11 controlled, how much detail we put in there. If we say  
12 EPRI is doing this project and we are going to use that  
13 result to assist in answering question 2 above, that is  
14 very brief. If we go into a description of what EPRI is  
15 doing and how we are doing and how we mesh, that is very  
16 long.

17           Our intent now is to not have that description  
18 in there, but that that is a budget description of  
19 specifics, how you are spending this dollar. The  
20 commitment we're making now with a brief long-range plan  
21 like this is, we will have a much expanded budget  
22 document to cover the actual expenditures, to split  
23 hairs, if you would, in the spring.

24

25



1            Basically, out of order, I covered the meat of  
2 it. We still have some questions that we are grappling  
3 with. I will throw those up, since they are kind of out  
4 of order.

5            (Slide.)

6            One of these is -- this is going to be fairly  
7 brief. That is just what crosscuts are needed, what  
8 structure is needed. We have gone round and round in  
9 the office about this, as far as what -- we may have  
10 hopefully a comprehensive list of needs and how you cut  
11 that or what program you put it under is merely cutting  
12 up the pie. If you change all the chapter headings next  
13 year, the need should not change. That is the stability  
14 that should be inherent if you define the goals of the  
15 agency right.

16           We are still not sure if we need an overall  
17 structure, something that has primary system and  
18 secondary systems or says reactor fuel facility  
19 transportation and try to get all this stuff under it.

20           The time period covered. Our intention right  
21 now is to write the time period for final publication no  
22 later than December, that the research plan would be  
23 written in the past tense before December, and the  
24 future tense for after December, which means we will not  
25 have two years which are just background. If we have to

1 go out to '88 or '89, they will just be added on the  
2 end, but the 1983, the second half of 1983 would still  
3 be spoken of in the present tense. It would be a part  
4 of the plan.

5 In effect, what we are just doing is  
6 eliminating headings, and hopefully the approach then  
7 would flow all the way through. Bob Bernero would like  
8 to see it cut off at about 1986. It sounds like you  
9 would like to have it cut off in 1986 or '85, something  
10 consistent with the budget.

11 MR. SIESS: At least something consistent with  
12 the time frame we can think in terms of.

13 MR. BENDER: Let me make a comment about  
14 that. It is not practical to schedule the money out  
15 beyond five years, but sometimes the programs have to be  
16 looked at as extending further, and while you might not  
17 know what the expenditure rate is, I think it is a good  
18 idea not to have an arbitrary cutoff if you know the  
19 program can't be done in five years. That is all I am  
20 suggesting.

21 MR. GILLESPIE: Yes. But in keeping with  
22 tradition, this plan should go to 1989. If we are  
23 allowed to break with tradition, then this plan could go  
24 to '88 or to '87.

25 MR. SIESS: If you just called it a research

1 plan, and you address what you are doing, how long it is  
2 going to take, you don't have to put eighty-X to  
3 eighty-Y on it.

4 MR. GILLESPIE: I agree. The approach we are  
5 taking now is very conducive to doing that.

6 MR. SIESS: Some of the things you are going  
7 to talk about are two-year programs, some are five, some  
8 are ten, and I don't see why that can't be stated in a  
9 research plan, since the dollars don't mean anything  
10 anyway going out five years, and it doesn't have to have  
11 numbers on it, and you revise the thing annually. Don't  
12 change dates.

13 I think you are hung up on something that  
14 somebody started, long-range research plan, '83, '88, or  
15 something.

16 MR. GILLESPIE: Well, we can --

17 MR. SIESS: I don't know if the Commission  
18 asked for it that way or not.

19 MR. GILLESPIE: We will actively look into the  
20 way we are doing it, whether it be tradition or -- Bill,  
21 do you remember back that far, three years ago? Was it  
22 just asked for that way?

23 MR. BEACH: The five-year part was kind of a  
24 tradition. Actually, the first five-year plan was  
25 actually done back in 1977. Then there was another one

1 in '78. Then we went a number of years and didn't have  
2 one. But the five-year was tradition, yes.

3 MR. GILLESPIE: We will go back with that  
4 suggestion. If the five years actually got moved back  
5 to include '83, it would become much more manageable,  
6 because '83, '84, and '85, the first three years are  
7 actually budget years that you are dealing with in the  
8 here and the now.

9 (Slide.)

10 MR. GILLESPIE: We are starting early enough  
11 that we will not have the excuse that we used last year  
12 that we ran out of time. The crosscuts, we will be more  
13 than happy to provide crosscuts any which way people  
14 want them.

15 MR. SIESS: Do you have it on the computer?

16 MR. GILLESPIE: No.

17 (General laughter.)

18 MR. BENDER: That way, we can make our own  
19 crosscuts.

20 MR. GILLESPIE: As a matter of fact, only to a  
21 limited extent. We have the individual projects on the  
22 computer and we can crosscut down to decision units to  
23 get down to that detail, so partially the answer is yes,  
24 we do have it on a computer, but that never seems to  
25 come out as clean because it has three tasks under it

1 and it is split into different areas, although it is in  
2 one branch. Arsenault funds it. Bernero does it. We  
3 definitely have to have a planned organization crosscut,  
4 because we need that so the division directors know what  
5 they have. We are going to have a plan to decision unit  
6 crosscut. Then we will have a crosscut to make Bernero  
7 happy, from decision units to organization, any other  
8 crosscuts we want. At the draft stage, all we need is a  
9 request that someone wants it and we will put it  
10 together.

11 MR. MARK: You mentioned the possibility, and  
12 I am not urging it, if you had a crosscut from item to  
13 system.

14 MR. GILLESPIE: That is the overview we are  
15 still struggling with.

16 MR. MARK: It would be a possible item here,  
17 primary system to plant system.

18 MR. GILLESPIE: That is one of the overview  
19 structures. That is one of the crosscuts we have talked  
20 about in-house.

21 MR. MARK: It is a different quality of  
22 crosscut.

23 MR. GILLESPIE: We have kind of thrown out the  
24 idea of primary, secondary, transportation, fuel  
25 facility. It can be easily done, easily done, but I



1 think what we would really like to do is get it out in  
2 draft form, then get suggestions for crosscuts back.  
3 For the most part, crosscuts should not be that time  
4 consuming. They will take time, but we can manage  
5 them.

6 MR. SIESS: Have a computer with key words,  
7 and you can make 16 of them.

8 MR. GILLESPIE: We asked the NRC to provide us  
9 with a computer capability for doing that.

10 MR. SIESS: Incidentally, I was just looking  
11 back --

12 MR. BENDER: It doesn't sound all that  
13 complicated. Maybe it is.

14 MR. PODELACK: We are doing that independently.

15 MR. GILLESPIE: We are attempting to do that.  
16 I don't like committing to that yet.

17 MR. SIESS: In the communication from Chilk to  
18 Dircks, it simply states that research for developing  
19 long-range research plan, the plan would be updated  
20 every year, and it does not say five years at all.

21 MR. GILLESPIE: I have to bow to getting  
22 Minogue's impression of what is desirable on that one.

23 MR. SIESS: I am saying officially the  
24 Commission didn't ask for five years. It was your  
25 decision, which we will be glad to help you with, but --

1           MR. BENDER: Let me repeat the point I made.  
2 I don't care how long it is in the budget, but I really  
3 think when you have the plan, it should recognize  
4 whatever the research effort is, how long it is going to  
5 last, and not arbitrarily turn it off at some date,  
6 because that is how far you are going to look at the  
7 money.

8           MR. GILLESPIE: I agree. It would end with  
9 certain words that say, this is going to continue,  
10 thermal hydraulic transients, for example. The work in  
11 this area will continue because we can always anticipate  
12 that there will be operational problems that need  
13 reanalysis.

14          MR. SIESS: Even now, with five years, you  
15 have got projects that you expect to go beyond five  
16 years. You have to say something about that.

17          MR. GILLESPIE: We have similar generalities  
18 at the end of the programs now. Anyway, we are going to  
19 be open to crosscut suggestions. We do want to provide  
20 them. Two things we are doing here. We have an  
21 abbreviated schedule to get it out. The abbreviated  
22 schedule, shooting for October, is to have enough time  
23 through November to provide the necessary crosscuts so  
24 we don't have to answer a lot of questions after the  
25 fact. That is one of the prime reasons for getting it

1 done early.

2 MR. SIESS: I think if I were doing it, I  
3 would put it on the computer, and anybody that asked me  
4 for a crosscut, I would give it to them.

5 MR. GILLESPIE: We are going to try for that,  
6 but we don't have a whole lot of people ourselves, and  
7 we really don't have a programmer in house as such,  
8 someone dedicated that can sit down and write a WILBUR  
9 program for us.

10 MR. SIESS: Get a text edit program.

11 MR. BENDER: Get a TRS 80. It is much easier  
12 to do on that.

13 MR. SIESS: IBM 2C.

14 (General laughter.)

15 MR. GILLESPIE: We are going to --

16 MR. SHEWMON: Subcontract it to one of the  
17 members of the committee who thinks it is so easy.

18 (General laughter.)

19 MR. GILLESPIE: We are actively attempting to  
20 do that. I am very hesitant to commit that we will have  
21 it done soon. The other thing, I am very hesitant to  
22 put the effort into doing that before I know the plan  
23 has at least met with 50 percent acceptance.

24 MR. KERR: If you undertake it, it will only  
25 cost you about 50 percent more and take you about twice

1 as long as if you didn't do it with a computer.

2 MR. GILLESPIE: So, that really is where my  
3 presentation ends. As I said, we are only to the point  
4 of having collected 12 pages worth of information. Now  
5 we are looking to see if the topics are complete. We  
6 are going to get together with NRR and see if they think  
7 the topics are complete, and that all of their needs  
8 will fit under all of those topics and make sense to  
9 somebody.

10 At that point, we are going out for definition  
11 of the elements. Two things. We want to limit what we  
12 are looking at. When you see steam generators, we don't  
13 want to imply that we are doing everything under steam  
14 generators. We are doing a little bit under steam  
15 generators. The industry is doing a lot under steam  
16 generators, and in many cases we are depending on their  
17 results coming through, so we will actually limit the  
18 scope of what we are doing, and not make it sound like  
19 we are solving the world's problems. We are solving  
20 pieces of them, because we do have a fairly limited  
21 mission overall.

22 MR. BENDER: If you can get the discreet  
23 elements in this one breakdown one time, then at any  
24 time you can go through and develop your matrices under  
25 it.

1           MR. GILLESPIE: That is our approach right  
2 now. That's why we don't have an overall structure. If  
3 the elements are close and next year someone doesn't  
4 like our titles, then we will freely cut and paste them  
5 and put them wherever someone would like to see them,  
6 but the program, and this is pretty traditional, the  
7 program never changes. You just change a dollar as you  
8 change your words. Realistically, the program goes on.

9           MR. WARD: In spite of the plan.

10           (General laughter.)

11           MR. GILLESPIE: In spite of the plan. So what  
12 we would like to do is define what the program is going  
13 to accomplish. What you call that, as long as you  
14 accomplish the end product, the goal is the same. What  
15 heading you put that under is really indifferent. It  
16 doesn't matter.

17           Now, if you disagree with the goal, now you  
18 are to a point where you are really affecting the work  
19 being done, and we have yet to generate a list of goals,  
20 so our first objective is to generate a list of goals to  
21 be achieved, and if someone disagrees with something  
22 that is already 80 percent complete, I am not sure what  
23 we do at that point.

24           MR. SIESS: Gentlemen, what I would like to  
25 propose --



1           MR. MARK: In this list of chapter headings, I  
2 am delighted to observe that you can't possibly fit in  
3 one alleged need which I don't think should have been  
4 fit in anyway, that is, predicting the electric power  
5 demand.

6           MR. GILLESPIE: That is not in there.

7           MR. MARK: It could be put in here, but I hope  
8 it never is.

9           (General laughter.)

10          MR. SIESS: Gentlemen, we have heard what the  
11 staff is proposing to do about the next long-range  
12 research plan. I would like to have a little discussion  
13 about what the ACRS should do. Let me review a little  
14 of the history.

15                 On October 20, 1981, we wrote a letter to the  
16 chairman after a question I had raised at the meeting  
17 about our devoting so much time to reviewing the  
18 research program formally and make a report to the  
19 Congress, report to the Commission, and reviewing the  
20 long-range research plan. We had those things before us.

21                 We proposed at that time to continue the long,  
22 relatively comprehensive report to the Congress with all  
23 the detailed comments, mostly addressed to the staff.  
24 We proposed to reduce the scope of the report to the  
25 Commission and not repeat what was in the report to the

1 Congress, and we made a step in that direction with the  
2 report we just did last month, although it ended up  
3 coming out of the NUREG, but it was a lot shorter, and  
4 took a lot less of our time, and probably was just as  
5 effective.

6           Regarding the long-range research plan, we  
7 said the first long-range research plan developed was  
8 little more than five years of projections and reviews  
9 of ongoing programs for the next one or two years. We  
10 believe therefore that reviewing the long-range research  
11 plan will not be an effective use of our time unless a  
12 more meaningful plan is developed.

13           Now, in response to that, the Commission  
14 thought we could cut back on their report in July, and  
15 said, we concur with the ACRS recommendations in the  
16 letter I just read, with the exception that an ACRS  
17 review of the long-range research plan be included in  
18 the comprehensive review of the research program which  
19 forms the basis for your annual report to Congress.  
20 This would give us the benefit of your advice at the  
21 earliest but most productive stage, and, we believe,  
22 would result in the most efficient use of yours and the  
23 research staff's time. They in effect said we didn't  
24 need a formal review of the long-range plan, but their  
25 review of it would be included in the Congressional

1 review. The timing isn't unreasonable perhaps for that.  
2 Now, we made a response to that in a letter in  
3 December and said it was too late to use the existing  
4 long-range research plan as the basis for our report to  
5 Congress that we did in February of this year.  
6 Nevertheless, we intend to review the plan, and to the  
7 extent needed and practicable, provide you and the  
8 Commissioners with our comments. It is likely that our  
9 comments this year will be based primarily on the review  
10 we carried out in preparation of our report to  
11 Congress. Extensive interaction with the research staff  
12 should not be necessary.

13 Then, in our review of the draft of the plan  
14 that you got here, this thick thing, NUREG-0784, we said  
15 we hope to continue discussions with research staff and  
16 perhaps with the Commission regarding the purpose,  
17 philosophy, scope, and effectiveness of the long-range  
18 research plan and its usefulness to the Commission, to  
19 Research, to the user offices, and to the ACRS.

20 Now, that is one of the reasons for this  
21 meeting today, to continue the discussion. In addition,  
22 we would be happy to discuss further with you how the  
23 timing and content of our review and reports on the  
24 research program might be conducted in the future if the  
25 long-range research plan were to be made available to

1 the ACRS in final or near final form in December of the  
2 forthcoming year.

3           Now, we had some discussion with them at the  
4 June meeting with the Commissioners, and as a result of  
5 that discussion, we wrote them a letter in which we  
6 said, we propose that we discontinue our formal report  
7 to the Commission on the LLRP. However, we expect to  
8 continue to receive the plan both in the draft and final  
9 form, and we expect to utilize it in our review of and  
10 report on the NRC safety program and report to the  
11 Congress.

12           Now, gentlemen, that last proposal doesn't  
13 seem to be different than what the Commission asked us  
14 to do, to use it as part of our report to the Congress.  
15 We put this in a letter to Palladino, because the  
16 requirement of a review by the ACRS was a Commission  
17 requirement in a letter it wrote to Dircks, Com JJE13,  
18 saying it would be reviewed by the ACRS in February. We  
19 said we didn't want to. Joe said, put this in a letter,  
20 and we will see about rescinding our previous advice.

21           Now, we have had some indication from the  
22 Chairman's office that they are not quite ready to  
23 rescind that requirement that we review the plan in  
24 February.

25



1           We are hoping that they will and that we can  
2 go along on the basis in Palladino's letter that we use  
3 it as part of our report to Congress and address it if  
4 we wish in there as appropriate, and that we utilize it  
5 because it is a good document.

6           Now, I would propose that we stick to our guns  
7 and tell the Commission that if the occasion arises, we  
8 think it is useful but we don't want to have to comment  
9 on it formally to the Commission either before it is  
10 approved or after it is approved by the Commission. It  
11 will be incorporated into our report to the Congress  
12 unless -- obviously if there is something we can't  
13 stand, we will write a letter on it.

14           Now, all the Staff is asking is that we review  
15 the document they are working on about October in a  
16 meeting like this and get input from individuals, if you  
17 wish, and not necessarily a formal report by the  
18 committee. And of course, any of our subcommittees may  
19 if they wish devote a meeting or a part of a meeting to  
20 a portion of the long-range research plan when it comes  
21 out in December that interests them, or it can be a part  
22 of any meeting that is scheduled or you can simply try  
23 to relate things in your area to the plan.

24           The Staff will undoubtedly use the plan as  
25 part of their presentation. So I would propose that we



1 go along with the Staff, that when they come out with  
2 this early draft, that we have a meeting. We will  
3 invite as many people as want to attend, and we will  
4 discuss it with them pretty much on a philosophical  
5 basis like we did here where we talked about the  
6 content, the scope, the purpose, how it is arrived at  
7 and what it is used for, and that we try to convince the  
8 Chairman and the Commissioners that we don't need a  
9 formal review, that it will be an input to what we do.

10 Is that generally agreeable? Paul?

11 MR. SHEWMON: If we do this in October, will  
12 we have one that is written under this new format you  
13 have been talking about?

14 MR. GILLISPIE: Yes.

15 MR. SIESS: Well, September --

16 MR. GILLISPIE: We are going to try very hard  
17 the first week in September to have it sent out for  
18 distribution. If we don't have it to Sam for  
19 distribution a month ahead of time for review, we would  
20 say let's go to the next month.

21 MR. SIESS: We need a couple of weeks. People  
22 need to have it a couple of weeks. This won't be a  
23 final document, Paul. This won't be some final  
24 document; this will be input during the operation.

25 MR. SHEWMON: I was just wondering. That

1 sounded like at least an easier document to get through  
2 than this thing. I was curious.

3 MR. GILLISPIE: We are really shooting at  
4 something much shorter at that point to get initial  
5 input, yes.

6 MR. BENDER: There was a point that I don't  
7 think was covered, that is, the relationship between the  
8 NRC program and the DOE program, whatever it is, will  
9 somewhere show up in that long-range plan.

10 MR. SIESS: It was covered. They said they  
11 have representatives on each of the DOE task groups and  
12 that those people are the same ones who are in charge of  
13 writing these chapters.

14 MR. BENDER: That just got past me.

15 MR. SIESS: Whether the relationship will be  
16 clear, I don't know, but the input is there.

17 MR. GILLISPIE: DOE is developing a lot of  
18 needs but they are not getting money to do the things.  
19 The need for coordination doesn't exist if they are not  
20 doing any research, but the information is what will be  
21 there.

22 MR. BENDER: Well, in fact you have got the  
23 DOE and the international programs as well that are  
24 involved.

25 MR. GILLISPIE: The status of this year's plan?

1 MR. SIESS: Yes.

2 MR. GILLISPIE: It has been voted on, and  
3 right now we are waiting for a -- the only vote sheets  
4 we have gotten are the Chairman's and Ahearne's. The  
5 Chairman on his wrote "I concur," and Ahearne's were  
6 comments. It has never been approved or disapproved;  
7 it has been noted.

8 MR. SIESS: Neither one of them said they had  
9 read it.

10 MR. GILLISPIE: No.

11 MR. SIESS: I think there ought to be a place  
12 for them to check that they have read it.

13 MR. GILLISPIE: So we are still waiting for a  
14 third commissioner to vote. It has served its purpose.  
15 It served a useful purpose, it did what it was supposed  
16 to do. Publishing it now is very much after the fact.

17 MR. MARK: Is this 0784 you are speaking of?

18 MR. GILLISPIE: Yes.

19 MR. SIESS: Paul, I will write up a brief  
20 statement like I just made for the Full Committee, and  
21 if it comes up during the meeting this week, you may  
22 want to address it.

23 MR. SHEWMON: In part of that you will talk  
24 about the new format, what we have to review?

25 MR. SIESS: No. I figure anybody that wasn't

1 here doesn't need to know that. I will just talk about  
2 the decision.

3 MR. SHEWMON: It might have some interest in  
4 whether they are likely to see 374 pages or 37-1/2.

5 MR. SIESS: I will answer that question. But  
6 I just want to put something down that would relate to  
7 our review as far as the Commission is concerned.

8 MR. KERR: Would you be willing to advise  
9 Committee members as to what they should do with this  
10 document that they received at the beginning of the  
11 meeting?

12 MR. DURAISWAMY: It is just for information.  
13 You have to comment on that in April.

14 MR. SIESS: I would suggest you could either  
15 take it home or send it home and do with it at home  
16 whatever you would with any other 374-page document.

17 MR. KERR: Is it 90 percent obsolete, 30  
18 percent obsolete?

19 MR. GILLISPIE: Well, the information is --

20 MR. SHEWMON: The document is deathless, but  
21 you will be getting the abbreviated version next month.

22 MR. SIESS: I will tell you what I intend to  
23 do. I intend to take out the pages that relate to the  
24 structural engineering programs and put them in my file  
25 because there is some good stuff in there.

1           MR. GILLISPIE: It is not obsolete, but there  
2 is no relationship -- we have not detailed anyplace  
3 where the almost \$30 million that we are not spending  
4 that it talks about in there came out of. So there is  
5 no relationship to the actual to that right now.

6           MR. SIESS: Anything else, gentlemen? There  
7 is another meeting starting in here when, Dave?

8           MR. DURAIWAMY: One o'clock.

9           MR. SIESS: Okay. This one is adjourned.

10           [Whereupon, at 12:30 p.m., the meeting was  
11 adjourned.]

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NUCLEAR REGULATORY COMMISSION

This is to certify that the attached proceedings before the

\_\_\_\_\_

in the matter of: ACRS/Subcommittee on Safety Research Program

Date of Proceeding: August 11, 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.

Patricia A. Minson

Official Reporter (Typed)

*Patricia A. Minson*

Official Reporter (Signature)

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Jane N. Beach

Official Reporter (Typed)

Jane N. Beach

Official Reporter (Signature)

ROLE OF ACRS  
IN RESEARCH PROGRAM

- o ADVICE ON NEEDS AND DIRECTIONS
- o TECHNICAL CRITIQUE OF RESULTS
- o ADVICE TO COMMISSION ON BUDGET
- o ADVICE TO CONGRESS ON BUDGET

PREVIOUS LRRP'S  
STRENGTH

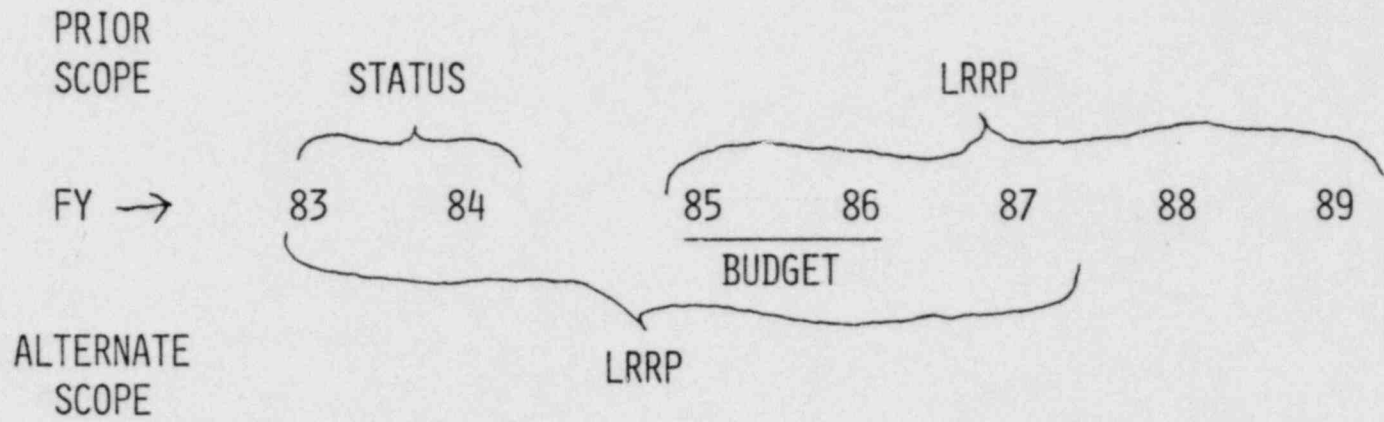
- o COMPREHENSIVE DISPLAY OF CURRENT AND  
FUTURE PROGRAMS
- o WIDE OPEN FOR COMMENT AND ADVICE
- o GENERALLY COORDINATED WITH BUDGET CYCLE

PREVIOUS LRRP'S  
WEAKNESS

- o ABSENCE OF CLEAR PLANNING
  - REGULATORY ISSUES
  - PROBLEM DEFINITIONS
  - BASIC AND SPECIFIC OBJECTIVES
  
- o DIVIDED BY RES ORGANIZATION/BUDGET STRUCTURE, NOT BY PROBLEM AREA
  
- o INCOMPATIBLE WITH PPG INPUT, CAN ONLY FOLLOW PPG OUTPUT
  
- o VERY FAR HORIZON
  - 2 YEARS STATUS
  - 2 YEARS BUDGET
  - 3 YEARS FUTURE



SCOPE OF PLAN  
FALL 1982 - LRRP



1. Introduction
2. Plant Aging (Arlotto)
3. Pressurized Thermal Shock (Arlotto)
4. Equipment Qualification (Arlotto)
5. Severe Accident (Bassett)
6. LOCA and Transient Analysis (Bassett)
7. Advanced Reactors (Bassett)
8. Risk Analysis (Bernero)
9. Human Factors (Goller)
10. Decommissioning (Arlotto)
11. External Events (Arsenault)
12. Radiation Protection and Health Effects (Arsenault)
13. Waste Management (Arsenault)
14. Materials Safety (Bernero)
15. Topical Programs (Goller)
  - Safeguards
  - Emergency Response
  - Plant Instruments and Controls

- Appendix A      Unresolved Safety Issues
- Appendix B      Potential Areas of Research  
Not Covered by Plan
- Appendix C      Listing of Standards Work  
Not Covered by Plan
- Appendix D      Prioritization Strategy

## 2. Aging

Research is needed to study and understand time-related issues such as aging and degradation, methods of examination and testing to determine the condition of components, and interpretation of results of these tests for appropriate action. This work will provide the bases for licensing decisions on whether operating plants continue to meet health and safety requirements in effect at the time of licensing and subsequently imposed health and safety requirements.

### Chapter Elements:

Reactor Vessels

Steam Generators

Piping

Electrical and Mechanical Components

Nondestructive Examination

### 3. Pressurized Thermal Shock

This chapter describes activities to develop and support Commission decisions and future actions on the question of reactor pressure vessel failure due to the injection of low temperature coolant under certain accident conditions. This work has been divided into four parts corresponding to the major kinds of analyses required to support these decisions.

#### Chapter Elements:

1. Accident Sequence Analysis
2. Materials Response
3. Consequence Analysis
4. Analysis of Alternatives

#### 4. Equipment Qualification

This program will study the methods used for qualifying equipment used in nuclear power plants taking into account such factors as effects of synergism, order or sequence of tests, and accelerated aging techniques. Methods will be validated and new methods developed as appropriate to ensure that qualification test results reported by applicants and licensees provide a basis for licensing decisions that ensure protection of the public health and safety.

##### Chapter Elements:

Qualification of Electrical Equipment (Environmental and Functional)

Qualification of Mechanical Equipment (Environmental and Functional)

Seismic Qualification of Equipment



5. Severe Accident

This program supports the reassessment of the regulatory treatment of severe accidents. It comprises the coordinated phenomenological research programs needed to develop a sound technical basis for NRC decisions concerning the ability of reactors to cope with these accidents.

Chapter Elements:

1. Severe Accident Sequence Analysis
2. Accident Management
3. Behavior of Damaged Fuel
4. Hydrogen Generation and Control
5. Fuel - Structure Interaction
6. Containment Analysis
7. Fission Product Release and Transport

## 6. LOCA and Transient Analysis

This program provides the methods and data for coolant systems analysis to fulfill the needs: quantification of Appendix K margins; determination of adequacy of operator guidelines and procedures; analysis of complex plant transients. The research related to Appendix K is nearly completed and will culminate in the support of revisions to Appendix K during the next two years. The emphasis is now shifting to continued code application to the analysis of plant transients, with concurrent development of models for specific problems such as fluid-fluid mixing, and testing of systems response in facilities such as Semiscale, PKL, LOBI, and ROSA.

### Chapter Elements:

1. DBA Thermal Hydraulics
2. Code Assessment
3. Problems in Model Development
4. Integral Systems Tests

7. Advanced Reactors

uc. Incorporates safety research necessary to support NRC regulatory activities in conjunction with all advanced nuclear power reactors types.

Chapter Elements:

1. Fast Breeder Reactors
2. Gas Cooled Reactors

## 8. Risk Analysis

This chapter describes the work being carried out using probabilistic risk assessment techniques to support the regulatory process. This work falls into two broad classifications. The first relates to work being undertaken in direct support of specifically identified Commission actions, discussions, and rulemakings. Among such activities are Part 60 licensing support and support for decisions on severe accident rulemaking, pressurized thermal shock, and the Indian Point hearings. The second class of activities relates to the generic requirements to integrate PRA techniques into the broad body of regulatory practice. Examples of where such integration is mandated is in the application of the safety goal, IREP/NREP, determination of value/impact of regulatory actions (regulatory analysis) improved inspection protocols, and in the future analysis and evaluation of operating data.

The former class of activities, i.e., those that support specific regulatory activities, are described in those sections of the plan that deal with each topical area, e.g., waste management, pressurized thermal shock. This chapter describes only those projects being carried out to support PRA integration. The projects being conducted within this program area have been divided into six topical areas listed below. While sharing some common requirements for information and analysis, each of these has a sufficiently different set of needs to warrant separate discussion.

### Chapter Elements:

1. Safety Goal Implementation
2. Regulatory Analysis
3. Improved Inspection Protocols
4. IREP/NREP
5. AEOD
6. Prioritization of Resources
7. Periodic and Systematic Review

## 9. Human Factors

This program will provide the technical basis to support current and anticipated regulatory needs in the application of human factors to nuclear facilities. The research includes work on control room design and evaluation criteria, personnel qualifications and staffing, management and organizational criteria, plant procedures and human reliability.

### Chapter Elements:

- Human Factors Engineering
- Licensee Qualifications
- Management and Organization
- Plant Procedures
- Human Reliability



## 10. Decommissioning

The decommissioning program will develop information needed to establish regulations governing decommissioning of nuclear facilities and to establish criteria for design of new facilities in such a way that eventual decommissioning is facilitated, thereby ensuring that the public health and safety is protected at this phase of plant life.

### Chapter Elements:

Decommissioning of Nuclear Power Plants

Decommissioning of Fuel Cycle Facilities

Decommissioning of Non-Fuel Cycle Facilities, e.g.,

Radiopharmaceutical Plants

Facilitation of Decommissioning

## 11. External Events

External events in the form of extreme natural and man-related phenomena pose a threat to the safe operation of nuclear facilities. The character of these events and the probabilistic distribution of their magnitudes affect facility design, operation, and siting, as well as the level of risk associated with an operating facility. Uncertainties in the characterization of these events and their probabilities lead to conservatism in regulation and uncertainty in risk assessment. It is important that the resulting uncertainty in risk estimates be adequately and properly assessed and, if significant, reduced.

### Chapter Elements:

Natural Phenomena (Earthquakes, Floods, Tornadoes)

Man-Related Phenomena

## 12. Radiation Protection and Health Effects

A major goal of the Commission is to ensure that the individual and societal risks of radiological damage to health resulting from licensed activities are accepted and as low as reasonably achievable, taking into account the state of technology, the economics of improvements in relationship to benefits to the public health and safety, and other societal and socioeconomic considerations such as the use of atomic energy in the public interest.

Achieving that goal requires, in addition to safety regulation programs, a technical capability to identify the potential sources of radiological exposure, to assess the relationship between exposure and consequent health effects, to determine the acceptable limits for individual exposure, and to provide technical guidance concerning the measurement and control of occupational exposure.

Significant uncertainties remain in the areas of radionuclide metabolism and internal dosimetry, dose-effect relationships and risk estimation, environmental pathways for public exposure, and radiological and dosimetric measurements in the workplace.

### Chapter Elements:

Metabolism and Internal Dosimetry

Health Effects and Risk Estimation

Environmental Pathways for Public Exposure

Occupational Radiological Protection

### 13. Waste Management

Regulation of radioactive waste management requires a technical capability to assess compliance of a waste management system with the regulatory requirements for operational safety, occupational radiological protection, and long-term waste isolation and to assess the risks associated with its operation. The sources of uncertainty in the assessment of compliance and risk differ between the three program elements of high-level waste, low-level waste, and uranium recovery.

#### Chapter Elements:

High-Level Waste

Low-Level Waste

Uranium Recovery

#### 14. Materials Safety

This program deals with projects being carried out to support the regulation of activities involving the processing, transportation, interim storage, and end uses of radioactive materials in facilities other than nuclear power plants. Because of the broad scope and diverse needs of the particular elements of this program, work has been divided on the basis of the specific facility to which these tasks are directed.

##### Chapter Elements:

- Fuel Cycle (including the interim and long-term storage of fuel)
- Radioisotope Utilization (including the commercial uses of byproducts)
- Transportation



## 15. Topical Programs

### Safeguards:

This program will study systems and procedures that can be used for safeguarding specific nuclear material and nuclear facilities. The research will provide the technical basis for developing or revising Federal regulations and guidance relating to physical protection and material control and accounting.

### Chapter Element:

Physical Protection

Material Control and Accounting

### Emergency Preparedness:

This program will provide the technical basis to support current and anticipated regulatory needs for emergency preparedness at licensed nuclear facilities. The research includes work on the development and evaluation of methods and techniques to better ensure the capability of Federal, State, and local government and licensees to mitigate the consequences of a radiological emergency.

### Chapter Element:

Licensee Functions

Other Parties Functions

### Quality Assurance:

This program will provide the technical basis to support current and anticipated regulatory needs in the quality assurance area. The research includes work on the development of methods and techniques to improve regulatory criteria for establishing and implementing

quality assurance activities at licensed nuclear facilities.

Chapter Elements:

Criteria Development

QA Implementation

## Plant Instruments and Controls

This program will involve research to improve and confirm the availability of methods of reactor and associated process systems protection, control, and instrumentation to minimize the probability of abnormal operation or accidents and to mitigate the consequences of an accident if one should occur.

### Chapter Elements:

- Safety Implications of Control Systems
- Component Assessments
- Diagnostics
- New I&C Technology

Appendix A      Unresolved Safety Issues

Appendix B      Potential Areas of Research Not Covered by Plan

Appendix C      Listing of Standards Work Not Covered by Plan

Appendix D      Prioritization Strategy

RESEARCH PLANNING SYSTEM

LRRP PURPOSE

1. AGREEMENT ON THE GOALS AND NEEDS
2. AGREEMENT ON PRIORITIES
3. AGREEMENT ON INFORMATION NEEDED TO SATISFY THE NEEDS
4. STIMULATE TECHNICAL ADVICE ON HOW TO ACHIEVE INFORMATION RESULTS

BUDGET PURPOSE

DETAIL THE PROGRAMS TO ACHIEVE THE AGREED UPON RESEARCH RESULTS

SCHEDULE

IDENTIFY AND DEFINE PROGRAM AREAS AND LIST

AUGUST 6

DISCUSS ELEMENTS WITH NRR/NMSS STAFF

AUGUST 16 (WEEK OF)

DEFINE ELEMENTS AND LIST REGULATORY NEEDS

AUGUST 23

PRIORITIZE THE NEEDS WITHIN EACH ELEMENT AND COMPLETE  
WRITTEN JUSTIFICATION

SEPTEMBER 3

REQUEST NRR/NMSS/ACRS COMMENTS WEEK OF

SEPTEMBER 6

COMPLETE APPENDICES

SEPTEMBER 10

COMPLETE FIRST DRAFT OF PROGRAM DESCRIPTIONS

SEPTEMBER 24

COMPLETE ASSEMBLY AND REQUEST NRR/NMSS/ACRS COMMENTS  
AND SUGGESTIONS

SEPTEMBER 30

INCORPORATE APPROPRIATE COMMENTS; EDIT AND SUBMIT  
FOR COMMISSION APPROVAL

OCTOBER 29



## STRUCTURE

1. IS AN OVERALL STRUCTURE NEEDED?
2. HOW SHOULD FUTURE PROGRAMMATIC WORK BE ADDRESSED?
3. TIME PERIOD COVERED?
4. ADDITIONAL PROGRAMS OR ELEMENTS?

CROSSCUTS

1. PLAN TO ORGANIZATION
2. PLAN TO DECISION UNITS
3. DECISION UNITS TO ORGANIZATION
4. OTHER

## CHAPTER OUTLINE

1. PROGRAM AREA
  - A. STATEMENT OF PURPOSE
  
2. PROGRAM ELEMENTS (MULTIPLE)
  - A. ELEMENT DEFINITION
  - B. SPECIFIC REGULATORY NEEDS
  - C. JUSTIFICATION OF THE IMPORTANCE OF EACH IDENTIFIED NEED
  - D. PRIORITIZE REGULATORY NEEDS WITHIN EACH ELEMENT
  
3. RESEARCH PROGRAM DESCRIPTION BY ELEMENT  
THIS WILL RELATE MAJOR RESEARCH DELIVERABLES TO REGULATORY NEEDS INCLUDING A SCHEDULE, COSTS, AND RELATIONSHIP TO OTHER PROGRAMS (INTERNAL AND EXTERNAL).