DATE ISSUED: 10/2/82

MINUTES OF THE
ACRS SUBCOMMITTEE MEETING ON
SAFETY RESEARCH PROGRAM
AUGUST 11, 1982
WASHINGTON, D.C.

INTRODUCTION

The ACRS Subcommittee on Safety Research Program held a meeting on August 11, 1982, at 1717 H Street, N.W., Washington, D.C., to discuss the format and content of the NRC's next Long-Range Research Plan (LRRP). The entire meeting was open to the public attendance. Mr. Sam Duraiswamy was the Designated Federal Employee for the meeting. A tentative presentation schedule for the meeting is included in Attachment A. A list of documents submitted to the Subcommittee is included in Attachment B.

ATTENDEES:

ACRS: C. P. Siess (Subcommittee Chairman), D. Okrent, J. C. Mark, D. A. Ward, M. Bender, P. G. Shewmon, M. Plesset, D. W. Moeller, and Sam Duraiswamy (Designated Federal Employee).

Principal NRC Speakers: R. Bernero and F. Gillespie.

EXECUTIVE SESSION

Dr. Siess, the Subcommittee Chairman, convened the meeting at 8:30 a.m. and indicated that the main purpose of the meeting was to discuss the purpose, philosophy, scope, and effectiveness of, and approach to, the NRC's next LRRP, and also the role of the ACRS in reviewing the LRRP. He said that the Subcommittee had received neither written comments nor requests for time to make oral statements from members of the public.

Prior to holding discussions with the NRC Staff on the scheduled items, Dr. Siess commented that in accordance with the procedure outlined in COMJA-80-13, "Procedures for Endorsing Research Contracts," dated April 22, 1980, the ACRS had reviewed the first LRRP for FY 1983-1987 (NUREG-0740) and provided its comments to the Commission in its report dated April 14, 1981. The second ACRS report on the draft LRRP for FY 1984-1988 (NUREG-0784) was issued on April 5, 1982. In addition to reviewing the LRRP, the

ACRS has been reviewing the NRC Safety Research Program and budget when preparing its annual reports to the Commission and the Congress on the related matter. Actually, the ACRS has been reviewing formally the NRC Safety Research Program three times a year, and that, in his opinion, is two times too often. Further, in order to provide detailed comments on the LRRP, several ACRS Subcommittees, that are involved in reviewing different sections of the LRRP, will have to have at least one meeting to discuss the plan and prepare comments; the comments by various Subcommittees will then have to be discussed and approved by the full Committee. He believes that this is a time-consuming process and will take at least two to three months. In his opinion, NRC Staff's schedule does not allow this much time for the ACRS to review and comment on the LRRP. Realizing these difficulties and in order to minimize the duplicative ACRS review of the NRC Safety Research Program, the ACRS wrote a letter to the Commission on June 7, 1982 proposing that the ACRS discontinue its formal report to the Commission on the LRRP. Although the Commission somewhat agreed to such a proposal during its meeting with the ACRS on July 4, 1982, it has not yet provided anything in writing indicating its willingness to relieve ACRS of this duty. Dr. Siess suggested that it would be helpful if RES provided its opinion on the role of the ACRS in relation to the LRRP.

PRESENTATION BY RES

Role of the ACRS in relation to the LRRP and the NRC Safety Research Program - Mr. R. Bernero

Prior to discussing the role of the ACRS in relation to the LRRP and the NRC Safety Research Program, Mr. Bernero said that he agrees with the comment made by Dr. Siess that the ACRS review of the NRC Safety Research Program three times a year is at least two times too many. In his opinion, RES does not have a clear understanding of the interaction with the ACRS with regard to LRRP, and he believes that a more effective way should be developed to interact with the ACRS.

With regard to the role of the ACRS in relation to the NRC research program, Mr. Bernero said that RES believes that the ACRS role is to provide:

- Advice on research needs and directions
- Advice to the Commission on the NRC research program and budget

° Advice to the Congress on the NRC research program and budget
° Technical comments on the results of the research

Dr. Siess asked whether the ACRS should concern itself with only what it thinks should be in the LRRP or should it start evaluating the user offices' needs and then evaluate the research programs against those needs. Mr. Bernero responded that he does not believe that the user offices really have a long-range regulatory plan. He believes that the LRRP incorporates significant elements of regulatory directions. In his opinion, if the ACRS took a narrow approach and reviewed only what is in the LRRP without reviewing the long-range needs of the user offices, there would be a vacuum. He believes that the ACRS review scope should be expanded to include the long-range needs of the user offices.

With reference to certain information in the transcript of the Commission meeting held on July 27, 1982 in relation to the FY 1984-1985 budget, Dr. Okrent commented that he does not believe that several of the ACRS positions in NUREG-0875 have been adequately dealt with by RES. He believes that the responses provided by RES at that meeting to certain ACRS comments would have been different if an ACRS representative had been present at the meeting. He suggested that the Committee consider making such an arrangement.

Dr. Okrent commented further that, in his opinion, the time spent by the ACRS in reviewing and developing technical positions on major regulatory questions such as Implementation of Safety Goals and Severe Accident Rulemaking is much less than the time spent for reviewing the NRC Safety Research Program. Further, he believes that the ACRS should have a systematic look at the needs of the regulatory Staff and other things associated with their functions.

Dr. Siess said that, although the point raised by Dr. Okrent with regard to having an ACRS representative at the Commission meeting is a valid one, he believes that it would be difficult to have one representative who could speak for the whole ACRS.

With regard to Dr. Okrent's comment related to the time spent in reviewing the regulatory issues, Dr. Siess said that he agrees with Dr. Okrent that the ACRS is not spending a tremendous amount of time in reviewing such issues. However, he is not sure how and when the ACRS would find enough time to devote to such issues. He also believes that the ACRS has more contact with RES than it needs.

Strengths and Weakness of Previous LRRPs - Mr. R. Bernero

Mr. Bernero discussed briefly the strengths and weakness of previous LRRPs.

Strengths

- Previous LRRPs included a comprehensive display of current and future programs.
- Since the overall program descriptions were included in one document, it was easy to refer to, review and comment on.
- Previous LRRPs were generally coordinated with the yearly budget cycle.

Weaknesses (see Attachment C, Page 1)

- Previous LRRPs included only long-range research programs but not actually long-range research plans. They lacked clear definition of regulatory issues, and clear planning for resolution of such issues.
- They were divided by RES organization/budget structure, not by problem area.
- Previous LRRPs included things that were too far in the future and it was very difficult to predict things that far in the future.

Mr. Bernero mentioned that the next LRRP might include research plans either for FY 1985 through 1989 or for FY 1983 through 1987 (Attachment C, Page 2).

Alternate Format and Chapter Content for the Next LRRP - Mr. F. Gillespie

Mr. Gillespie discussed briefly what the next LRRP will include and how it will differ from the previous LRRPs:

- The main purpose of the next LRRP will be to define the regulatory goals and the information needs to meet those goals. It will include also priorities on various research programs.
- It will be much shorter than the previous LRRPs. The aim is for about 150 pages as compared to about 375 in the last LRRP (NUREG-0784).
- It will be aimed at Office Directors' level. It will not include complete details of programs unless it is absolutely necessary. Program details will be included in the budget proposal and will be referred to in the LRRP.
- The timing of the submittal of the next LRRP to the Commission will be such that it will provide input to the PPG document.

Mr. Bender commented that the LRRP should identify the kinds of expertise that are being maintained by the Commission to answer questions in certain areas including the lengths of time for which such expertise will be maintained.

Mr. Beach responded that if RES wants to establish expertise in certain areas, they need to have a user office request. When tried in the past without a user office request, they were turned down in the budget process by the Office of Management and Budget (OMB).

Dr. Okrent asked whether RES plans to include in the LRRP a meaningful evaluation of whether the research being planned will provide information necessary to meet the Agency needs. Mr. Gillespie responded that they plan to list the needs first and then try to find out what information is necessary to meet those needs. If they find out that the information needed for a certain need is impossible to obtain, they probably will not include that need in the LRRP. If there is a need for which the information necessary could be obtained but with a large expenditure, then such a need will be included in the LRRP to offer the Commission an alternative.

Dr. Siess asked what RES would do if certain information necessary to meet a need that was identified by a user office and agreed to by RES was not possible to obtain. Mr. Gillespie responded that RES would discuss with the user office the difficulities associated with obtaining such information and try to figure out a way to get around that issue. He added that those needs for which the information needed would be impossible to obtain would not be included in the LRRP.

Dr. Okrent commented that the LRRP should include all the needs and the information necessary to meet such needs irrespective of whether such information could be obtained or not. For those needs for which the necessary information could not be obtained, they should include an evaluation of the difficulties, and alternative means for obtaining such information. If the LRRP does not include such issues, then it will be an incomplete document.

Dr. Kerr commented that in those cases where RES believes that it may be difficult to obtain the needed information through research, they should approach a contractor and ask him to find out whether the information could be obtained by research. Mr. Bernero responded that this approach has been used by the NRC Staff.

Dr. Kerr asked how useful ACRS comments are to RES, and how RES decides which of the ACRS comments and/or recommendations to listen to. Mr. Bernero responded that ACRS comments on the long-range and broader aspects of issues have been and will be useful to RES. He said that all of the ACRS comments and recommendations may not always be listened to by RES because they have an obligation to meet the user-office research needs.

Indicating that the written responses provided by RES to the ACRS recommendations listed in NUREG-0875 seems to imply that RES either did not understand clearly the thoughts behind some of the ACRS comments or chose to ignore what ACRS had in mind, Dr. Kerr asked whether the interaction between RES and ACRS was adequate to enable RES to understand the real thrust of some of the ACRS comments. Mr. Bernero responded that he believes that RES normally understands

the real intent of ACRS comments. However, he believes that a more logical presentation by RES to the ACRS on what they are doing and which direction they are planning to go will facilitate the exchange of information between RES and ACRS.

Mr. Ward commented that the NRC seems to place emphasis in the wrong place; he believes that, first, a long-range Agency goal should be developed and based on that a long-range research plan should be developed, if necessary.

Mr. Bender commented that he believes also that RES should develop a document including the long-range policy of the Agency and get it approved by the Commission; based on that, they should try to develop a LRRP.

Dr. Plesset asked whether RES has evaluated or plans to evaluate the more expensive experimental programs on a cost-benefit basis to determine their effectiveness and hence to determine whether they need to be redirected to be more useful. Mr. Bernero responded that RES has performed such evaluation in the past; one such example is the evaluation of the effectiveness and usefulness of LOFT.

Dr. Siess commented that since the LRRP is a projection of the current programs, he does not see a need for a five-year plan. He believes that the purposes of the LRRP could be achieved if it included a two-year plan rather than a five-year plan. Mr. Gillespie responded that they will look into the reasons for developing a five-year plan.

Dr. Siess commented also that the LRRP should include NRC plans on the contingency items such as LMFBR research. Mr. Gillespie responded that they plan to include long-range research plan for LMFBR in the next LRRP.

Mr. Gillespie said that each chapter in the next LRRP will cover a major program area such as Aging, Pressurized Thermal Shock, Equipment Qualification, Severe

Accidents, etc. (Attachment C, Page 3). Each chapter in the next LRRP will include the following (Attachment C, Page 4):

- Program area
- Program elements
- Program description by element including cost, schedule, and relationship to other programs.

Mr. Gillespie said that as a first step in the next LRRP development process, RES has identified the major program areas; they plan to meet with NRR and other user offices as soon as possible to discuss with and to determine whether the major program areas identified by RES include the high priority needs of the user offices. He mentioned that RES is thinking about separating the large-break LOCA work that is now included under the LOCA and Transient Analysis and include it under a separate chapter in the next LRRP. However, there have been some differing opinions among the Staff with regard to this approach. He said that the list of program areas identified by RES is not a final one; they are open to any suggestions from the user offices as well as the ACRS.

Mr. Gillespie said that they intend to include in the LRRP the method used by RES in prioritizing the research programs. They plan to include whether priorities were based on risk reduction potential, reduction of uncertainty in risk, or some other basis.

Mr. Bender suggested that it would be helpful to include "cross-cuts" by program areas. Mr. Gillespie responded that they plan to include "cross-cuts" between:

- Plan to Organization
- Plan to Decision Units
- Decision Units to Organization

Dr. Mark suggested that it would be helpful if RES included cross-cuts between research associated with primary and secondary systems. Mr. Gillespie said that they have talked about including such cross-cuts and he believes that it could be done easily.

Dr. Siess said that cross-cuts could be easily obtained by using a computer.

Mr. Gillespie said that since they already have individual projects in the computer, they would be able to obtain cross-cuts between Decision Units. Although they have some intention of using a computer for providing cross-cuts, he does not want to commit to such approach at this time.

Mr. Ward asked why Improved Decay Heat Removal Systems is not included as a separate program area in the list prepared by RES. Mr. Gillespie responded that they will consider Mr. Ward's comment.

Dr. Siess asked whether RES plans to consider the following questions when making choice between various programs:

- How should resources be allocated among safety of (or risk from) plants now operating, plants already designed but not yet reviewed for construction permits (not yet built), and plants not yet designed?

- How should resources be allocated between research on accident prevention and accident mitigation?

- How should resources be allocated between research to reduce real risk and research to reduce perceived risk, if they should be different?

- How should resources be allocated between research to convince the NRC Staff that a plant is "safe" and research to convince the Atomic Safety and Licensing Board or the public that a plant is "safe"?

- When should research be done by NRC, whey by Department of Energy (DOE), when by industry, and when and how by a combination of these?

Mr. Gillespie responded that they intend to consider questions such as those listed above when prioritizing the research programs.

Dr. Siess asked whether there would be any advantage to having a senior review group similar to the Committee to Review Generic Requirements (CRGR) to look at the research needs and the adequacy of the justification provided by user offices for such needs. Mr. Gillespie responded that they already have a system, similar to what CRGR has been following, for the development of research programs.

Indicating that it may be difficult to establish relative priorities among the work involved in different offices, Dr. Siess asked whether guidance is expected of the Commission for such cases. Mr. Gillespie responded that they plan to submit to the Commission a list of items identified by RES and agreed to by the user offices, along with a brief description of the needs and the necessary research to obtain information to meet those needs and seek Commission comments on those items. They also plan to provide a list of priorities, including items more than they could budget for, and seek Commission guidance as to which of those items should be dropped and which should be carried out. Based on the Commission comments, they will revise the list accordingly.

Schedule for the Next LRRP - Mr. F. Gillespie

Mr. Gillespie discussed briefly the schedule for the development of the next LRRP (Attachment C, Page 5). He said that RES has already come up with a list of major program areas and the next step is to meet with NRR and other user offices to obtain their comments on the list of major program areas. He stated that the next LRRP is scheduled to be submitted to the Commission for approval by the end of October 1982. They plan to submit a draft copy of the next LRRP to the ACRS in the first week of September 1982.

He said that RES agrees with the ACRS that a formal review of the LRRP by ACRS is not needed. Therefore, he believes that comments from the ACRS need not be formally reported to the Commission; any comments, oral or written, from various ACRS Subcommittees or even from individual ACRS members would be helpful to RES.

Mr. Bender commented that the LRRP should include a complete schedule including the date of completion of the research efforts. If a particular program is going to be extended farther than the five-year period for which the LRRP is written, it should be specified in the LRRP even if RES does not know what the expenditure would be beyond that five-year period.

Dr. Siess said that if the next LRRP is made available to the ACRS in final or near final form in December, the Safety Research Program Subcommittee may meet with RES to discuss how and on what schedule the ACRS review of and reports on the NRC Safety Research Program might be conducted.

SUBCOMMITTEE REMARKS

Dr. Siess proposed the following:

- There is no reason to change the proposal made in the ACRS letter to the Commission dated June 7, 1982, that the ACRS discontinue its formal report to the Commission on the LRRP but that it will continue to use the LRRP in its reviews of, and reports on, the NRC Safety Research Program.

- If the first draft of the next LRRP is made available to the ACRS in September, the Safety Research Program Subcommittee may have a meeting in October to review that document and provide some philosophical-type of comments.

- When conducting meetings to obtain information for use in the preparation of the next ACRS report to the Congress, cognizant Subcommittees may want to devote a portion of their meeting to discuss the LRRP.

- Since the LRRP includes an overall view of the NRC Safety Research Program, coupled with the fact that RES will use the LRRP as a basis for their budget proposal for FY 1985 and FY 1986, ACRS may want to use the LRRP as a basis for its report to the Congress to the maximum extent practicable.

The Subcommittee agreed to the proposal made by Dr. Siess.

Dr. Siess thanked all participants and adjourned the meeting at 12:30 p.m.

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A transcript of the open portion of the meeting is available in the NRC Public Document Room at 1717 H Street, N.W., Washington, D.C., or can be obtained at cost from Alderson Reporting, 400 Virginia Avenue, S.W., Washington, D.C. 202/554-2345.

LIST OF DOCUMENTS SUBMITTED TO THE SUBCOMMITTEE

1. Handout by RES related to the proposed chapter outline for the next LRRP.
2. Draft Long-Range Research Plan for FY 1984-1988 (NUREG-0784).

ATTACHMENT A

TENTATIVE PRESENTATION SCHEDULE
ACRS SUBCOMMITTEE MEETING ON
SAFETY RESEARCH PROGRAM
AUGUST 11, 1982
Room 1046, 1717 H Street, N.W.
WASHINGTON, D.C.

1.	Executive Session	8:30 - 8:45 am
2.	Role of the ACRS in the NRC Safety Research Program	8:45 - 9:30 am
3.	Review of Strengths and Weaknesses of Previous LRRPs	9:30 - 10:15 am
	Break	10:15 - 10:25 am
4.	Alternate Format and Chapter Content for FY 1984 - 1989 LRRP	10:25 - 11:15 am
5.	Agenda and Schedule for Preparation of FY 1984 - 1989 LRRP	11:15 - 11:45 am
6.	Other Items	11:45 - 12:30 pm

a. How Regulatory Goals are defined before research plans are made (example: Severe Accident Research Plan).

b. Role of PRA in establishing Research priorities.

c. LRRP for LMFBR.

d. Coordination Between RES and research user offices on Technical Assistance Program Activities.

e. Mechanism for Resolving Research user offices' comments and differences.

f. Research done by others.

NOTE: Items (a) through (f) under 6 may be presented along with items 3 through 5, as appropriate.

7.	Subcommittee Remarks	12:30 - 12:45 pm
8.	Adjourn	12:45 pm

ATTACHMENT B

PREVIOUS LRRP'S
WEAKNESS

- o ABSENCE OF CLEAR PLANNING
  - REGULATORY ISSUES
  - PROBLEM DEFINITIONS
  - BASIC AND SPECIFIC OBJECTIVES

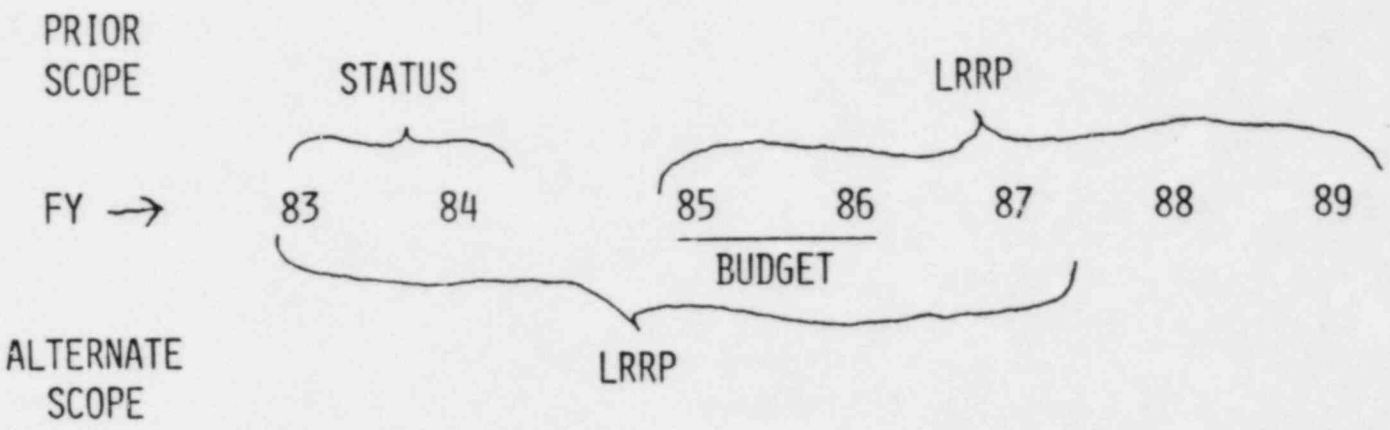
- o DIVIDED BY RES ORGANIZATION/BUDGET STRUCTURE, NOT BY PROBLEM AREA

- o INCOMPATIBLE WITH PPG INPUT, CAN ONLY FOLLOW PPG OUTPUT

- o VERY FAR HORIZON
  - 2 YEARS STATUS
  - 2 YEARS BUDGET
  - 3 YEARS FUTURE

ATTACHMENT C

SCOPE OF PLAN
FALL 1982 - LRRP



RECORD COPY

Safety Research Program
Subcommittee Mtg.
August 11, 1982
F. Gillespie.

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

ATTACHMENT C

RECORD COPY

Safety Research Program

August 11, 1982

C. Gillespie.

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).

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