



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

February 3, 1997

MEMORANDUM TO: Chairman Jackson  
Commissioner Rogers  
Commissioner Dicus  
Commissioner Diaz  
Commissioner McGaffigan

FROM: Hugh L. Thompson, Jr. *Hugh L. Thompson, Jr.*  
Acting Executive Director for Operations

SUBJECT: NUCLEAR SAFETY RESEARCH REVIEW COMMITTEE (NSRRC)  
REPORT DATED JANUARY 15, 1997

Attached, please find the NSRRC's report on its meeting held on November 14-15, 1996. During this meeting, the NSRRC undertook a self-examination of the value it is contributing to the Agency and generated a set of criteria by which the future performance of the Committee could be assessed. In addition, the Committee compared its activities with those of other advisory committees, and it developed a set of operating principles and criteria to improve its advisory effectiveness and coordination with other advisory committees, including the ACRS.

The NSRRC covered the above topics extensively and several conclusions and recommendations resulted from the Committee's discussions. A detailed listing of values and performance evaluation criteria that were developed is included in Meeting Minutes attached to the NSRRC report. These values and criteria will now be used by the NSRRC as a guide to enhance its advisory effectiveness to the NRC.

The relationship between the ACRS and the NSRRC committees was discussed at length, and various ideas and suggestions were considered by the NSRRC to improve on the way it provides advice on safety research issues and programs. A table, also included in the Report Meeting Minutes, showing the differences in responsibilities of these committees will be used as a guide by the NSRRC in conducting its advisory role to the Office of Research. One specific recommendation regarding joint meetings was to have the NSRRC and ACRS Subcommittees meet jointly or attend each other's meetings to avoid duplication and save RES staff time and resources.

Contact:  
J Cortez, RES  
415-6596

The RES staff will be working with the NSRRC in the coming months to implement the above guidelines and criteria to improve its advisory effectiveness and coordination with other NRC advisory committees. As part of this effort, RES will provide the feedback on the usefulness of past recommendations that NSRRC requested (page 7 of the attachment).

Note that a planned Commission briefing scheduled for December 17, 1996, to discuss Committee recommendations resulting from the NSRRC November 1996 meeting was postponed until more information was available. The attached report should bring the Commission up-to-date on the NSRRC committee activities on this subject. If the Commission desires a briefing following review of this report the staff will schedule a briefing by the NSRRC.

The NSRRC self-examination was conducted as part of the response to COMSECY 96-028, August 21, 1996, regarding the proposed Direction Setting Issue 19, Independent Oversight. The self-examination will be used as an input to the EDO evaluation of this independent oversight activity which we plan to complete in November 1997.

Attachment: Letter to D. Morrison from  
E. Thomas Boulette dated  
January 15, 1997

cc: SECY  
OGC  
OPA  
OCA



**Boston Edison**

Pilgrim Nuclear Power Station  
Rocky Hill Road  
Plymouth, Massachusetts 02360

E. T. Boulette, PhD  
Senior Vice President - Nuclear

January 15, 1997

Dr. David L. Morrison, Director  
Office of Nuclear Regulatory Research  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Dr. Morrison:

The Nuclear Safety Research Review Committee (NSRRC) met on November 14-15, 1996, at NRC Headquarters. NSRRC members present included E. T. Boulette, Chair, Michael Golay, Robert Hatcher, Charles Mayo, John Taylor, and Sumio Yukawa. S. George Bankoff joined the committee on the 15th. Also present were David Morrison, Director, Office of Nuclear Regulatory Research; Jose Luis M. Cortez, NSRRC Federal Designated Official, and his assistant, Ms. Sandra Young.

At this meeting, the NSRRC undertook a self-examination of the value it is contributing to the Agency and generated a set of criteria by which the future performance of the Committee could be assessed. In addition, the Committee compared its activities with those of other advisory committees and it developed a set of operating principles and criteria to improve its advisory effectiveness and coordination with other advisory committees, including the ACRS.

The Committee covered the above topics extensively and several conclusions and recommendations resulted from the Committee's discussions. A detailed listing of values and performance evaluation criteria is included in the enclosed meeting minutes. These values and criteria will be used by the NSRRC in the future as a guide to enhance its advisory effectiveness.

In addition, the Committee revised the NSRRC Subcommittee structure assignments and renamed a Subcommittee to reflect RES's new responsibilities in the nuclear waste area. A tentative NSRRC Committee/Subcommittee meeting schedule was agreed to for the coming year in the March-April 1997 time frame.

Other topics of general interest to the Committee were also discussed and some recommendations made regarding committee organization of future meetings, committee charter and committee evaluation and review procedures. As discussed below, various recommendations were unanimously adapted.

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January 15, 1997

### Relationship of the ACRS and NSRRC:

The relationship between the ACRS and the NSRRC committees was discussed at length and various ideas and suggestions were considered by the Committee in order to improve the manner in which the NSRRC receives RES staff input and Agency regulatory requirements and the way NSRRC provides advice on safety research issues and programs. A table, showing the major differences in assignments and responsibilities of these committees, is included in the meeting minutes. This table will be used as a guide by the NSRRC in conducting its advisory role to the Office of Research.

One key recommendation was that relevant NSRRC and ACRS Subcommittees meet jointly or attend each other's meetings on the topics of mutual interest and in some cases jointly hear RES staff presentations to avoid duplication. Moreover this would save RES staff time and resources. At present, the NSRRC does not see the need for joint meetings as long as NSRRC members are informed about the issues being discussed in full ACRS committee and ACRS subcommittee meetings.

As to NSRRC participation in ACRS meetings, the NSRRC Committee will look to RES staff to identify appropriate ACRS meetings for NSRRC members to attend. NSRRC members and the Chairman of the NSRRC should be kept informed about ACRS Subcommittee meetings, schedules and agenda subjects as soon as they become available to RES staff.

### Discussion on NSRRC Subcommittee Structure and Activities:

There are presently five NSRRC Subcommittees: Materials Engineering, Accident Analysis, I&C and Human Factors, Waste, and PRA.

Initially, the discussions centered around the Waste Subcommittee and its present role in view of the fact that the high level waste program has been transferred to NMSS and the only research within RES is related to radionuclide transport in the environment. It was suggested and agreed to by the NSRRC that the Waste Subcommittee name be changed to Radionuclide Transport and that it meet whenever it is desirable, but probably no more than once per year.

The Committee also considered whether the PRA and the I&C and Human Factors Subcommittees should be combined. It was agreed to keep these subcommittees separate because the PRA Subcommittee is focused on the research needs in support of performance-based regulation, which is quite different from the responsibilities of the other Subcommittee. One of the big issues in PRA is the handling of uncertainty in the broad range of phenomena that are dealt with in nuclear reactor safety.

Dr. David L. Morrison, Director

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It was also agreed to leave the Accident Analysis Subcommittee in place and have George Bankoff as the new chairman.

Regarding subcommittee meetings it was suggested by Dr. Morrison that we have subcommittee meetings in February/March, 1997, and a full committee meeting in late March or April, 1997. It was also suggested that all subcommittees (other than the Radionuclide Subcommittee) meet at least twice a year and to schedule two full committee meetings during 1997. See the meeting minutes for more details on meeting dates.

#### Discussion on NSRRC Meeting Structure and Procedures:

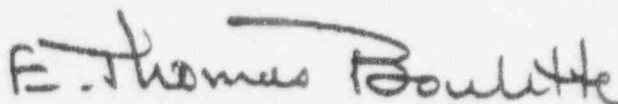
The NSRRC would like to have more feedback from the RES staff on the recommendations that have been made by the NSRRC, in terms of what advice has been useful, accepted/not accepted, modified, including the reasons for the RES staff positions. In addition, the NSRRC feels that committee performance evaluations should be done by RES staff and the NSRRC every two years to better determine the effectiveness of the advice and guidance given to the NRC by the NSRRC.

Past performance of the Committee should be based on their past recommendations (2-3 years worth of subcommittee reports) to see what impacts the Committee's recommendations have made on the program, citing specific examples. Feedback from RES staff on Committee recommendations and/or suggestions would also allow the Committee to evaluate its effectiveness on a continuing basis. The idea is for NSRRC to be able to develop a "score" sheet on the Committee's recommendations to the staff and staff disposition of these recommendations as a function of time.

#### April 1997 Meeting - Tentative Plans

The meeting in April should focus on core competencies by the RES office to carry out its duties to the Commission and help ensure that the Commission maintains an independent technical base. In addition, the NSRRC will review its charter for modifications as needed, consistent with the assessment criteria.

Sincerely,



E. Thomas Boulette, Chairman  
Nuclear Safety Research Review Committee



## MEETING MINUTES - NOVEMBER 14-15, 1996

The NSRRC Committee meeting was held on the afternoon of November 14 and the morning of November 15, 1996.

Members present included E. T. Boulette, Chair, Michael Golay, Robert Hatcher, Charles Mayo, John Taylor, Sumio Yakawa. George Bankoff joined the Committee on the 15th. Also present were David Morrison, Director - Office of Nuclear Regulatory Research, Jose Cortez and Sandra Young.

At this meeting, the NSRRC undertook a self-examination of the value it is contributing to the Agency and generated a set of criteria by which the future performance of the Committee could be assessed. In addition, the Committee compared its activities with those of other NRC advisory committees and it developed a set of operating principles and criteria to improve its advisory effectiveness and coordination with other advisory committees.

The stated purpose of the meeting as noted in the Federal Register was to:

1. Evaluate the value and contributions of this Committee, in assisting the Office of Nuclear Regulatory Research (RES) in carrying out the NRC's regulatory responsibility and at the same time, develop a set of criteria under which the performance of the NSRRC could be evaluated in the future.
2. Discuss the roles of the NSRRC and the NRC's Advisory Committee on Reactor Safeguards (ACRS) in terms of areas of common interest of the two Committees and to find ways to effectively coordinate activities of common interest to make sure the Committees' activities are supportive and complementary in nature and avoid duplication.

The Committee discussed both of the above topics in detail and several conclusions and recommendations resulted from the Committee's discussions. A detailed listing of values and performance evaluation criteria is presented in the next section.

In addition, the Committee revised the NSRRC Subcommittee structure and assignments. One of the subcommittees has now been renamed to reflect RES's new responsibilities in the nuclear waste area. A tentative NSRRC Committee/Subcommittee meeting schedule was agreed to for the coming year in the March-April 1997 time frame.

Other topics of general interest to the Committee were also discussed and recommendations were made regarding Committee organization of future meetings, Committee charter and Committee evaluation and review procedures to facilitate future assessment of NSRRC usefulness and effectiveness.

## 1. VALUES AND CONTRIBUTIONS OF THE NSRRC

With respect to the values of the NSRRC, the Committee concluded that the most important values of the Committee to the Office of Research include:

1. The NSRRC is the only NRC Advisory Committee that has a broad scope and complete responsibility to cover all of the safety research programs. This is a real benefit because other committees look only at specialized research areas, and only when regulatory issues are discussed.
2. The NSRRC appraises the research priorities and RES core competencies independent of regulatory issues, and by so doing assists in the identification of core capabilities of the Office of Research.
3. The NSRRC provides independent opinions and technical advice on RES program content because most Committee members are affiliated with the research community and have relevant technical backgrounds outside the nuclear industry.
4. The NSRRC is in a position to support the RES Director in controversial safety research issues by offering an independent strictly technical perspective.
5. The NSRRC assists the Director of RES in determining the appropriateness and correctness (total balance and content) of the direction of the research program keeping in mind the research priorities consistent with available budgets.
6. The NSRRC assists the RES Director in evaluating whether the most qualified people are doing the research work at the best possible research establishments, making their recommendations on the best resources available.
7. Assessment of the likelihood of the program meeting NRC regulatory needs and providing insights on long-term anticipatory research needs is a unique function of the NSRRC.
8. A comprehensive global view of research is provided by the NSRRC including advice on priorities and an assessment of program leverage obtained through international cooperative R&D.
9. The NSRRC assists the RES Director with identification of critical research areas that are not being pursued by staff or being supported under the RES program by making alternative recommendations to resolve existing safety problems using new techniques or methods as necessary (e.g., the ROSA-AP600 test program in Japan recommendation).

## II. PERFORMANCE CRITERIA FOR THE NSRRC

The Committee noted the following as possible criteria to be used by both the Committee and the NRC staff receiving the Committee's advice and counsel for future evaluation of the performance of the NSRRC:

1. Provide independent technical assessment of the scope and priorities of the research program against near-term and long-range needs of the Agency, consistent with available resources (people and dollars).
2. Recommend areas where RES can more effectively and efficiently address the needs of its customers through collaborative research projects, implementation of technologies developed by others, and use of best performers.
3. Audit and effectively communicate the value of NRC's research program to the Commission and licensees (provide independent technical oversight for those areas that improve external support for decisions, i.e. budgets).
4. Provide guidance in defining an appropriate level of core competencies in prioritizing individual programs including identifying improvements in research program planning and execution.
5. Provide the RES Director with independent guidance on controversial programs or those having large uncertainty as to the use and application of potential results.
6. Monitor the frequency of acceptance and implementation of NSRRC recommendations regarding RES programs based on the quality and timeliness of NSRRC recommendations.
7. Evaluate the effectiveness of interfaces of NSRRC with the ACRS and other committees.
8. Identify and nurture critical research issues to ensure that NRC safety research remains of the highest quality.
9. Help formulate a broad-based safety research program and assess program results to ensure timely closure or extension and support when appropriate.
10. Periodic effectiveness review.



### III. NSRRC/ACRS RELATIONSHIPS AND RESPONSIBILITIES

The relationship between these two Committees was discussed at length and various ideas and suggestions were considered by the NSRRC in order to improve the manner in which the NSRRC receives RES staff input and Agency regulatory requirements and the way NSRRC provides advice on safety research issues and programs.

Other ideas and suggestions were offered regarding ways in which the NRC could better obtain advice and counsel from the NSRRC on RES programs including interaction and coordination with other advisory committees such as the ACRS.

One of the recommendations was that relevant NSRRC and ACRS Subcommittees meet jointly or attend each other's meetings on the topics of mutual interest and in some cases jointly hear pertinent RES staff presentations to avoid duplication. Moreover, this would save RES staff time and resources. NOTE: NSRRC members have already agreed to participate in some ACRS Subcommittee activities. This will allow the NSRRC to better understand the ACRS's nuclear safety research needs. At present, the NSRRC does not see the need for joint meetings as long as NSRRC members are informed about the issues being discussed in full ACRS Committee and ACRS Subcommittee meetings.

As to NSRRC participation in ACRS meetings, the NSRRC will look to RES staff to identify appropriate ACRS meetings for NSRRC members to attend. NSRRC members and the Chairman of the NSRRC should be kept informed about ACRS Subcommittee meetings, schedules and agenda subjects as soon as they become available to RES staff. NSRRC members agreed to share the burden of attending the many ACRS Subcommittee meetings by designating only one Committee member to cover each meeting and report back to their respective subcommittees followed by a presentation or report to the full Committee.

The following table compares the various roles and functions of the NSRRC and the ACRS. This table was prepared to point out the differences in Committee assignments and responsibilities, as noted above.

## COMPARISON OF ACRS/NSRRC COMMITTEE RESPONSIBILITIES

### ACRS

- License application focus.
- Review safety studies and facility license applications and submit reports as required by NRC regulations.
- Focus is on the safety of operations that may require research results.
- Advise NRC on hazards of proposed or existing reactor facilities and the adequacy of proposed safety standards.
- Perform other duties NRC may request (including review of the RES program).
- The ACRS may conduct reviews on specific generic matters or nuclear facility safety related items requiring scientific analysis (e.g. steam generator failure modes).
- Example: The ACRS is concerned with whether risk-informed performance-based regulation (PBR) is a good idea and would lead the NRC in the direction of improving safety with fewer regulations.
- ACRS is a safety review committee.
- Reviews the effectiveness of RES programs and other NRC offices in connection with the development of rules and standards.

### NSRRC

- Research focus.
- Reviews technical content of techniques or methods used to study a given nuclear safety concern or technical issue.
- Focus on the content and management of research programs.
- Advises the NRC on the best technical capabilities to address scientific basis for standards.
- NSRRC primary focus is on safety research methodologies.
- Kind of safety research to be done in any area of concern (e.g. steam generator tube flaws or cracks occurring as a result of overpressurization).
- Example: The NSRRC is more concerned with the tools that research needs to provide in order to allow the NRC to be able to go in that direction (PBR).
- The NSRRC is a safety research review committee.
- Reviews RES programs only, looking at the priorities, costs and technical content of safety research programs.

#### IV. DISCUSSION ON SUBCOMMITTEE ACTIVITIES

NSRRC Subcommittees are: Materials Engineering, Accident Analysis, I&C and Human Factors, Waste and PRA.

Initially, the discussions centered around the Waste Subcommittee and its present role in view of the fact that the high-level waste program has been transferred to NMSS. The ACNW Committee has responsibility in the area of overall risk assessment and performance assessment of the long-term nuclear waste repository, and presently, the only research within RES is related to radionuclide transport in the environment. This program is funded at about \$2 million in FY 1996. It was suggested and agreed to by the NSRRC that the Waste Subcommittee name be changed to Radionuclide Transport and that it meet whenever it is desirable but probably no more than once per year.

The Committee also considered whether the PRA and the I&C and Human Factors Subcommittees should be combined. After some discussion, it was agreed to keep these Subcommittees separate because the PRA Subcommittee is focused on the research needs in support of performance-based regulation, which is quite different from the responsibilities of the other Subcommittee. One of the big issues in PRA is the handling of uncertainty in the broad range of phenomena that are dealt with in nuclear reactor safety.

It was also agreed to leave the Accident Analysis Subcommittee in place and have George Bankoff named as the new Chairman now that Tony Baratta has officially resigned from the NSRRC. Bankoff would not serve on the PRA Subcommittee.

Regarding Subcommittee meetings, it was suggested by Dr. Morrison that we have at least one Subcommittee meeting in February/March 1997, before the budget calls and prior to a full Committee meeting which should be in late March or April 1997. Preliminary Committee schedules are to be proposed and sent out to all members in the coming weeks. This schedule would then be used to inform the ACRS about the NSRRC calendar of meetings. Dr. Cortez will get a proposed calendar from T. Boulette and inform everyone including the ACRS. Dr. Boulette suggested that all Subcommittees (other than the Radionuclide Subcommittee) meet at least twice a year and he also plans to schedule two full Committee meetings during 1997. These meetings should be in April and October in such a way as to satisfy the RES Director's needs. Dr. Boulette suggested that meeting dates be set by the 1st of December of this year for the meetings to be held in March/April 1997, and only tentative dates established for all the fall meetings.

## V. DISCUSSIONS ON MEETING STRUCTURE AND PROCEDURES

Committee Chairman (Boulette) requested feedback from the RES staff on the recommendations made by the NSRRC, in terms of what has been useful, accepted, not accepted, modified, as well as the reasons why. In addition, an NSRRC performance evaluation should be done by RES staff and the NSRRC every 2 years to determine the effectiveness of the advice and guidance given by the Committee.

Past performance of Committee should be based on their past recommendations (2-3 years worth of Subcommittee reports) to see what impacts the Committee's recommendations have made on the program. Specific examples of impact should be reported. Feedback from staff on Committee recommendations and/or suggestions is needed in order for the Committee to evaluate its effectiveness on a continuing basis. Specifically, the NSRRC wants response from the staff as to the disposition of recommendations to date. For future meetings, the NSRRC requests an assessment of the actions taken by RES with regard to the recommendations made in previous meetings. NSRRC will develop a "score" sheet on the Committee's recommendations and staff disposition of these recommendations over the years. The responses from the staff should include the basis for the action on recommendation disposition.

## VI. APRIL 1997 MEETING - TENTATIVE PLANS

The meeting in April should focus on core competencies by the RES office to carry out its duties to the Commission and help ensure that the Commission maintains an independent technical base. A set of assessment criteria will be developed at this meeting. In addition, the Committee will review its charter for modifications to be consistent with the assessment criteria.

We recommended that the staff provide background materials to Committee members two weeks prior to meetings, including instruction notes to identify what is included and how these materials are to be used during meeting.