UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, D. C. 20555

January 30, 1997

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

FROM: John T. Larkins, Executive Director,
ACRS/ACNW

SUBJECT: ASSESSMENT OF TECHNICAL EXPERTISE NEEDED FOR THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

I. Introduction

In response to a request from Chairman Jackson regarding the type of technical expertise that should be represented on the Advisory Committee on Reactor Safeguards (ACRS) in order to best carry out its statutory responsibilities and in providing advice to the Commission, the ACRS staff has performed an assessment of the areas of expertise which will be sought in recruiting new ACRS members. This assessment was reviewed only by the ACRS Chairman and Vice Chairman, but not by the full Committee. With Commission concurrence, this assessment will serve as the basis for seeking qualified candidates for ACRS membership and making recommendations to the Commission.

ACRS members are appointed to four-year terms as specified in the Atomic Energy Act. The ACRS membership includes individuals who have retired from the nuclear power industry, universities, or DOE laboratories, and individuals currently employed by universities or DOE laboratories. It typically requires up to a year for new members to become fully involved in their ACRS duties.

II. Background

Prior to 1983, there was no policy limiting the length of time a member could serve on the ACRS. Consequently, new appointments occurred on an infrequent basis. In 1983, the Commission decided to limit the number of terms to three (Attachment 1). This limitation has had a significant impact on turnover of Committee members. As a result of this policy, new appointments now occur much more frequently. The average tenure for the members currently on the Committee is less than four years compared to an

13

average of more than 12 years prior to the implementation of the above-mentioned policy. This has an impact on the institutional memory and understanding of the technical basis for prior Committee decisions. This policy, however, affords the opportunity to alter the technical expertise of the ACRS more frequently to respond to the charging needs of the Commission.

Prior to the mid-1980s, the Commission routinely accepted the ACRS recommendations for the selection of new members. In the mid-1980s, the Commission adopted the practice of providing guidance for the selection and appointment of new members. As an example, the Commission directed the ACRS to recruit members with a strong operational (e.g., ex-utility managers) background to help address recurring operational questions and issues. The service of these individuals has been exemplary in meeting that goal and these individuals have significantly helped the Committee in other areas, such as advanced reactor design reviews.

In 1994, the Commission established new policy for selection of new ACRS members, including creation of a Screening Panel (Attachment 2) to review the qualifications of candidates and make recommendations to the Commission independent of the ACRS. In accordance with this policy, the Commission provides feedback on the technical expertise needed on the Committee in addition to approving the appointment (Attachment 3). It is worth noting that the ACRS has always maintained a cadre of members with expertise in key technical areas such as nuclear engineering, thermal-hydraulics, nuclear power plant operations, materials engineering and metallurgy, structural/seismic engineering, severe accident phenomenon, and more recently in PRA and digital instrumentation and control systems. The selection of these key technical areas was based on the nature of the ongoing and anticipated ACRS activities. Although it was preferable to have an individual with a nuclear background, it was not an essential element in the selection, as long as the individual had superior technical skills in one of the sought after technical areas. Members would acquire the understanding of nuclear technology by serving on the Committee. Additionally, the ACRS has supplemented its technical expertise by the use of expert consultants in addressing specific technical issues. The number of consultants and the extent to which consultants are utilized in ACRS reviews have been significantly reduced in the last few years.

III. Discussion

The principal areas of responsibility that the ACRS expects to be important in the next five years include the following:

- Review of operating nuclear power plant experience from the perspective of significant/unaddressed safety issues and an assurance of continued safe operation. These issues include plant aging, retrofitting of digital instrumentation and control systems in operating plants, fire protection. steam generator integrity, and materials performance.

- Safety implications of deregulation issues resulting from changes such as the Energy Policy Act of 1992 (e.g., power upgrades, increased fuel lifetime, and downsized work forces).

- Regulatory effectiveness issues such as the use of the NRC Safety Goal Policy and the use of a risk-informed, performance-based regulatory approach.

- Review of the ongoing and proposed research programs to determine the extent to which they address the regulatory needs of the agency. These include research sponsored by other organizations, including foreign countries.

- Assessment of the adequacy of regulatory tools (e.g., computational methods, thermal hydraulics evaluations, and industry codes and standards).

- License renewal issues.

- Standard plant designs.

- Review of significant regulatory initiatives (e.g., safety-related rules, regulatory guides, standard review plans, and policy statements).

These areas currently make up the majority of the ACRS workload. As a result, a significant portion of the needed expertise is available within the current membership. The most pressing needs will be to replace the expertise of retiring members and to supplement expertise in new/expanding technical areas.

The ACRS adds value to the regulatory process by providing independent advice to the Commission in resolving challenging technical issues that the NRC staff is addressing. However, equally valuable is the ACRS advice to the Commission which identifies and brings to resolution important issues not being worked on by the NRC staff. A notable example of this is the ACRS development of the first proposal for an NRC Safety Goal Policy. A more recent example is the ACRS recognition of the new regulatory needs associated with the review of digital instrumentation and control systems. The Committee plans to be proactive in identifying emerging technical issues and providing advice to the Commission in resolving such issues.

Some of the needed expertise on the ACRS will be influenced by the ongoing and planned NRC staff activities on which the ACRS provides advice to the Commission. The focus will be on selecting ACRS members with proven intellectual ability to deal with broad technical issues and make significant contributions to Commission decisions and to improvement in the regulatory process.

The areas of technical expertise required by the Committee for the successful performance of its responsibilities are highlighted in the first column of the matrix shown in the attached Table. These technical areas were developed based on a review of ongoing and anticipated NRC regulatory activities. The matrix shown in Figure 1 lists the technical areas of expertise of current members and those areas in which the needed expertise can be provided by consultants. The choice to use consultants was made for those areas where adequate expertise is not possessed by ACRS members and is not needed on a regular basis. This matrix will be updated as new members are appointed and existing members leave and will serve as an instrument to develop recommendations for the selection of future members.

In developing our assessment of the ACRS principal tasks, we have used the NRC Five-Year Plan, the ACRS list of Priority Issues, the discussion during the October 17-19, 1996 Regulatory Policies and Practices Subcommittee meeting, the Direction Setting Issue papers, and to a lesser extent our knowledge of yet undecided initiatives, such as NRC oversight of some of DOE activities.

IV. Conclusions

Three vacancies occurred in 1996 with the retirement of Mr. Carroll, Mr. Lindblad, and Mr. Wylie. One of these vacancies has been filled with the appointment of Mr. Barton. Two additional vacancies will occur in 1997 with the retirement of Dr. Catton on February 25, 1997, and Dr. Shack on July 31, 1997, who decided not to seek a second term. We believe the Commission's interests would be best served by the appointment of:

(1) An individual with proven thermal hydraulics and computational fluid dynamics expertise.

(2) An individual with structural mechanics/materials engineering and metallurgy expertise. A preference would be given to obtaining an individual with working knowledge of ASME Codes and Standards.

(3) An individual with both plant operations and application of probabilistic risk assessment methodology expertise.

(4) An individual with plant operations experience, a detailed knowledge of at least some of the current plant designs, and a detailed knowledge of NRC regulations and practices. A preference would be given to obtaining an individual with electrical power systems expertise.

We are actively recruiting individuals with the required skills and expertise and anticipate making recommendations to the Commission for appointment of new members within the next few weeks.

Attachments:

Table - Matrix of Required Technical Expertise Areas and Existing Coverage by ACRS Members

Att. 1 - Memorandum dated 9/16/83 from N. J. Palladino for R. F. Fraley, ACRS, "Reappointment of ACRS Members"

Att. 2 - Memorandum dated 5/4/94 from John C. Hoyle, Assistant Secretary, to James M. Taylor, EDO, and John T. Larkins, ACRS, "COMIS-94-003 - Expanded Input in Advisory Committee Selections"

Att. 3 - Memorandum dated 6/20/94 from John C. Hoyle, Acting Secretary, to James M. Taylor, EDO, and John T. Larkins, ACRS, "COMSECY-94-018 - Advisory Committee Member Selection"

Table - Matrix of Required Technical Expertise Areas and Existing Coverage by ACRS Members

Required Tech. Expertise	Area Targeted for Member Recruitment	Existing Member Technical Expertise[1]								
		TSK	GA	JB	MHF	DWM	DAP	RLS	WJS	CON[2]
Power Plant Operations	Yes			X		x		x		
Current Reactor Designs	Yes	x		X	x		x	x	x	
Regulatory Policy & Practice	Yes	x		x		x	x	X	x	
Advanced Reactor Designs	No	x			x		x	x	x	
Probabilistic Risk Assessment	Yes[3]	x	X				x			
Human/Organizational Factors	No		X	x		x		x		
Thermal Hydraulics	Yes	x			x			x		X
Fire Protection	No		x				x			X
Materials Eng.&Metallurgy	Yes[4]	x					x	x	X	
Instrumentation and Control	No		x			X				
Reactor Fuels	No						X		x	
Severe Accident Phen.	No	X			X		X			
Accident Management	No	x		x	x					
Fission Product & Aerosol	No	X			x		X			
Structural Engineering	No								x	X
Extreme External Phenomena	No		x						x	X

[1] A large "X "indicates recognized expertise in the technical area, a lower case "x" indicates a working knowledge in the area.

[2] Technical areas indicated under this column will be covered using consultants to the ACRS

[3] Requirements will focus on individuals with operating plant experience, detailed knowledge of plant systems and operating procedures and experience in the application of PRA.

[4] ACRS member William Shack has indicated he will not seek reappointment.

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

CHAIRMAN

September 16, 1983

MEMORANDUM FOR: R. F. Fraley, Executive Director
Advisory Committee on Reactor Safeguards

FROM: Nunzio J. Palladino

SUBJECT: REAPPOINTMENT OF ACRS MEMBERS

The Commission has decided that ACRS members appointed in the future shall be appointed to no more than three consecutive terms.

To implement this policy with regard to current members of the Committee, the Commission has approved the following implementation plan:

-- Current ACRS members who are in their first term shall be limited to a maximum of three consecutive terms.

-- Current ACRS members who are in their second or third terms shall be limited to a maximum of four consecutive terms.

-- Current ACRS members who have already served more than three consecutive terms shall be limited to a maximum of one more consecutive term upon expiration of their current term.

In setting these limits, the Commission does not intend to create a presumption that reappointment within them will become the normal course. Rather, the Commission will continue, as it has in the past, to treat pending vacancies on the ACRS on case-by-case basis.

cc: Commissioner Gilinsky
Commissioner Roberts
Commissioner Asselstine
Commissioner Bernthal
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19

ATTACHMENT 1

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

OFFICE OF THE SECRETARY

May 4, 1994

MEMORANDUM TO: James M. Taylor
Executive Director for Operations

John T. Larkins, Executive Director,
Advisory Committee on Reactor Safeguards and
Advisory Committee on Nuclear Waste

FROM: John C. Hoyle, Assistant Secretary

SUBJECT: COMJS-94-003 - EXPANDED INPUT IN ADVISORY COMMITTEE SELECTIONS

The Commission (with all Commissioners agreeing) has approved the following procedure for the future selections of new members on advisory committees:

1) The Commission will be provided a draft Federal Register notice and proposed press release and a list of the professional societies/technical organizations for the solicitation of nominations. These documents will indicate what specific expertise/skills are being sought for the opening. The specific expertise/skills will be chosen in consultation with the advisory committee which has the opening.

2) At the time of publication of the Federal Register notice and press release, notification of the search for nominations will be given to appropriate professional societies/technical organizations. The advisory committee with the opening should be specifically invited to suggest candidates.

3) A screening panel will be established to review the resulting nominations. The panel will be composed of:

   a) a representative of the Commission or the principal staff office with whom the committee works,

   b) a (full-time federal employee) representative of the advisory committee with the existing or anticipated vacancy, and

   c) an individual (full-time federal employee) identified by the Commission, preferably from outside the agency.

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20

who possesses the expertise/skills being sought.

4) Each screening panel will:

a) Review and rate the nominations for the selecting official using as benchmarks the specific expertise/skills being sought for the opening, as well as the individual's breadth of knowledge and ability/experience in applying his/her skills to problems outside of their specific field of expertise. The panel's report should list all the qualified candidates, and it should rank at least the best qualified candidates. A brief narrative should be provided identifying the criteria and rationale for the best qualified rankings.

b) In carrying out the provisions of a) above, the panel may seek the advice of other individuals whose views may be useful to the screening panel.

c) Submit a copy of the panel's report to the appropriate committee for its independent recommendation on the nominees, as well as submit a copy to the Commission (or to the designated selecting official for the particular advisory committee).

5) The advisory committee should submit its selection recommendations to the screening panel, and/or the Commission (or the designated selecting official) as they see fit.

This process should be implemented for the selection of advisory committee members for all cases which begin after the issue date of this SRM. For those selections which are currently in process, the previous process should be used.

NRC's Advisory Committee Management Officer, with input from the advisory committees and from the screening panels, should provide an evaluation of the functioning of this procedure after a two-year period.

cc: The Chairman
Commissioner Rogers
Commissioner Remick
Commissioner de Planque
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21