ACRS SUBCOMMITTEE STRUCTURE

SUBCOMMITTEE	Ballinger	Bier	Brown	Dimitrijevic	Halnon	Kirchner	Martin	March-Leuba	Petti	Rempe	Roberts	Sunseri
Licensing												
Design-Centered (CPs & OLs, DCs, SDAs, NPUFs, and Navy)	*C-APR1400*[1] *C-SHINE*	C-GA FMR	M	M	*C- SMR 160* C-Terrestrial	C-NuScale *C-OKLO*	C-X-Energy C-UICU	C-BWRX300 *C-ESBWR*	C-KAIROS	C-AP300 *C-AP1000*	C-TerraPower C-eVinci	*C-APWR* C-Navy
License Renewals	M		M	M	M	M					M	C
Regulatory Rulemaking, Policies and Practices[2]	M	C	M	M	M	M	M	M	C-Part 53	M	M	M
Technical Areas of Expertise												
Accident Analysis (Thermal-Hydraulics, Severe Accidents, and Source Term)	M		M	M		M	M	C-Thermal Hydraulics	C- Source Term	C-Severe Accidents *C-Power Uprates*	M	
Digital I&C Systems[3]			C	M	M			M			M	M
Fuels, Materials, and Structures	C	M			M	M		M	M	M		M
Human Factors, Reliability & PRA		C-Human Factors	M	C - PRA			M		M	M	M	M
Plant Operations, Radiation Protection, & Fire Protection	M		M	M	C		M		M		M	M
Safety Research[4]	M	M	M	M	M	M	M	M	M	C	M	M
ACRS Organization and Planning												
Planning & Procedures						M			M	C		
Total (Chair)	7 (1)	5 (3)	8 (1)	8 (1)	7 (2)	7 (3)	6(2)	6 (2)	8 (3)	7 (2)	8(2)	8 (2)

[1] Although retained in case additional items arise, gray italics denotes inactive (Chair position not included in totals).
[2] Reviews include Safety Goal working group meetings led by Member Bier.
[3] DI&C reviews include Artificial Intelligence working group meetings led by Member Bier.
[4] Reviews include working group meetings led by Members Petti (DSA topics), Dimitrijevic (DRA topics), and Sunseri (DE topics).

July 5, 2023

ACRS SUBCOMMITTEE STRUCTURE

The ACRS is organized around the following technical subcommittees whose purpose is to obtain, analyze, and organize information for consideration by the full committee. Below is a list of the current subcommittees and a general scope of activities associated with the subcommittees.

Design-Centered:

- Review new applications and amendments with a focus on their safety aspects
- Review significant topical reports referenced in or related to applications (note that this could occur in the pre-application phase)
- Review Design Acceptance Criteria (DAC) and Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) issues associated with new reactor designs
- Review applicable guidance and review standards for DC, SDA, OL and COL applications
- Review license renewal applications including subsequent license renewals

License Renewals

- Review individual license renewal applications including subsequent license renewals
- Review NRC and industry activities associated with subsequent license renewal (i.e., life beyond 60)
- In conjunction with the Regulatory Rulemaking, Policies, and Practices Subcommittee, review regulatory requirements and guidance associated with the renewal of operating licenses for nuclear power plants (10 CFR Part 54) and revisions to the Generic Aging Lessons Learned (GALL) Report or GALL-SLR Report

Regulatory Rulemaking, Policies and Practices

- Review relevant staff and industry activities (e.g., transformation, licensing modernization project, etc.) in coordination with cognizant Subcommittees
- Review proposed regulatory requirements and guidance not assigned to specific ACRS Subcommittees
- Examine the coherence and specific aspects of the NRC regulatory process, as appropriate, and consider changes in emphasis needed in safety-related NRC rules and regulatory practices
- Identify important safety issues needing increased (or less) attention and/or resolution in the NRC regulatory process
- Review NRC staff's reevaluation of the effectiveness of existing regulations which were not assigned to other Subcommittees
- Review activities associated with the hazards of DOE facilities in coordination with cognizant Subcommittees
- Review use of defense-in-depth concept in the regulatory process
- Review individual early site permit applications
- Review technical issues associated with emergency planning

- Review regulatory requirements and guidance associated with safeguards and security issues including those associated with losing large areas of a plant due to explosions or fire (10 CFR 50.54 (hh)(2) and 10 CFR52.80(d))
- Review changes in existing and new regulatory requirements and associated guidance (10 CFR Parts 50, 52, 53, 54, and 60) in conjunction with other cognizant Subcommittees
- Interact with working group to consider adequacy of safety goals

Accident Analysis

- Review safety issues associated with severe accident, source term, and thermal hydraulic phenomena, including associated staff activities with NRC codes (e.g., TRACE, PARCS, PATHS, and MELCOR)
- Review related research activities to support Safety Research Subcommittee activities
- Review related issues associated with existing plant and new plant designs in coordination with cognizant Subcommittees
- Review NRC and industry activities associated with the development and introduction of accident tolerant fuel (ATF) in coordination with the Fuels, Materials, and Structures Subcommittee
- Review issues associated with the use of industry- or new DOE-developed accident analysis codes
- Review topical reports for generic accident analysis methodologies
- Review extended power uprate applications as necessary

Digital Instrumentation and Control (DI&C) Systems

- Review regulatory requirements and guidance associated with DI&C systems
- Review related research activities to support Safety Research Subcommittee activities, including readiness to support artificial intelligence applications.
- Review information developed by the staff on the inventory and classification (e.g., by function or other characteristics) of the various types of digital hardware and software systems that are being used and are likely to be used in nuclear power plants
- Review staff evaluation of operating experience with digital systems in the nuclear and other industries to obtain insights regarding potential failures modes
- Review methods for evaluating digital system reliability
- Review NRC staff and industry activities associated with cyber security
- Review related issues associated with new plant designs in coordination with cognizant Subcommittees
- Review facility preparedness with respect to cyber security in coordination with the Plant Operations, Radiation Protection, and Fire Protection Subcommittee

Fuels, Materials, and Structures

- Review related research activities to support Safety Research Subcommittee activities
- Review NRC and industry activities associated with the development and introduction of accident tolerant fuel (ATF) in coordination with the Accident Analysis Subcommittee

- Review NRC and industry activities associated with aging of reactor plant systems, structures, and components (SSCs) due to flow accelerated corrosion, stress corrosion cracking, irradiation embrittlement, general corrosion, and other forms of metal degradation
- Review nondestructive examination techniques used in the detection and sizing of flaws in metallic structures and components such as pressure vessels, piping systems, and steam generator tubes
- Review metallurgical and reactor fuels issues associated with plant life extension, power uprates, and new plant designs in coordination with the cognizant Subcommittees
- Review NRC and industry activities related to the introduction of new reactor core materials and components (including fuel and control rod designs) and related design and performance codes
- Review reactor fuel performance and regulatory issues associated with normal and abnormal conditions in coordination with the cognizant Subcommittees
- Review reactor neutronics analytical methods in coordination with the cognizant Subcommittees.
- Review regulatory requirements and guidance associated with licensing of source material (10 CFR Part 40)
- Review regulatory requirements and guidance associated with the following: disposal of high-level radioactive wastes in geologic repositories (10 CFR Part 60); land disposal of radioactive waste (10 CFR Part 61); licensing of special nuclear material (10 CFR Part 70); packaging and transportation of radioactive material (10 CFR Part 71); independent storage of spent nuclear fuel and high-level radioactive waste and reactor related greater than Class C waste (10 CFR Part 72); and fuel cycle facility oversight
- Review technical and risk-management issues associated with decommissioning
- Review significant operating experience regarding the storage and transportation of radioactive material
- Review NRC and industry activities associated with seismic and structural analyses of reactor plant systems, structures, and components (e.g., steam dryer vibration, structural responses to seismic events, fragility assessments, and the aging and degradation of concrete) in coordination with cognizant Subcommittee
- Evaluate the design and integrity of spent fuel storage pools as well as casks for spent fuel storage and transport

Human Factors, Reliability & PRA

- Review related research activities to support Safety Research Subcommittee activities
- Review the staff's risk-informed regulatory activities including transformation efforts
- Review the application of risk insights in the regulatory process
- Review the consistent and extended use of PRAs in the regulatory process and associated NRC programs
- Review regulatory guidance associated with the development and use of probabilistic risk assessment including the performance of sensitivity and uncertainty analyses of PRA results for risk-informed activities

- Review Probabilistic Seismic Hazard Analysis and its use in nuclear plant regulation in coordination with the cognizant Subcommittee
- Review staff's Level 3 PRA for a reference plant
- Review the impact of common-mode failures on the performance of plant safety systems
- Review NRC staff activities associated with consequence analysis codes
- Review the Accident Sequence Precursor Program and the development of Standardized Plant Analysis Risk (SPAR) models
- Review man-machine interactions, including design and arrangement of the control room and operator response
- Review methods and research for evaluating the effects of automation on human reliability, in coordination with the Digital Instrumentation and Control Systems Subcommittee
- Monitor regulatory approaches for dealing with the effects of automation on human reliability and resilience in other safety-critical industries (e.g., aviation, self-driving cars, medicine)
- Assess reliance on automation versus humans in new licensing submittals
- Review control room habitability issues
- Review regulatory requirements and guidance on human factors issues

Plant Operations, Radiation Protection, and Fire Protection

- Review significant operating events at nuclear power plants
- Review regulatory requirements and guidance associated with protection against ionizing radiation (10 CFR Part 20)
- Provide a briefing to Full Committee on significant operating experience (as needed)
- Coordinate periodic meetings with NRC Regional Offices and visits to NRC licensed facilities
- Review enhancements of the NRC's reactor oversight process
- Review risk-informed plant operations and reactor oversight regulatory activities in coordination with the Human Factors, Reliability & PRA Subcommittee
- Review effects of harsh and adverse environment on plant safety systems
- Coordinate the prioritization and resolution of generic safety issues, either directly handling those items or assigning to appropriate Subcommittees
- Review regulatory requirements and guidance for fire protection at nuclear power plants
- Review related research activities to support Safety Research Subcommittee activities
- Review facility preparedness with respect to cyber security in coordination with the Digital I&C Subcommittee

Safety Research

- Coordinate preparation of the required reviews (including briefings by RES Division: DSA, DRA, and DE) and associated report to the Commission on the overall NRC Safety Research Program.
- Identify new areas of research that are essential for regulatory decision making and research projects that are no longer cost effective and can be eliminated (including the use of new advanced computer methods)
- Review the adequacy of the user office needs for research
- Evaluate whether NRC research places proper emphasis on resolving important regulatory issues
- Consider what research should be done by the NRC, industry, or under cooperative research arrangements between NRC and other organizations
- Identify areas in which NRC should perform long-term research
- Review on-going research of special interest that can affect the mission of the agency

Planning and Procedures

- Prioritize topics and coordinate schedules to be considered by the ACRS
- Organize and implement commitments made at ACRS retreats
- Develop proposed changes to ACRS policies, practices, and bylaws for consideration by the Full Committee
- Implement ACRS policies in planning Full Committee activities, articulating priorities, and scheduling and monitoring activities of the ACRS Subcommittees
- Review Subcommittee structure, tasks, and workload of members and recommend changes, as needed, for Full Committee consideration
- Coordinate ACRS meetings with international organizations or other government agencies (including international outreach activity with advisory committees supporting other regulators)
- Monitor the adequacy of implementation of the memorandum of understanding between the ACRS and the Executive Director for Operations
- Candidate Recruitment - Identify specific technical disciplines needed by the ACRS based on existing membership and the Committee's anticipated workload and qualified candidates

SUBCOMMITTEE MEETING CONDUCT

Subcommittee meetings are conducted for various purposes. Subcommittee chairs have found guidance listed in Table 1 helpful.

Table 1. Subcommittee Chair Guidance

Prior to the Meeting

- Have ACRS staff ask if NRC staff needs a letter
- If warranted, meet with NRC staff (with DFO present) to clarify meeting expectations

Opening Meeting Comments

- Focus at the outset on the fundamental issues
- Recall the history of the problem or issue
- Place the matter in clear perspective

During Meeting

- Call attention to points in dispute or uncertainties
- Control the discussions that ensue within ACRS
- Summarize the discussions from time to time

Closing Meeting Activities

- Request public comments (control length of time per stakeholder; if warranted, remind stakeholder that members do not respond to questions but consider comments)
- Poll members for final comments and whether the topic should be referred to the full committee and key points for consideration.

After the Meeting

- If warranted (e.g., when the decision regarding a letter has changed, etc.), inform the Full Committee and provide recommendations for future actions.

ACRS SUBCOMMITTEE CHAIR GUIDANCE

LETTER AND LETTER REPORT PREPARATION

Writing letters and reports is one of the key duties of ACRS members. The Committee only expresses its opinions through these documents. This writeup s shares some guidance for preparing these documents with the objective of making the process as efficient as possible.

For each topic presented to the ACRS, a technical lead is assigned to facilitate the meeting and ultimately support the Full Committee by drafting a letter or letter report on a topic. The topics vary widely, including Topical Reports and associated Staff Safety Evaluations, Regulatory Guides, Rulemaking, and other topics having the potential to affect nuclear facility safety. Most Committee work is accomplished via Subcommittees, and Subcommittee chairs lead efforts to prepare letters / letter reports for Full Committee consideration. In cases where the subcommittee scope is broad or one member has specific expertise, the ACRS Chairman, or the Subcommittee chair in consultation with the ACRS Chairman, may ask another ACRS member to take the lead in running the meeting and drafting the letter.

The approach for developing a first draft of a letter/letter report varies by member and topic. Some members produce a first draft based on the written material provided and the input gained during the ACRS briefing. They then provide the first draft to other Subcommittee members for review and comment prior to Full Committee deliberation. Other members solicit input from all Subcommittee members and compose a first draft based on this input. In either case, soliciting member and consultant comments following a Subcommittee meeting is the first important step of the committee's deliberation and resolution process to gain consensus. It is important to note that consultants may only provide input at the draft stage of the letter report. Once the consultant comments are considered by the lead ACRS member and accepted, the lead members "owns" this input.

ACRS letters/letter reports typically follow a common structure:

> **Introduction:** what was reviewed, when was it reviewed, what additional information was used.
> **Conclusions and Recommendations:** key conclusions and recommendations that ACRS wants to convey.
> **Background:** the purpose and supporting information of the letter is presented
> **Discussion:** outlines/summarizes the important technical safety points of the topic and any important findings.
> **Summary:** repeat from the earlier section. In the case of a long set of conclusions and recommendations in the front of the letter, a shorter summary is often provided.
> **Response Need:** Because the NRC will formally respond to each letter, a sentence is added if a response is NOT required to help reduce unnecessary effort at the agency.

The overall length of the letter/letter report varies but is usually between 200 and 350 lines. Letters are addressed to the NRC Executive Director for Operations (EDO), and letter reports to the Chair of the Commission. The selected addressee depends on the regulatory importance and our statutory obligation regarding the subject. The audience for our letters/letter reports extends beyond the NRC staff and the Commission. It includes the applicant and informed members of the public. Hence, it is critical that letters be written in a manner that is 'easy-to-understand'.

To be as efficient as possible, synthesis and integration of the information gleaned from the written documentation and oral presentations is critical to good letter writing. Too much detail can obscure the message. Letters should be succinct and written in a high level "executive summary" style. It is often helpful to start the paragraph with the main point and then expand upon it in the paragraph instead of the more scientific approach of identifying all of the evidence and then drawing the conclusion. This is especially true when the letter is basically agreeing with staff findings.

For letter reports covering a larger scope, such as applications for a design certification, a construction

permit or an operating license, an outline (and supporting subheadings in the letter/letter report) can be helpful to establish the main points to be conveyed and facilitate reader understanding. Although taking statements directly out of staff or applicant documents may appear to be a good practice, the context is different in our document. Hence, this practice often requires extensive editing by ACRS members in our 'line-by-line' review of this document.

In many cases, a draft is provided to the applicant, prior to presentation at a Full Committee meeting, to assure there is no proprietary information in the letter. If possible, changes are made to allow the draft to be read in an open meeting. At that point, the draft is read by the lead author into the record during the Full Committee meeting. Major comments are then sought from the members. If major changes are required, the member will revise the draft prior to reconsideration. Once completed (or if there are not major comments), the document is shown on the screen and edited 'line by line' by the committee as a whole. The line-by-line process is time consuming and arduous, but the goal is to get consensus of the committee. 'Soft' votes can be taken during the process to get major agreement on phraseology and keep the process from being bogged down. If a member does not agree with a major point, they can write 'added comments' that will be attached to the letter. During this process, the staff and applicant (if appropriate) are available to provide factual accuracy corrections and answer factual corrections, if necessary. However, to assure the independence of ACRS opinions, the staff and applicant role is limited to factual corrections.

The ACRS usually produces between two and four letters during a Full Committee meeting. Well-written succinct drafts go a long way toward helping expedite our work during the Full Committee meeting.