



## Advisory Committee on Reactor Safeguards (ACRS): The Latest Chapter

“Who We Are and What We Do”

Said Abdel-Khalik  
Chairman, ACRS  
March 11, 2010

---

---

---

---

---

---

---

---



### Outline

- History/Evolution/Charter
- Examples of Significant Contributions
- Role of the ACRS
- Current & Future Challenges

2

---

---

---

---

---

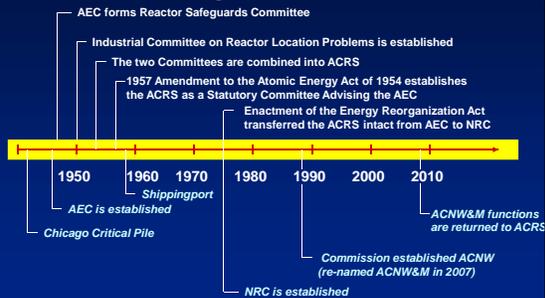
---

---

---



### ACRS - History



3

---

---

---

---

---

---

---

---



### ACRS - Charter

- 1957 Amendment to the Atomic Energy Act of 1954 establishes the ACRS as a Statutory Committee Advising the AEC
- "The Committee shall review safety studies and facility license applications referred to it and shall make reports thereon, shall advise the Commission with regard to the hazards of proposed or existing reactor facilities and the adequacy of proposed reactor safety standards and shall perform other such duties as the Commission may request."

4

---

---

---

---

---

---

---

---



### ACRS 2009 Charter Revision

- ACRS Charter was updated in 2009 to reflect incorporation of responsibilities previously assigned to ACNW&M
- ACRS Radiation Protection & Nuclear Materials Subcommittee was formed to focus ACRS efforts in this area

5

---

---

---

---

---

---

---

---



### ACRS Composition

- The Atomic Energy Act provides for up to 15 members on the ACRS
- ACRS Members are well recognized experts in diverse technical areas that are key to nuclear safety
- ACRS members are appointed by the Commission to 4 year terms (renewable)

6

---

---

---

---

---

---

---

---



### Examples of ACRS Contributions

*“Some of the most significant successes of the Nuclear Regulatory Commission were achieved in large part with the benefit of the wise counsel perhaps even the prodding – of the ACRS”*

Excerpt from a speech by former NRC Chairman Richard Meserve  
Before a symposium honoring the fiftieth anniversary of the ACRS  
(March 4, 2003)

7

---

---

---

---

---

---

---

---



### Examples of ACRS Contributions

- Reactor Siting
  - In 1950 the AEC Reactor Safeguards Committee prepared the first guidance document on siting (WASH-3)
  - In 1961, ACRS outlined reactor siting criteria that focused on quantitative limits, leading the development of TID-14844 and 10 CFR Part 100

8

---

---

---

---

---

---

---

---



### Examples of ACRS Contributions

- ECCS (1960's) – The ACRS challenged the major vendors to include improved ECCS designs for utility licensing applications.
  - By the summer of 1966 General Electric responded in support of the Dresden 3 plant. They introduced a redundant core-flooding system and an automatic depressurization system.
  - Later that year Westinghouse introduced accumulators.

9

---

---

---

---

---

---

---

---



### Examples of ACRS Contributions

- Severe Accidents (Late 1960's & 1970's) - As a result of ACRS concerns, the AEC undertook a study of the potential causes and consequences of core melt accidents. Developments associated with these activities formed the basis for:
  - establishment of a set of general design criteria for nuclear power plants, the forerunner of Appendix A to 10 CFR Part 50
  - the ECCS rulemaking on system acceptance criteria; and
  - the AEC's decision to undertake a study to estimate the probability of a severe accident (WASH-1400)

10

---

---

---

---

---

---

---

---

---

---



### Examples of ACRS Contributions

- Quantitative Safety Goals (1980's) – ACRS recommended establishment of quantitative safety goals to assist in the evaluation of the overall safety of nuclear power plants
  - First set of trial goals was developed by the Committee

11

---

---

---

---

---

---

---

---

---

---



### Examples of ACRS Contributions

- Risk-informed Regulations (1990's – Present) – ACRS has taken a leading role in considering some of the challenging issues that have arisen in this effort
  - Application of defense-in-depth in a risk-informed context
  - Active participation in development of the risk-informed integrated decision-making process and Regulatory Guide 1.174

12

---

---

---

---

---

---

---

---

---

---



### Examples of ACRS Contributions

- Operating Plant Issues
  - Fire safety
  - Operator training and human performance
  - Steam generator performance and degradation
  - License Renewal
  - Power Upgrades
  - GSI-191 PWR Sump Strainer Blockage

13

---

---

---

---

---

---

---

---



### Role of the ACRS

- Technical Excellence, Independence, and Objectivity
  - Reports directly to the Commission
  - Diverse technical expertise enables integrated/multi-disciplinary reviews
  - Reviews are designed to not be duplicative of NRC staff reviews
  - Focus is safety and technical rigor
- Openness, Candor, and Dedication
  - FACA – Ensures openness and transparency in Committee operations
  - Structured forum for stakeholder comments

14

---

---

---

---

---

---

---

---



### ACRS – The Future

- Increasing overall workload indicates need for greater efficiency in operations
- Increase in Reviews of New Reactor Applications and Advanced Reactor designs
- Continuation of focus on safety of operating reactors
- Increase in workload in the area of Radiation Protection and Nuclear Materials and Waste
- Maintain ACRS membership at full strength and technical capabilities
- Continue to enhance outreach

**We welcome your Comments!**  
 Email (edwin.hackett@nrc.gov), Phone 301-415-7360

15

---

---

---

---

---

---

---

---