



SAND2008-3270P

NNSA Technology Partnerships Program Review

Nuclear Regulatory Commission Programs at SNL

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**Nuclear Energy Safety Technologies
Nuclear Energy and Global Security Technologies
Center**



Why SNL supports the USNRC

*The NRC's mission is
protection of public health and safety through
regulation of nuclear power and the civilian use of
nuclear materials*



- **Legislation provides mechanism for DOE laboratories to support NRC for its regulatory research needs**
- **SNL has long history with NRC and significant capability in safety and risk technologies, including modeling, analysis, and experiments**
- **Complements/leverages DOE work**



NRC Facts



Commissioner

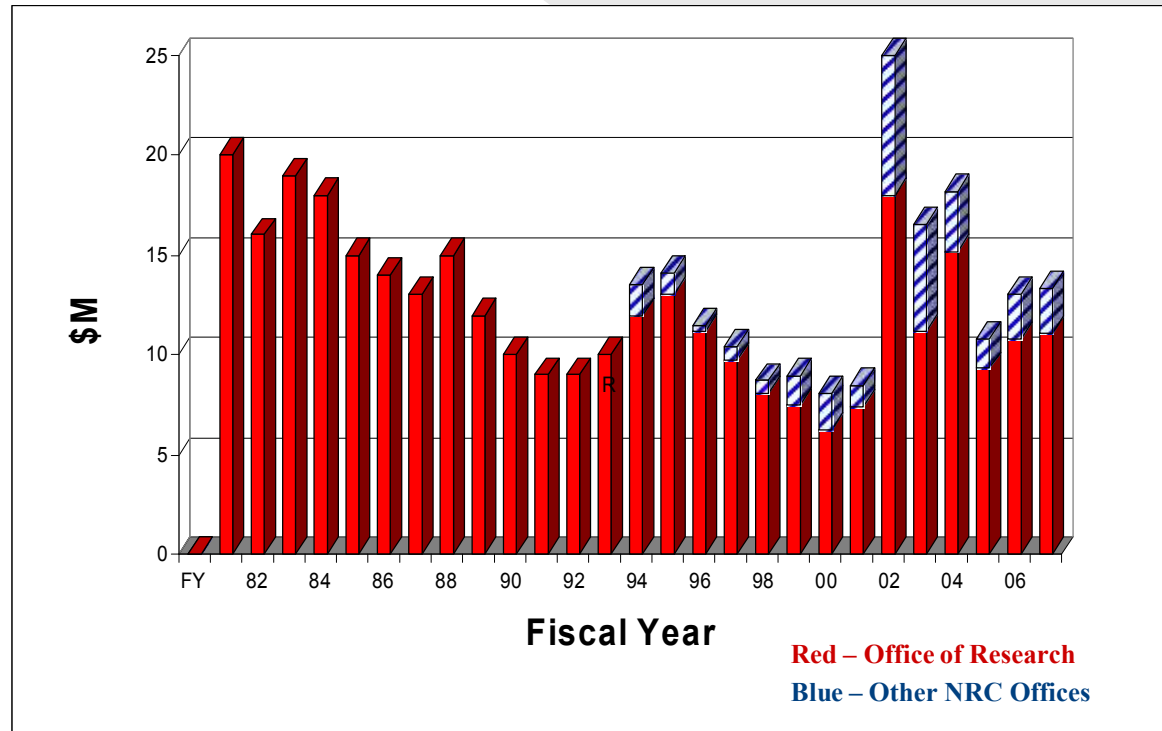
Kristine L. Svinicki

- **Headed by five Commissioners appointed by the President and confirmed by the Senate**
 - One new Commissioner
- **Approximately 3,300 employees and budget of \$917M in FY08**
 - Budget increase of \$100M
- **Created by the Energy Reorganization Act of 1974**
 - NRC does not have dedicated laboratories
- **NRC has docketed seven new Combined Operating License applications for new reactors**



NRC Relationship with Sandia

- Revenue Est. FY08: ~\$14 M
- Projects in FY08: ~50
- New Licensee reviews
 - Balance of Plant
 - NRO
- Program responsibility:
 - Line of Business Director: Marianne Walck, Acting
 - Program Manager: Jeffrey J. Danneels, Acting



Line support:

- FTEs supported 6700\6000\Rest



Nuclear Regulatory Commission Programs

- **Existing Programs**
 - Risk Informed Regulation
 - Probabilistic risk assessment
 - Fire protection
 - Human reliability analysis
 - Severe Accident Modeling
 - Experiments and Structural Analyses
- **Growth/New areas**
 - Digital Instrumentation and Control
 - Cyber Security
 - Licensee Application Reviews
 - BOP
 - State of the Art Consequence Assessment (SOARCA)
 - International





Digital I&C / Cyber Security

- **Builds on DOE and Critical Infrastructure Experience**
- **Nuclear power plants going digital**
 - Non-safety systems
 - International experience
- **Cyber evaluations of Control Systems**
 - Existing Fleet
 - New reactor designs





NRC Office of New Reactors License Application Review Support

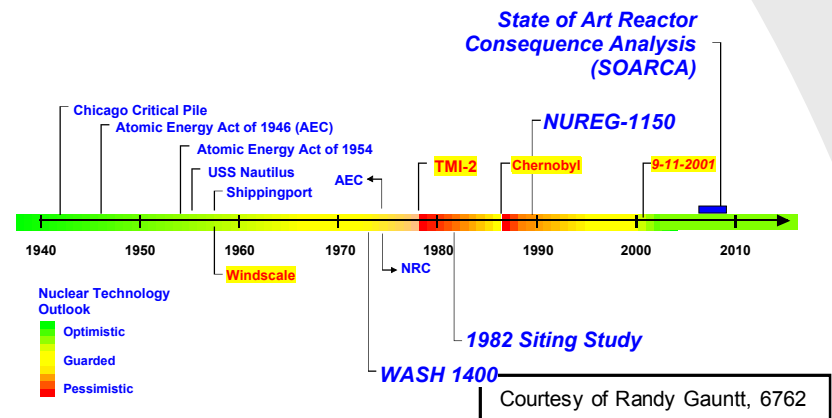
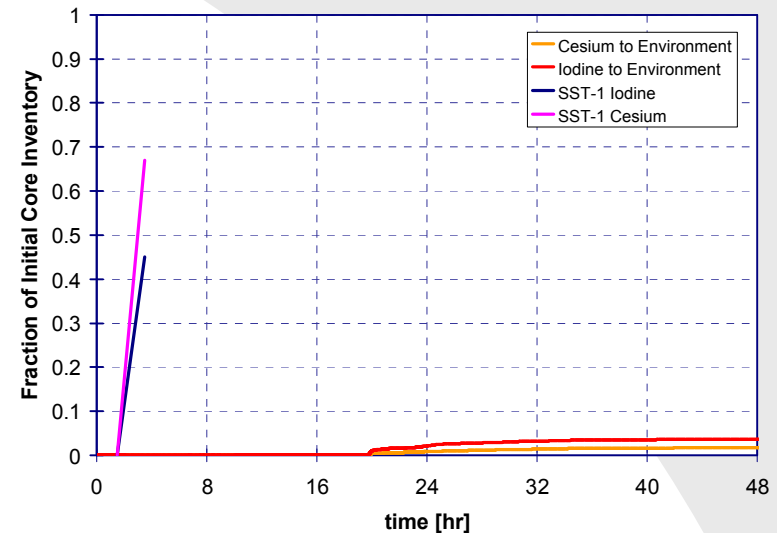
- **Provide Technical Assistance in Support of Design Certification, Early Site Permit, Combined License, Environmental, and Pre-Application Activities Related to New Reactor License Applications**
 - **\$25M over 5 years**
 - **Work scope includes 6 program areas**
 - **Design Certification (DC)**
 - **Early Site Permit (ESP)**
 - **Environmental Impact Statement (EIS)**
 - **Combined License (COL)**
 - **Regulatory Infrastructure**
 - **Hearing Technical Support**
 - **9 Task Orders for over \$4M to date**





State-of-the-Art Reactor Consequence Analysis (SOARCA) Project

- **Objective**
 - To develop state-of-the-art accident progression and consequence estimates for key severe accident scenarios at U.S. nuclear power reactors
- **Approach**
 - Computational analysis employing current state-of-the-art tools
 - MELCOR severe accident progression analysis code
 - MACCS2 off-site consequence analysis code
- **Current Plan**
 - Completed preliminary Peach Bottom and Surry analyses
- **Impact**
 - New landmark study on par with NUREG-1150 and WASH-1400
 - Major influence on nuclear power industry





Conclusions

- **Sandia support of the NRC mission provides technical expertise in the national interest**
- **Sandia NRC program poised to grow with projects in new areas**
- **Sandia capabilities used to provide this support have been developed in large part from DOE weapons laboratory mission work**
- **Security aspects of this work are becoming more closely aligned with DOE security programs**