EXAMPLES OF LONG-TERM RESEARCH PROGRAM PROJECTS

FY 2009

Advanced Level 2/3 Probabilistic Risk Assessment (PRA) Modeling Techniques

Integral Effects Test Facility for Advanced Non-Light Water Reactors

FY 2010

Fire Safety of Digital Instrumentation and Control and Electrical Systems

Advanced Fabrication Techniques

FY 2011

Nondestructive Evaluation (NDE) and Surveillance of Civil Structures

Advanced Light-Water Reactor Fuels

FY 2012

Smart Grid Impact on Nuclear Power Plants

Safety and Regulatory Issues of the Thorium Cycle

FY 2013

Evaluating Remaining Service Life of Nuclear Power Plant Concrete Structures

Using Paleoflood Information to Assess Climate Variability Contribution to Flooding Risk at Nuclear Plant Sites

FY 2014

Spectroscopy for Early Detection of Concrete Degradation

Advanced Knowledge Engineering Tools to Support Risk-Informed Decision Making

HOW TO LEARN MORE

Visit the NRC Research Activities Web site:

http://www.nrc.gov/about-nrc/regulatory/research.html

Read NUREG-1925, Rev. 1, "Research Activities FY2010-FY2011," page 202, ML113560049

For more information on the Long-Term Research Program, please contact the NRC's Office of Public Affairs at 301-415-8200 or OPA.Resource@nrc.gov

U.S. Nuclear Regulatory Commission
www.nrc.gov

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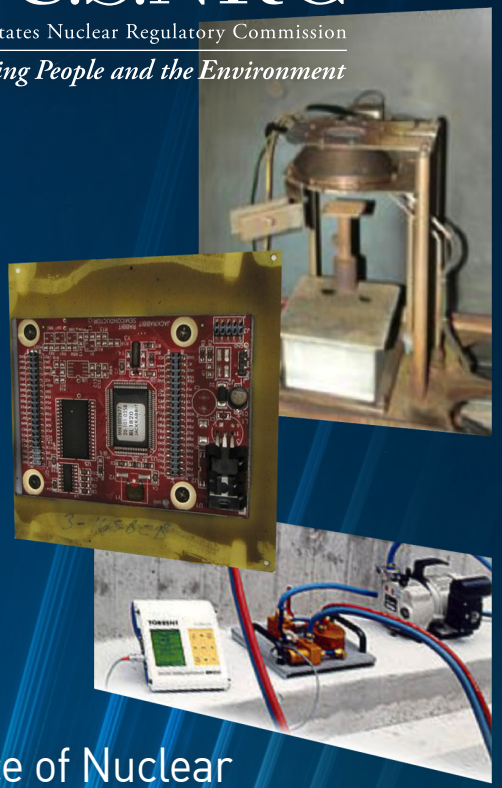
U.S.NRC

United States Nuclear Regulatory Commission

Protecting People and the Environment



Office of Nuclear Regulatory Research

Long-Term Research Program

Addressing future regulatory and technological needs

THE LONG-TERM RESEARCH PROGRAM

The Long-Term Research Program (LTRP) supports anticipated future (beyond 5 years) NRC regulatory needs[1] by providing fundamental insights and information to address potential technical issues or identified gaps in the NRC's regulations or infrastructure. The program is managed by the Accident Analysis Branch in the Office of Nuclear Regulatory Research (RES). Staff in the NRC's program offices (e.g., reactor or materials oversight) offer proposals for long-term research.

LTRP projects generally last 1 to 2 years and are feasibility or scoping studies that assess whether future research on the topic should be pursued as part of the NRC's normal planning and budgeting process.

WHAT IS THE PURPOSE OF THE LONG-TERM RESEARCH PROGRAM?

- Ensure that NRC regulations and regulatory process have sound technical bases
- Prepare the NRC for anticipated changes in nuclear technology
- Develop methods by which the NRC can carry out its regulatory responsibilities
- Develop and maintain an infrastructure of expertise, facilities, analytical capabilities, and data to support regulatory decisionmaking

[1] The NRC also identifies "forward-looking" research activities that are near-term (< 5 years) research projects.

PROGRAM PROCESS

The Long-Term Research Program consists of a four-stage process.

RES solicits proposals from NRC staff. Proposals are due October 1 for consideration during current fiscal year[2]

Solicit Proposals (early September)

Senior NRC technical advisors from six technical program offices rank proposals using the criteria below and develop consensus recommendations:

A. Leveraging resources (10%)
B. Advancing state-of-the-art (30%)
C. Providing independent tools (10%)
D. Applying to more than one area (20%)
E. Addressing gaps created by technology (30%)

Rank and Recommend Proposals (October–December)

Staff informs Commission of proposals identified for funding, status of ongoing projects, and status of overall program via yearly SECY paper that is concurred on by all major NRC offices

Write SECY (January)

Successful proposals are entered into the planning and budgeting process (NRC budgets 2 years in advance)

Include in Budget (March)

[2] Staff can submit ideas at any time, but proposals submitted after October 1st are considered during the following year.

LONG-TERM RESEARCH PROGRAM SUCCESS STORIES

Fire Safety of Digital Instrumentation and Control (I&C) and Electrical Systems

Objective: To identify new failure modes and effects for fiber optic cables and digital instrumentation and control (I&C) systems in operating plants and new reactors when exposed to fire.

Scope: Review past digital I&C test programs related to the effect of heat and smoke to provide insight into potential failure modes for the new systems and potential test methods that could be used.

Motivation for Long-Term Research: Anticipated installation of fiber optic cables and digital I&C systems in operating plants and new reactors.

Products: NRC report NUREG/CR-7123, "A Literature Review of the Effects of Smoke from a Fire on Electrical Equipment." This report documents the current state-of-knowledge of smoke damage to control circuits. NRC is conducting follow-on research on this topic outside of the LTRP.

Nondestructive Evaluation (NDE) and Surveillance of Civil Structures

Objective: Review current NDEs and sensor technologies for nuclear power plant (NPP) reinforced concrete structures to obtain physical and chemical properties for old and new concrete.

Scope: Review current NDE and sensor technologies to obtain quantitative physical and chemical data for service life modeling of concrete structures. Identify promising NDE techniques and sensor technologies amenable to further analyses and development.

Motivation for Long-Term Research: Predicting the remaining service life of existing NPP concrete structures and the service life of new concrete structures.

Products: NRC report in NUREG/CR format that will document the current state-of-knowledge of NDE and sensor technology for concrete and identify NDE and sensor technology amenable for improvements for obtaining quantitative data.