



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

**PLEASE RESPOND BY:  
October 26, 2016**

October 11, 2016

COMSECY-16-0021

MEMORANDUM TO: Chairman Burns  
Commissioner Svinicki  
Commissioner Baran

FROM: Victor M. McCree */RA/*  
Executive Director for Operations

SUBJECT: RECOMMENDATIONS REGARDING THE AGENCY'S  
LONG-TERM RESEARCH PROGRAM

The purpose of this memorandum is to provide the recommendations of the U.S. Nuclear Regulatory Commission (NRC) staff on the Long-Term Research Program (LTRP), in response to Commission direction in the staff requirements memorandum (SRM)-COMSECY-16-0006, "Revision to the Agency's Long-Term Research Program and Related Reporting to the Commission," dated April 13, 2016. This includes a discussion of the relationship of the LTRP to the generic issues (GI) program and consideration of enhanced milestones to tie research to user needs in response to the SRM. In COMSECY-16-0006, dated February 29, 2016, the staff sought Commission support for reconsidering the LTRP in light of Project Aim and committed to informing the Commission of its findings by the end of fiscal year (FY) 2016.

Section 205 of the Energy Reorganization Act of 1974 establishes the fundamental role of the Office of Nuclear Regulatory Research (RES) in the NRC. The role is further specified in Title 10 of the *Code of Federal Regulations* (10 CFR) 1.45, "Office of Nuclear Regulatory Research." As specified in the Act, the role of RES is to develop recommendations for research deemed necessary for the performance of NRC's licensing and related regulatory functions, and to engage in and monitor contracts or agreements for the research. Additionally, the Commission further defined the roles and responsibility of RES under Direction Setting Issue (DSI) 22, Research. In particular, in SRM-COMSECY-96-066 – "Research (DSI 22)," dated March 28, 1997, the Commission directed the staff to continue with the research program, which should include elements of both confirmatory and exploratory research.

In SRM-COMDEK-06-0001, FY 2008 Budget Proposal," dated August 23, 2006, the Commission directed the staff to conduct "forward looking" regulatory research by monitoring emerging technical/regulatory issues and initiating research to support such needs in a timely manner. In response in SECY-07-0192, "Agency Long-Term Research Activities for Fiscal Year 2009," dated October 31, 2007, the staff provided the Commission with a list of feasibility

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studies, which were to be initiated in FY 2009. The intent of a feasibility study is to determine the viability of a research idea and to fully assess the agency need before dedicating significant resources to conduct a research study.

The report was the first in a series of annual LTRP reports that articulated the feasibility studies. In SRM-COMSECY-13-0009, "Modification or Closure of Action Items in the Commission Tracking System," dated August 8, 2013, the Commission reaffirmed its position that the staff should continue issuing an annual LTRP report and the staff has continued to provide the annual report to the Commission.

In 2015 the staff reviewed the LTRP to assess the efficiency and effectiveness of the program. This assessment was included in the 2015 annual report (SECY-15-0042, "Agency Long-Term Research Activities for Fiscal Year 2017," dated March 20, 2015). The staff examined whether the LTRP produced feasibility studies that were effective in meeting the agency's research and regulatory needs. The staff rated the success of the program based on whether the completed LTRP feasibility studies transitioned into the overarching research program. The staff found that, since the initiation of the LTRP in 2007, 27 feasibility studies had been approved and undertaken. Of these, 15 studies had been completed, 5 studies had been cancelled (generally because of a change in the regulatory need), and 7 studies were still active. Of the 15 completed studies, 14 had successfully transitioned into the research program through user need requests (UNRs), Research Plans, or other formal agreements between RES and the regulatory offices. Based on the assessment, the staff concluded that the LTRP was accomplishing its purpose of enabling the NRC to meet its anticipated future regulatory needs.

In 2016 as part of the agencywide rebaselining effort for Project Aim, the staff identified the LTRP as a candidate to be streamlined, and the subsequent SRM-COMSECY-16-0006 directed the staff to reconsider the efficiency and effectiveness of the LTRP. In response, the staff conducted an evaluation of the LTRP and how the LTRP contributes to the overarching research program. The staff found that the feasibility studies conducted under the LTRP were a worthwhile contributor to a continuum of research that includes identification, planning, and execution of research projects. The projects arise from several sources, including the LTRP feasibility studies. Research projects are typically planned in response to UNRs or Research Plans<sup>1</sup>. These research projects are coordinated with the regulatory offices to ensure that regulatory needs and agency priorities are met, consistent with the agency common prioritization criteria. Based on this priority, the appropriate research projects are conducted to the extent resources permit. The results of the research are used to inform or define regulatory actions, such as support to licensing and updates to regulations, guidance, or implementation of Commission policy.

The staff also found that the current long-term research program could be enhanced to be more efficient and effective. First, the long-term research and associated planning activities should be treated as part of the continuum of research activities and the designation of "long-term" research as a separate research program (e.g., the LTRP) should be discontinued. This

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<sup>1</sup>A detailed discussion of the process for identifying research needs, including definitions of UNRs and Research Plans can be found in the RES Office Instruction, PRM-001, Rev.1, "Process for Responding to Work Requests: Informal Assistance, Research Assistance, User Needs, and Research Plans," Agencywide Document Access and Management System Accession No. ML15187A012.

recognizes that some research projects require significant fore-thought to enable the development of a research study to fulfill the regulatory need and the length of time is determined by the work necessary to address the need. In addition, the staff considers longer term needs as part of routine activities and as a result, long-term research and its planning activities do not need a separate program and may be managed using the same process used for planning and conducting other research projects.

Second, research feasibility studies could be identified and carried out on a more frequent basis than on an annual basis. Under the existing LTRP, the staff would identify long-term research projects once per year as part of developing the annual report. This also created a situation where the proposed feasibility studies were identified, but not funded or begun until 2 years later as part of the budget execution cycle. Going forward, the staff plans to develop a process that enables the staff to solicit ideas more regularly, particularly from the agency senior-level advisors, followed by a periodic screening evaluation. The staff plans to place ideas that pass the criteria of the screening evaluation into a portfolio and appropriately prioritize the feasibility studies depending on the regulatory need. The offices would consult on whether to proceed with the feasibility studies at the division director level, consistent with the common prioritization process.

In addition, RES plans to increase interactions with the NRC regulatory offices regarding using the results of the feasibility studies for planning research. In particular, in coordination with the regulatory offices and business line leads, the results of the studies would be used to plan and launch research projects, typically in response to UNRs or Research Plans. Approval of these projects would be at the division director or office director level, consistent with other projects in the continuum of agency research activities. The staff also plans to continue to engage the Advisory Committee on Reactor Safeguards (ACRS) on the results of the feasibility studies as part of the current research program reviews conducted by the ACRS.

The 2015 effort to measure program effectiveness was the first time the staff had taken a critical look at the LTRP and concluded that the program was accomplishing its purpose. The staff plans to continue to assess how the efficiency and effectiveness of the feasibility studies can be improved upon, recognizing that they are one component of the continuum of research projects. Also, the staff plans to include more objective measures of effectiveness for feasibility studies, such as an assessment of quality and value. This is consistent with the current measures of quality and value that are used to monitor the continuum of research projects and includes monitoring the development of projects at appropriate interim milestones.

The staff keeps the Commission informed of the significant activities that are part of the continuum of agency research, as appropriate, regardless of whether the activities result from UNRs, Research Plans, or Commission policy. Therefore, the staff believes that there is minimal additional benefit from continuing an annual report to the Commission on the "Long Term Research Program," which is focused on the feasibility studies and recommends discontinuing the reports. In addition, the staff's current initiative to enhance the tracking and reporting on research projects will enhance Commission access to the status and performance of research projects.

In SRM-COMSECY-16-0006, the Commission also directed the staff to examine the similarities and overlap between the LTRP and the GI program. The LTRP and the GI program are two distinctly different and separate programs. Although each program involves technical assessments, the GI program evaluates focused issues that have direct regulatory applications based on their safety significance, whereas the feasibility studies address broader scoped issues that may have regulatory application, but have not yet been assessed for their safety significance. Based on the staff's assessment of GIs, the staff may identify the need for and conduct research. For example, this was done for GI-193 regarding the potential for air binding of emergency core cooling pumps during a design basis event, thereby causing a loss of core cooling. In this case, the research was needed in the short-term to support regulatory decision-making and was successfully completed in approximately 8 months. This research complemented the staff's assessment under the GI program and successfully contributed to resolving the GI. Therefore, because the programs are different and do not overlap, the staff does not believe that the programs should be integrated.

Based on the direction in SRM-COMSECY-16-0006, the statutory and policy framework for RES, and the evaluation summarized in this document, the staff recommends that the Commission:

- Eliminate the designation of the LTRP as a separate program from the NRC's existing research program, but continue the use of feasibility studies to support the planning of appropriate research activities within the continuum of research.
- Eliminate the annual SECY report sent to the Commission on the feasibility studies planned for 2 years in the future. The staff will keep the Commission informed of significant activities in the continuum of agency research, as appropriate, including through the annual budget process and through enhanced reporting and tracking of research projects.
- Maintain the existing relationship between the GI program and research projects.

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**SRM-COMSECY-16-0006-1**

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