

POLICY ISSUE INFORMATION

July 7, 2003

SECY-03-0113

FOR: The Commissioners

FROM: William D. Travers
Executive Director for Operations

SUBJECT: SEMIANNUAL UPDATE OF THE STATUS OF NEW REACTOR LICENSING
ACTIVITIES

PURPOSE:

This paper informs the Commission of the staff's new reactor licensing activities since the issuance of SECY-03-0005, "Semi-Annual Update of the Future Licensing and Inspection Readiness Assessment," dated January 8, 2003.

BACKGROUND:

In SECY-01-0188, "Future Licensing and Inspection Readiness Assessment," dated October 12, 2001, the staff assessed its technical, licensing, and inspection capabilities, and described enhancements supporting new reactor licensing. The staff also committed to provide the Commission with semiannual updates of the status of new reactor licensing activities. The first two updates were given in SECY-02-0076, dated May 8, 2002, and SECY-03-0005, dated January 8, 2003.

The attachment to this paper describes recent design certification review activities, preparations for receipt of early site permit (ESP) applications, preapplication activities of new reactor designs, and supporting infrastructure development. Interactions with stakeholders, including international and intragovernmental activities, are also discussed.

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DISCUSSION:

Brief summaries of key new reactor licensing activities since issuance of SECY-03-0005 are provided below.

AP1000 Design Certification Draft Safety Evaluation

On June 16, 2003, the staff completed its draft safety evaluation report (DSER) for the AP1000 design certification application. The DSER was issued with open items (unresolved or new requests for additional information (RAIs)) and confirmatory items (resolved RAIs which need to be incorporated in the AP1000 Design Control Document). The staff will work with Westinghouse to resolve all of the open items in preparation for issuing the final safety evaluation report.

Early Site Permit (ESP) Preapplication Activities

The NRC staff, the Nuclear Energy Institute, and the prospective ESP applicants have had a series of meetings to resolve generic issues which might impede the timely review and disposition of an ESP application. Public meetings have been held in the vicinity of the expected sites to inform the public about the ESP review process and opportunities for public involvement. The staff recently completed SECY-03-0105, "Early Site Permit (ESP) Application Readiness," June 24, 2003, to inform the Commission of the staff efforts to prepare for review of expected ESP applications. A draft review standard describing the ESP review process and review criteria has also been issued for public comment.

Security

The staff is developing recommendations for the Commission in support of establishing security requirements for new reactors. In addition, information regarding interim compensatory measures and the revised design basis threat (DBT) have been provided to Westinghouse and the prospective ESP applicants for their consideration. Guidance was also provided to the prospective ESP applicants on how security measures should be addressed in their applications. These organizations were informed that the Commission will determine which, if any, security requirements aside from the revised DBT will be applicable to their applications.

Infrastructure Development

SECY-03-0059, "NRC's Advanced Reactor Research Program," was forwarded to the Commission on April 18, 2003. This paper provides the staff's assessment of NRC's advanced reactor research infrastructure and research plans. Research that supports design certification review schedules and the technical bases for regulatory decisions were given the highest priority. Activities that increase NRC's understanding of new phenomena and their impact on safety margins were also given a high priority. The staff will review the plan annually, updating it as necessary to accommodate new designs or technical issues.

As stated in the attached report, resources have been redirected from high-temperature gas-cooled reactor (HTGR) research infrastructure development to activities supporting ACR-700 and ESBWR preapplication reviews. This resource shift will affect the staff's ability to perform

HTGR design certification reviews. HTGR designs utilize technology substantially different from current light water reactor (LWR) designs, and will require staff expertise, analytic tools, methods, and facilities to support the licensing process. The greatest impact is on research for HTGR material codes and standards development, radiation testing of reactor fuel, and thermal-hydraulic and severe accident computer code development.

The ACR-700 also involves a technology that is substantially different from current LWRs. Presently, only Atomic Energy of Canada, Limited (AECL), maintains a facility capable of performing experiments and tests of an ACR-700 design. The staff is assessing the need for an independent test facility to validate NRC's analytic tools as part of the ACR-700 preapplication review. A second facility would provide NRC with independent capability to validate its computer codes, and would give the staff flexibility in investigating plant conditions beyond those tested by AECL. The staff will provide its recommendations to the Commission on whether an independent ACR-700 test facility is needed.

Combined License Issues

The staff has begun interactions with stakeholders to resolve combined license (COL) issues prior to the receipt of the first COL application. The staff intends to use the process that was developed for ESP generic issues to address COL issues. Public meetings were held on February 20, 2003, and May 22, 2003, to discuss COL issues. A preliminary set of generic issues has been identified. Representatives of the Nuclear Energy Institute (NEI) indicated in a May 22, 2003, meeting that resolution of the generic COL issues would inform business decisions by potential COL applicants in calendar year 2005 that could result in a COL application in calendar year 2006.

Construction Inspection Program (CIP)

The CIP team, composed of NRC headquarters and regional personnel, has developed a framework document after reviewing existing inspection procedures and regulatory guidance. The CIP framework provides an inspection program overview regarding early site permit applications, issuance of a COL, verification of inspections, tests, analyses, and acceptance criteria (ITAAC) during the new reactor construction period, and transition to the Reactor Oversight Process (ROP). The framework document was issued for public comment on May 30, 2003.

Deferral of Rulemaking Activities

Rulemaking activities associated with 10 CFR Part 51 Tables S-3 and S-4, 10 CFR Part 51 alternative sites review, and Appendix I to Part 50, have been deferred until Fiscal Year 2006. This deferral is due to budget constraints based on the prioritization of these activities against other reactor arena activities. As stated in SECY-01-0188, these rulemakings are not essential for the Commission to conduct new reactor licensing activities, though they would improve the efficiency and effectiveness of the review processes.

CONCLUSION:

New reactor licensing activities have made significant progress over the past several months. The staff has completed the draft safety evaluation for the AP1000 design certification review,

and is completing preparations for the receipt of three early site permit (ESP) applications over the next few months. During the next 6 to 12 months, the staff will continue the AP1000 review, working with Westinghouse to resolve open items identified in the draft safety evaluation. Review of three early site permit applications will be initiated. Preapplication review of the ESBWR, ACR-700, GT-MHR, IRIS, and SWR-1000 designs will continue. Technical and regulatory infrastructure development will also continue, with the goal of improving the efficiency, effectiveness, and realism of staff review, and ensuring that an appropriate level of safety and security is maintained for new reactor and site licenses. The staff will also continue to reach out to all stakeholders to build public confidence in these activities.

COORDINATION:

The Office of the General Counsel has reviewed this paper and has no legal objection. The Office of the Chief Financial Officer has reviewed this paper for resource implications and has no objections.

/RA/

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Attachment:
Semiannual Update of the Status of
New Reactor Licensing Activities

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New Reactor Licensing Activities

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Semiannual Update of the Status of New Reactor Licensing Activities

June 2003

INTRODUCTION

This attachment to the June 2003 update of the status of new reactor licensing activities summarizes the status of the AP1000 design certification review, early site permits (ESPs), preapplication activities for other designs, regulatory infrastructure development, and stakeholder interactions.

AP1000 DESIGN CERTIFICATION

On March 28, 2002, Westinghouse Electric Company (Westinghouse) submitted its application for final design approval and standard design certification for the AP1000 design. The NRC staff issued its design certification review schedule on July 12, 2002, establishing the following milestones and target dates for the review:

<u>Milestone</u>	<u>Target Date</u>
Issue initial requests for additional information (RAIs), not including security and safeguards issues	September 30, 2002 (complete)
Westinghouse response to the RAIs	December 2, 2002 (complete)
Staff informs Westinghouse of RAI status	February 28, 2003 (complete)
Issue draft safety evaluation report (DSER)	June 16, 2003 (complete)
Issue final safety evaluation report (FSER)	September 13, 2004
Issue final design approval	October 25, 2004
Complete design certification rulemaking	December 2005

The DSER was issued with open items (unresolved or new RAIs) and confirmatory items (resolved RAIs which need to be incorporated in the AP1000 Design Control Document). The staff will work with Westinghouse to resolve all of the open items in preparation for issuing the FSER.

After Westinghouse confirmed appropriate control of sensitive information, the staff provided information to consider in addressing security requirements for the AP1000 design certification. The staff provided both the February 25, 2002, and April 29, 2003, orders containing the interim compensatory measures (ICMs) and the revised design basis threat (DBT) as applicable to operating reactors, respectively, to Westinghouse for their consideration. The staff also informed Westinghouse that the Commission will determine which, if any, security requirements aside from the revised DBT would be applicable to their design certification application.

On May 9, 2003, a closed safeguards meeting was held with Westinghouse and its security review consultant (Southern Nuclear Operating Company) to discuss the AP1000 security plan. Westinghouse has revised the AP1000 security plan to defer significant aspects of the plan that are not included in design certification to be addressed by a combined license applicant. The staff is currently reviewing these revisions to the AP1000 Design Control Document to ensure that the combined license action items are appropriate.

The staff is continually assessing resources needed to support the design certification. Thus far, the resource estimates have been consistent with the estimates given in SECY-01-0188, "Future Licensing and Inspection Readiness Assessment," dated October 12, 2001. Adjustments to the resource requirements are made using the staff's planning, budgeting, and performance management (PBPM) process, with consideration of other agency needs and priorities.

EARLY SITE PERMITS

In SECY-02-0076, the staff informed the Commission that there were three potential applicants for an early site permit (ESP):

- Exelon Generation Company (Exelon) stated in a March 1, 2002, letter that it intends to apply for an ESP by June 2003. Exelon announced on April 30, 2002, that this application will be for the Clinton site. Exelon informed the staff on June 27, 2003, that its application is being delayed due to time needed to complete seismic evaluations. Exelon expects to provide a new submittal schedule in mid-August 2003.
- Entergy Operations, Incorporated (Entergy) indicated initially that it will make an ESP application for the Grand Gulf site by June 2003. On May 9, 2003, Entergy informed the staff that its application will be delayed until July 2003 due to the time needed to complete seismic evaluations.
- Dominion Generation (Dominion) has indicated it will apply for an ESP at the North Anna site by September 2003.

Entergy, Exelon, and Dominion have obtained funding from the Department of Energy to offset some of their application costs through the Nuclear Power 2010 initiative.

The staff has met with the Nuclear Energy Institute and the prospective ESP applicants to resolve generic issues which might impede the timely review and disposition of an ESP application. The staff recently completed SECY-03-0105, "Early Site Permit (ESP) Application Readiness," June 24, 2003, to inform the Commission of the staff efforts to prepare for review of expected ESP applications.

The staff is developing an integrated work schedule to confirm the process steps necessary for the ESP review, assigning critical skills and resources to each step, based on the 33-month review schedule given in SECY-03-0005. Following completion of this detailed schedule, the staff will develop a model to integrate the site-specific reviews of the three expected ESP applications with other critical work, such as power uprate and license renewal reviews.

On May 6, 2003, the staff issued letters to the prospective ESP applicants containing guidance on how security measures should be addressed in their applications. In the letters, the staff acknowledged that the prospective applicants "need to know" of the ICMs and revised DBT, and informed them of the availability of this information through their existing security organization. Furthermore, the staff informed the prospective applicants that the Commission will determine which, if any, security requirements aside from the revised DBT would be applicable to their ESP applications.

Recent ESP preapplication activities include:

- Completed preapplication public meetings in the vicinity of the prospective ESP sites. These meetings provide information on the NRC ESP review process, as well as outline future opportunities for public involvement in that process. On November 14, 2002, the staff conducted the first preapplication ESP public meeting in Port Gibson, Mississippi, for the Grand Gulf site. Preapplication ESP public meetings were conducted near the Clinton site on March 20, 2003, and near the North Anna site on April 1, 2003.
- Development of an ESP review standard to provide all stakeholders with a clear scope of the existing regulatory guidance applicable for a review of an ESP application, and to provide a work planning framework to enhance the quality and efficiency of the ESP review effort.
- Development of the inspection and other administrative procedures necessary to support the ESP review effort.
- Completed site visits by the staff to observe applicant data gathering activities and to confer with individual ESP applicants on site specific issues.

PREAPPLICATION ACTIVITIES

ESBWR

The General Electric (GE) ESBWR is a 1390 MWe reactor using natural circulation for normal operation with passive safety features. This design is based on the certified advanced boiling-water reactor (ABWR) and the simplified boiling-water reactor (SBWR) designs which the staff started to review in the early 1990s. On April 18, 2002, GE requested a preapplication review of the ESBWR and proposed that the preapplication review be conducted in two phases. During Phase 1, GE and the staff discussed the scope, schedule, and resource estimate for the preapplication review. Phase 2 of the preapplication review is currently underway and includes assessment of the technology basis for passive safety systems and the analysis methodology for transients and accidents.

On January 9, 2003, GE provided the last of eight topical reports submitted in support of the preapplication review. These documents discuss the ESBWR test and analysis program description, the ESBWR test program, the SBWR test program, the qualification of the TRACG computer code analysis method, the TRACG application to ESBWR, ESBWR scaling, and the ESBWR design description. The staff plans to complete the review of these submittals in early calendar year 2004. The preapplication review will also include discussions of the format and content of a design certification application and the schedule and resource estimate for the design certification review.

The Office of Nuclear Regulatory Research (RES) has redirected resources originally planned for gas-cooled reactor work to prepare infrastructure for supporting ESBWR design review. Programs have been initiated that will add modeling capabilities to NRC's thermal-hydraulic system analysis code TRACE (formerly TRACM). Code improvements include adding advanced BWR fuel modeling capabilities to allow assessment of ESBWR fuel bundle performance. TRACE has also been coupled to the NRC's containment analysis code,

CONTAIN. This linkage is important in the ESBWR safety analysis because of the tight coupling between the reactor vessel and the containment under certain accident scenarios. TRACE and CONTAIN will be NRC's primary analytic tools used to perform confirmatory analyses of the ESBWR response to off-normal conditions.

The staff has estimated that approximately 5 full-time-equivalent (FTE) staff and \$400,000 will be required for the agency's preapplication review by the Office of Nuclear Reactor Regulation (NRR) and RES. Estimates for the design certification review will be developed based on experience gained from the preapplication effort. Additional resources are being used to develop infrastructure to support a future design certification application. These activities include the development of methods, tools, and data to be used for independent safety assessments or confirmatory calculations.

It is anticipated that GE will submit a design certification application for the ESBWR design in midcalendar year 2004.

ACR-700

The ACR-700 is an advanced CANDU design that utilizes horizontal fuel channels passing through a heavy water moderator tank. As with other CANDU designs, the ACR-700 will be refueled during power operation. Other features of the reactor system, coolant pumps, U-tube steam generators, and pressurizer are similar to PWR designs in the U.S.

The ACR-700 will have features that make it significantly different from operating CANDU reactors. The ACR-700 utilizes light water for coolant within the fuel channels, whereas operating CANDU reactors utilize heavy water. The ACR-700 will be designed to have a negative void reactivity coefficient so that if boiling occurs within the fuel channels the reactor power will decrease. Operating CANDU reactors have positive void reactivity coefficients. The negative void coefficient for the ACR-700 will be achieved by using slightly enriched uranium fuel elements, instead of the natural uranium fuel used in operating CANDU reactors. The reactor core will be smaller than operating CANDU reactor cores, and will have fewer fuel channels.

Atomic Energy of Canada, Limited (AECL) provided its ACR-700 preapplication review plan in its letter of September 26, 2002, as amended on December 18, 2002. The December 18, 2002, letter expanded the scope of the preapplication review as originally identified in the September 26, 2002, preapplication review plan. The staff is currently working on developing a review plan based on the expanded scope of the preapplication topics and AECL's requested completion date of July 2004. After the NRC assessment of the ACR-700 preapplication review is finalized, a letter will be issued to AECL documenting the review plan, cost estimate, and schedule for the ACR-700 design preapplication review.

It is expected that the ACR-700 preapplication review will be accomplished in two phases. The objective of Phase 1 of the preapplication review is to familiarize the NRC staff with the ACR-700 design and the scope of the planned analysis, testing, and operational experience in support of the design. The activities planned during Phase 1 include a series of presentations on the details of the ACR-700 design, tours of applicable test facilities and operating CANDU reactors, and review of technical information provided by AECL. Selected reports are being submitted for staff review and comment. The first request for additional information, on reactor

physics issues, was sent to AECL on May 13, 2003; AECL responded to this request on June 15, 2003.

Phase 2 of the preapplication review will include further assessment of the design and technology base for the ACR-700, finalize resolution strategies for identified issues, and assess the resource, schedule, and cost estimates for design certification.

RES has redirected resources previously planned for gas-cooled reactor work to develop analytic tools, methods, and expertise needed to support the ACR-700 preapplication review. The ACR-700 differs significantly from light-water reactors previously reviewed by the staff, and will require infrastructure improvements in order to be ready for the design certification review. Presently, only AECL maintains a facility capable of performing experiments and tests of an ACR-700 design. The staff is assessing the need for an independent test facility to validate NRC's analytic tools as part of the ACR-700 preapplication review. A second facility would provide NRC with independent capability to validate its computer codes, and would give the staff flexibility in investigating plant conditions beyond those tested by AECL. The staff will provide its recommendations on whether an independent ACR-700 test facility is needed to the Commission.

The results of the preapplication review will be documented in a report to AECL providing staff comments on the material that has been submitted for review and identifying additional information needed for the design certification review. The report will highlight any significant issues or safety problems which would affect the ultimate ability of the ACR-700 to receive design certification. Completion of the ACR-700 preapplication review is expected in July 2004, in anticipation of AECL's plan to submit a design certification application in September 2004.

The staff is assessing the effect of the increased scope of activities requested in AECL's December 18, 2002 letter on preapplication review resource requirements. Estimates for the design certification review will be developed based on experience gained from the preapplication effort. Additional resources are being used to develop infrastructure to support a future design certification application. These activities include the development of methods, tools, and data to be used for independent safety assessments or confirmatory calculations.

SWR-1000

In SECY-03-0005, the staff informed the Commission that Framatome Advanced Nuclear Power (Framatome ANP) intended to pursue a design certification for the SWR-1000, which is a 1253 MWe boiling-water reactor incorporating passive safety features. In a January 9, 2003, letter, Framatome ANP revised its schedule for submittal of the design certification application, stating that the application is planned for sometime after 2005. Previously, Framatome ANP had stated that it expected to submit a design certification application by the end of calendar year 2005. Framatome ANP also stated that it expects to submit selected documentation for NRC review in calendar year 2004.

Framatome ANP requested that the staff continue to support meetings and discussions in 2003 prior to the submittal of preapplication material in 2004. The purpose of the meetings and discussions is to identify and clarify issues related to the certification process and matters of particular importance to the SWR-1000 design. In support of this request, a staff visit was

conducted in June 2003, to examine test facilities in Germany used for conduct testing supporting the SWR-1000 design certification application.

The staff continues to expect a limited effort in fiscal years 2003 and 2004 on the SWR-1000, mainly focused on interactions with Framatome ANP regarding its test program and its plans for analyses. For the longer term, the staff hopes to use, as much as possible, the same review team for the SWR-1000 review and the ESBWR design review. The staff believes that the tentative schedules provided by the applicants will support such an approach. Since the issues associated with the reviews are very similar, the staff believes this approach will be more efficient than forming two independent teams.

Resource estimates for preapplication review efforts are being developed as part of the planning of those activities. Estimates for the design certification review will be based on experience gained from the preapplication effort.

GT-MHR

The General Atomics Company (GA) Gas Turbine Modular Helium Reactor (GT-MHR) design is an approximately 300-MWt helium reactor design based on high-temperature gas-cooled reactor (HTGR) technology. The GT-MHR design uses helium to cool the ceramic-coated fuel particles contained in fuel compacts inserted in graphite fuel elements.

On January 28 - 29, 2003, the NRC staff conducted a public meeting with GA and interested stakeholders to discuss selected technical topics related to the GT-MHR preapplication review. Topics included GT-MHR source term, the fuel fabrication process, and the basis for fuel performance requirements. Staff questions were provided to GA on February 25, 2003.

Resource estimates for preapplication review efforts are being developed as part of the planning of those activities. Estimates for the design certification review will be based on experience gained from the preapplication effort.

International Reactor Innovative and Secure (IRIS)

IRIS is a 1000 MWt integral light-water reactor with all reactor coolant piping and heat transport systems located inside the reactor vessel. The IRIS integral vessel is larger than a traditional PWR pressure vessel, but the size of the IRIS containment is a fraction of the size of corresponding loop reactors. On July 11, 2002, Westinghouse requested the preapplication review of the IRIS design. Westinghouse describes its preapplication objectives for the IRIS design as follows:

- identify technical issues associated with the proposed test program for the IRIS design;
- define the approach for preparing a risk-informed application;
- develop the scope, schedule, and budget for work associated with the IRIS design; and
- develop a design certification schedule for the formal application phase.

Westinghouse plans to begin the preapplication review after providing the following documents to NRC: (1) the Plant Description Document (provided March 31, 2003), (2) a Safety Assessment, (3) the Phenomena Identification and Ranking Testing and Scaling Report, and (4) a facility comparison to the Standard Review Plan. The current Westinghouse schedule assumes that the design certification application will be submitted in 2007.

Pebble Bed Modular Reactor (PBMR)

The staff continues to monitor the status of the PBMR project in the Republic of South Africa. The staff has been informed that, if a decision is made to proceed with the detailed design by PBMR Pty., PBMR preapplication activities with the NRC may resume as early as July 2003. The staff has also monitored interactions between the PBMR Pty. representatives and the professional societies in the United States on development of codes and standards that would be important to licensing the PBMR in this country.

REGULATORY INFRASTRUCTURE

Advanced Reactor Steering Committee

A joint RES and NRR management team has been established to ensure that research in the nuclear reactor safety arena supports new reactor licensing review activities. This team, known as the Advanced Reactor Steering Committee, reviews activities associated with advanced reactor preapplication reviews, design certification reviews, and advanced reactor research infrastructure development. The steering committee will identify research activities necessary to support design certification reviews including the agency's independent assessments of new reactor designs and the formulation of the technical bases for the regulatory requirements.

An Advanced Reactor Technical Advisory Group (TAG) provides support and advice to the Advanced Reactor Steering Committee by reviewing and assessing the agency's infrastructure needs that have been identified by the NRC technical staff in key areas. These areas include both advanced light-water reactor designs and non-light-water reactor (e.g., high-temperature gas-cooled) designs. Current activities and scope includes research associated with the ESBWR, ACR-700, and GT-MHR preapplication reviews.

Research Infrastructure Assessment for Advanced Reactor Designs

SECY-03-0059, "NRC's Advanced Reactor Research Program," dated April 18, 2003, informs the Commission of the staff's advanced reactor research infrastructure assessment and plans for performing research activities. The infrastructure assessment process focused on critical research areas and information that would be needed to technically support an advanced reactor license submittal review. The approach used to address infrastructure needs did not delineate what research would be conducted by the NRC versus the applicant or developer, but rather focused on the ability to perform safety assessments of advanced designs, including identification of information gaps and the necessary tools, data, and expertise. Research supporting design certification review schedules and the technical bases for regulatory decisions were given the highest priority. Activities increasing NRC's understanding of new phenomena and their impact on safety margins were also given a high priority. The staff will review the plan annually, updating as necessary to accommodate new designs or technical issues.

High Temperature Gas-cooled Reactor (HTGR) Fuel Assessment

The staff is identifying mechanisms for fission product release from TRISO-coated fuel particles and fuel elements used in HTGRs. A staff panel has identified and defined phenomena leading to fission product release from TRISO-coated fuel particles and fuel elements during normal operations and postulated heatup, reactivity insertion, and water intrusion accidents. The panel also identified important issues associated with fuel particle manufacturing. These manufacturing issues may lead to defective or low-quality particles, and early or higher fission product release. After completion of the staff effort, a peer review by a panel of international HTGR fuel experts will be conducted. The data generated from fuel irradiation experiments will be used for HTGR fuel performance and qualification, and to also independently ascertain safety claims by applicants.

10 CFR Part 52 Rulemaking

The staff has proposed a rulemaking to revise 10 CFR Part 52, based on lessons learned during the previous design certification reviews, and on discussions with nuclear industry representatives about the ESP and combined license (COL) review processes. The proposed rule is described in SECY-02-0077, "Proposed Rule to Update 10 CFR Part 52, 'Early Site Permits, Standard Design Certifications, and Combined Licenses for Nuclear Power Plants,'" dated May 8, 2002. On May 6, 2003, the Commission issued a staff requirements memorandum (SRM) on SECY-02-0077, approving publication of the proposed rule to update 10 CFR Part 52 and other related regulations in the *Federal Register* subject to the comments and changes noted in the SRM. The staff submitted the revised proposed rule to the *Federal Register* for a 75-day comment period in June 2003.

Petitions for Rulemaking

The Nuclear Energy Institute (NEI) submitted two petitions for rulemaking regarding Part 52 in July 2001. In the first petition, PRM 52-1, NEI proposed two new sections to 10 CFR Part 52 to allow existing siting and programmatic information that was previously reviewed and approved by the NRC to be incorporated by reference and treated as resolved. NEI's second petition, PRM 52-2, proposed to eliminate the requirement that applicants and licensees analyze and the NRC evaluate alternative sites, alternative energy sources, and the need for power with respect to the siting, construction, and operation of nuclear power plants. The NRC published these petitions for public comment. Staff recommendations on the two petitions were provided to the Commission in September and November 2002.

On December 18, 2002, NEI provided a letter with additional information regarding the second petition, PRM 52-2. In its letter, NEI provided a new legal analysis related to the review of alternative sites. NEI stated that, as a result of this more recent analysis, it has concluded that the modifications to 10 CFR Part 52, Subpart A, that were proposed in the original petition letter of July 18, 2001, should not be adopted. Further, NEI stated that it continues to believe, as indicated in its original petition, that 10 CFR Part 51 should be modified to eliminate all references to evaluations of the need for power and of alternate energy sources because of the developments in the electricity industry that have occurred since those provisions were written.

Other Rulemaking Activities

Rulemaking activities associated with 10 CFR Part 51 Tables S-3 and S-4, 10 CFR Part 51 alternative sites review, and Appendix I to Part 50 have been deferred until fiscal year 2006. This deferral is due to budget constraints based on the prioritization of these activities against other reactor arena activities. As stated in SECY-01-0188, these rulemakings are not essential for the Commission to conduct new reactor licensing activities, though they would improve the efficiency and effectiveness of the review processes.

For the alternative sites review, on January 28, 2003, the staff held a public workshop to solicit stakeholder input on criteria for the review. The staff plans on continuing to develop the technical bases document as funded through this fiscal year, with work carrying over into the first part of the next fiscal year. The staff expects to issue a report on the alternative sites review, providing the technical bases for rulemaking by the end of calendar year 2003.

Construction Inspection Program Development

The Construction Inspection Program (CIP) team, composed of NRR and regional personnel, has developed a framework document after reviewing existing inspection procedures and regulatory guidance. The CIP framework provides an inspection program overview regarding early site permit applications, issuance of a COL, verification of inspections, tests, analyses, and acceptance criteria (ITAAC) during the new reactor construction period, and transition to the Reactor Oversight Process (ROP). The CIP team made the framework public on May 30, 2003, so that comments can be obtained from external stakeholders. A public workshop is also planned to discuss resolution of stakeholder comments and concerns.

Inspection Manual Chapter 2501 is being revised to make it consistent with the ESP review standard and to address stakeholder concerns. Additionally, the team is developing inspection procedures to support the ESP applications.

Activities have included review of ITAAC from completed design certifications to determine what changes need to be made to the construction inspection procedures and if new procedures are needed. Three areas of ITAAC were identified for which there were no existing inspection procedures: communications, lighting, and thermo-weld systems (i.e., cadmium welds).

The CIP team attended a public meeting with representatives from NEI on February 20, 2003, to discuss the construction inspection program and combined license issues.

The CIP team has attended meetings with vendors and construction companies to discuss their construction scheduling software in order to determine how best to develop a construction inspection program information management system (CIPIMS). The staff attended Bechtel, Hitachi and AECL's ACR constructability workshop on February 24 - 25, 2003, and plans to meet with General Electric in the near future. The CIP team may also visit some domestic shipyards and international facilities under construction. The staff is seeking to interface with organizations that will use modular techniques for nuclear power plant construction, and to witness how inspections are accomplished of craft fabrication activities being performed offsite, either at domestic or foreign manufacturing facilities.

The staff is considering incorporating information learned from current discussions with stakeholders into the framework document. The CIP team is also discussing possible international technical exchange visits with the Office of International Programs (OIP).

Legal, Financial, and Other Issues

On October 7, 2002, SECY-02-0180, "Legal and Financial Policy Issues Associated With Licensing New Nuclear Power Plants," was forwarded to the Commission. This paper provided the Commission with recommendations and the status of legal, financial, and other policy issues associated with licensing new nuclear power plants, including fuel cycle impacts, financial qualifications, and decommissioning funding.

The Commission approved the staff recommendations in an SRM on March 31, 2003. These recommendations are that:

- the environmental effects of the production, transportation, and storage of reactor fuel and radioactive waste be reviewed on an application-by-application basis for other than light water reactor applicants;
- non-electric utility applicants continue to be required to submit financial qualifications information in accordance with 10 CFR 50.33(f); and
- the NRC require non-electric-utility applicants to use the options provided in 10 CFR 50.75 to fund decommissioning costs.

As a result of the Commission's endorsement of the staff recommendations, no rulemaking activity is planned to address the legal and financial issues discussed in SECY-02-0180.

Combined License (COL) Issues

The staff has begun interactions with stakeholders to resolve COL issues prior to the receipt of the first COL application. The staff intends to use the process that was developed for ESP generic issues to address COL issues. Public meetings were held on February 20, 2003, and May 22, 2003, to discuss COL issues. A preliminary set of generic issues has been identified and NEI indicated in a May 22, 2003, meeting that it is targeting a COL application for calendar year 2006. Industry representatives stated that the first COL applications would likely reference either a certified design, or one of several designs that are currently being reviewed by the staff. These representatives also stated that they are uncertain whether such a COL application would reference one of the early site permit applications that the staff is scheduled to begin reviewing this year.

In response to SECY-02-0067, "Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) for Operational Programs," the Commission issued an SRM dated September 11, 2002. This SRM directed the staff to bring added predictability to the programmatic ITAAC process by developing appropriate guidelines to support the submission of necessary and sufficient information on programs in COL applications. Additionally, the SRM stated that the guidelines should clarify when programs beyond emergency planning require ITAAC in the COL application. The Commission directed the staff to provide a report on the issue by March 1, 2004. The staff has begun to engage stakeholders on this issue, and will implement a plan that

not only improves the predictability of the COL process, but also provides for the timely verification of proper operational information and standards, confirming the acceptability of the applicant's program.

The staff has budgeted resources to support this COL generic review. The resources may need to be revised depending on the timing and the scope of the work involved with supporting this review.

Early Site Permit Review Standard

The NRC staff is developing a review standard for ESP applications to provide guidance to the NRC staff on the process for reviewing an ESP application and on criteria for that review. The standard consolidates existing guidance, updates the guidance to reflect the ESP licensing process, and identifies the scope of the ESP review. The standard also informs stakeholders regarding information the staff expects to be provided in an ESP application. The draft review standard was released for interim use and public comment in December 2002. Two additional sections, addressing quality assurance and accident analysis, were released on April 11, 2003. The final ESP review standard is planned to be completed by the end of December 2003, after addressing public comments and incorporating lessons learned from the acceptance review of the first two ESP applications. The current draft version of the document, along with the staff's responses to public comments on the document, will provide guidance for the staff's initial review of the ESP applications received in 2003.

ADDITIONAL STAKEHOLDER INTERACTIONS

International Cooperation

The staff initiated trilateral cooperative efforts with the Canadian Nuclear Safety Commission (CNSC) and the United Kingdom (UK) Nuclear Installations Inspectorate (NII) on issues relating to new reactor designs that may be built domestically as well as in Canada and the UK. Subsequent to the October 16 - 17, 2002, meeting between the NRC staff, and CNSC and NII representatives, the staff prepared a memorandum to the Commission, dated March 12, 2003, providing details on the scope of collaboration between the three regulatory agencies.

As part of the international cooperation efforts on new reactor designs, the staff met with CNSC representatives on February 6, 2003, to discuss the status of the ACR-700 review plan and schedule. The staff met with NII representatives on March 6, 2003, to discuss the ACR-700 and AP1000 review plans and schedules.

International regulatory and technical information exchange activities supporting the ACR-700 design review are currently underway for a number of technical areas, including probabilistic risk assessment, digital instrumentation and controls, online refueling, the CATHENA computer code, and quality assurance (QA) review. On May 22, 2003, the staff met with CNSC representatives to discuss the level of cooperation on QA for the ACR-700 design review and the staff's plan to participate as observers in a QA audit conducted by CNSC of the applicant's facilities. A 2-day meeting with CNSC was held May 27-28, 2003, at NRC headquarters to discuss the licensing approach for the ACR-700 in the United States and Canada, synchronization of reviews in both countries, security and safeguards issues, and details on the technical areas for cooperation.

In addition to the trilateral cooperative efforts with British and Canadian regulators on activities related to the licensing of the ACR-700, the staff is exploring prospects of working with other countries that have CANDU experience, such as Korea. The staff met with the Korea Institute of Nuclear Safety (KINS) on April 14, 2003, to discuss cooperation in confirmatory research on computer codes used for the review of the ACR-700 design. At the request of the staff and under existing arrangements, KINS provided information on thermal-hydraulic analysis codes for CANDU reactor analysis which will expedite the audit of ACR-700 computer codes.

The staff continues to seek opportunities to interact with and, where appropriate, initiate cooperative programs with other agencies and organizations, including the European Commission (EC) in the area of HTGR technology. An implementing agreement is being developed that will formalize future HTGR-related cooperation with the EC, under the NRC-European Atomic Energy Community (EURATOM) Agreement. NRC is also participating in meetings sponsored by the International Atomic Energy Agency (IAEA), including various Coordinated Research Projects dealing with advances in fuel technology for high temperature gas cooled reactors and the effects of near-field earthquakes on nuclear facilities. The NRC staff is also pursuing cooperative research with Tsinghua University's Institute of Nuclear Energy Technology in the People's Republic of China related to HTR-10 reactor safety experiments.

Department of Energy (DOE)

Under the Nuclear Power 2010 initiative, DOE aims to support construction of a new nuclear power plant in the United States by the end of the decade. Under this initiative, the government and the private sector will work together to (1) identify sites for nuclear power plants; (2) demonstrate the efficiency and timeliness of key NRC processes for the licensing of new plants; and (3) conduct research needed to make the safest and most advanced nuclear plant technologies available. DOE also plans to share part of the applicants' costs of demonstrating the 10 CFR Part 52 licensing process.

NRC and DOE staff maintain informal contact to keep each organization informed of the status of new reactor activities, including legislative initiatives. In addition, a meeting between staff of the two agencies is planned for the near future to review and discuss activities to ensure actions are appropriately coordinated.