

July 19, 2011

MEMORANDUM TO: Chairman Jaczko
Commissioner Svinicki
Commissioner Apostolakis
Commissioner Magwood
Commissioner Ostendorff

FROM: Michael R. Johnson, Director */RA SFlanders for/*
Office of New Reactors

SUBJECT: QUARTERLY REPORT ON THE STATUS OF NEW REACTOR
LICENSING ACTIVITIES – APRIL 1 TO JUN 30, 2011

In response to the U.S. Nuclear Regulatory Commission's February 13, 2011, staff requirements memorandum for COMJSM-00-0003, "Staff Readiness for New Nuclear Plant Construction and the Pebble Bed Modular Reactor" and Staff Requirements – SECY-09-0064, "Regulation of Fusion-Based Power Generation Devices," the enclosed report provides the status of new reactor licensing activities for the quarter beginning April 1, 2011, and ending June 30, 2011. The report outlines detailed information on the status of new reactor licensing reviews for design certifications, early site permits, and combined license applications for this quarter. It also provides information on regulatory infrastructure, construction inspection, advanced reactors, and international activities.

Enclosure:
As stated

cc: SECY
EDO
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OPA
CFO

CONTACT: Mike Canova, NRO/DNRL
(301) 415-0737

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Memorandum to Commission from Michael R. Johnson dated July X, 2011

SUBJECT: QUARTERLY REPORT ON THE STATUS OF NEW REACTOR LICENSING
ACTIVITIES – APRIL 1 TO JUNE 30, 2011

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Office of New Reactors
Quarterly Report on the Status of New Reactor
Licensing Activities
April 1 to June 30, 2011

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STATUS OF NEW REACTOR LICENSING ACTIVITIES

APRIL 1 TO JUNE 30, 2011

Introduction

New Reactor Program Overview

Since its inception in 2006, the U.S. Nuclear Regulatory Commission's (NRC's) Office of New Reactors (NRO) has successfully served the public interest by permitting the safe, secure, and environmentally responsible use of source and special nuclear material in meeting the Nation's future energy needs. The office's work is characterized by significant activities and accomplishments in its core responsibility areas of new reactor licensing, vendor and construction inspections, the agency's Advanced Reactor Program (ARP), and the agency's growing international leadership. Specifically, NRO has completed several licensing activities, such as the review and issuance of four early site permits (ESPs) and a limited work authorization (LWA) as part of an ESP.

In the prior quarter, NRO submitted to the Commission and issued for public comment the design certification (DC) rulemaking packages for the AP1000 DC amendment and the economic simplified boiling-water reactor (ESBWR), as well as the DC rule amendment for the advanced boiling-water reactor (ABWR) aircraft impact assessment (AIA). The 75-day comment period closed this quarter for all three DCs noted above. NRO has also made substantial progress in its review of many of the 12 active combined license applications (COLAs), such as the completion of several safety evaluation report (SER) sections and environmental impact statements (EISs). These accomplishments demonstrate the office's commitment to fulfilling its mission, and mark the significant progress that NRO has made in implementing the licensing process under Title 10 of the *Code of Federal Regulations* (10 CFR) Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants."

In addition, NRO and Region II worked together to develop an inspection program and put in place the structure and procedures required to conduct the new reactor construction oversight program for ongoing and near-term construction activities. This new inspection program incorporates the elements in 10 CFR Part 52, such as inspections, tests, analyses, and acceptance criteria (ITAAC); incorporates lessons learned from the inspection program used in the previous construction era (1970–1980) for plants licensed under 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities"; and considers modular construction at remote locations. For instance, in March 2010, with the start of engineered backfill operations authorized under the LWA, safety-related construction officially began at Vogtle Unit 3; safety-related activities have also begun on Unit 4. Other recent activities include the NRC staff's participation in the simulated ITAAC closure and verification demonstration exercise described in SECY-10-0100, "Staff Progress in Resolving Issues Associated with Inspections, Tests, Analyses, and Acceptance Criteria," dated August 5, 2010, and development of a construction assessment program that includes a regulatory framework, use of a construction significance determination process, and adoption of a construction action matrix.

In 2008, NRO created ARP to provide an organization dedicated to preparing to review the Next Generation Nuclear Plant (NGNP) license application and future applications involving small modular reactors (SMRs). Recently, NRO has made significant progress in identifying key

policy, licensing, and technical issues, in addition to developing resolution plans, which the NRC staff is proactively executing. Furthermore, NRO has implemented supporting initiatives aimed at ensuring readiness to review future SMR licensing applications. For example, similar to the design-centered working group meetings,

The NRC has strengthened its leadership role in the international arena by cooperating with other national nuclear regulatory authorities to address new reactor design reviews and construction oversight. NRO's participation in the Multinational Design Evaluation Program (MDEP) has enhanced the NRC's effectiveness and efficiency.

Quarterly Status

NRO continues to focus on the licensing reviews and construction oversight activities necessary to address industry plans for near-term applications. This includes supporting the completion of the DC applications and COLAs with active near-term programs for construction.

The NRC is currently reviewing two DC applications and is preparing the final rule package for on DC and two DC amendments. Thorough and timely reviews of these DC applications are critical to the successful completion of the COLAs. In addition, the NRC received two ABWR DC renewal requests in early fiscal year (FY) 2011. As of June 30, 2011, the NRC has 12 COLAs under active review.

The agency's experience with these applications has demonstrated the success of 10 CFR Part 52 and the design-centered review approach in achieving standardization around a selected design. This standardization has resulted in a clear safety focus and resource savings. Although some reviews have been complicated by applicant revisions, the NRC staff is making progress on the applications currently under review. For all applications, it is important that applicants minimize design and siting modifications and work aggressively to resolve open issues. In addition, DC and combined license (COL) applicants are revising the submittal dates for responses to requests for additional information (RAIs), thereby causing schedule delays. The NRC is working with applicants to overcome these challenges, and the staff is focused on resolving the remaining technical issues. The NRC has moved forward on reviewing applications and is on a closure path for many issues.

For program definition and budgetary control the NRO program elements are broken down into sub-programs encompassing New Reactor licensing, Advance Reactors, and Oversight.

During this reporting period, major accomplishments for the new reactor licensing subprogram include completing the environmental review of three (3) COLAs through the issuance of the Final Environmental Impact Statements (FEIS) for V. C. Summer, Calvert Cliffs and Comanche Peak; drafting of the first two COL SECY papers; Issuing a letter to UniStar concluding that the Calvert Cliffs COL application does not meet the requirements of 10 CFR 50.38; conducting several Commission briefings regarding the AP1000; and presenting several advanced SEs on Fermi and STP to the Advisory Committee on Reactor Safeguards (ACRS). The staff conducted pre-licensing work for the impending Blue Castle application submittal, and successfully conducted several international activities related to the MDEP Working Groups for the AP1000 and AREVA EPR designs

During this reporting period, major accomplishments for the advanced reactor subprogram include developing a Commission paper describing the different license structure alternatives and the NRC staff's recommendations with regard to multimodule facilities. The NRO staff also formed an NRC source term working group, instituted an issue identification and ranking process (IIRP), and completed an additional statement of work to the national laboratories that will provide insights into the technical, policy, and licensing issues that the NRC staff is considering.

During this reporting period, major accomplishments for the Construction Inspection oversight sub-program include issuance of Federal Register Notice seeking public comment on Draft Regulatory Guide (DG)-1250, "Guidance for ITAAC Closure Under 10 CFR Part 52," in conjunction with the proposed amendment to 10 CFR Part 52, "Requirements for Maintenance of Inspection, Tests, Analyses, and Acceptance Criteria," to incorporate the reporting requirements for licensees concerning events and associated resolutions material to previously closed ITAAC. The NRO staff continues to make considerable progress on the evaluation of the ITAAC Closure Verification Process and the surge in ITAAC closure submittals expected during the last year of a new nuclear power plant construction, and with this end, conducted several public meetings on ITAAC, construction reactor oversight process (cROP) and Changes during Construction issues.

This report summarizes the following areas covering the third quarter of FY 2011: new reactor licensing reviews and rulemaking (organized by design center), regulatory infrastructure, construction inspection activities, advanced reactors, international activities, and funding.

NEW REACTOR LICENSING REVIEWS AND RULEMAKING

The table below summarizes the status of new reactor licensing reviews and associated rulemakings, organized by design center, for the third quarter of FY 2011. At the beginning of each design center discussion, a table highlights key public milestone dates for each project.

AP1000			
Project	FSER	FEIS	Rulemaking
AP1000 DC Rule Amendment	TBD	N/A	TBD
Vogtle Electric Generating Plant Units 3 and 4	TBD	March 2011	N/A
Summer, Units 2 and 3	TBD	April 2011	N/A
Bellefonte, Units 3 and 4	Suspended	Suspended	N/A
Levy County, Units 1 and 2	April 2012	April 2012	N/A
William States Lee III, Units 1 and 2	August 2012	August 2012	N/A
Shearon Harris, Units 2 and 3	September 2013	January 2014	N/A
*Turkey Point, Units 6 and 7	December 2012	October 2012	N/A

* Under rebaselining review.

Schedule Status

Review Completion Dates:

Original:	FSER—December 2010	Actual:	FSER— TBD
	DSEIS—Issued September 2010		FSEIS— March 2011(complete)

On March 28, 2008, Southern Nuclear Operating Company (SNOC) submitted a COLA for two AP1000 units to be located at its Vogtle site near Augusta in Burke County, GA. The initial application also referenced the Vogtle ESP application, Revision 5, dated December 23, 2008. The NRC staff issued the SER for an ESP application for the Vogtle site in February 2009 and the ESP on August 26, 2009. Since then, it has issued three amendments to the ESP (on May 21, 2010, June 25, 2010, and July 9, 2010).

The NRC staff presented the advanced SER for Vogtle Units 3 and 4 to the ACRS AP1000 full committee on January 13, 2011. On January 24, 2011, ACRS sent a favorable letter recommending that the Commission approve SNOC's COLA for the Vogtle site following completion of the FSER. The NRC responded to the ACRS letter on March 3, 2011.

The staff is in the process of reviewing recent submittals in order to develop a schedule for the FSER. Specifically, on June 13, 2011, Westinghouse submitted AP1000 DCD Revision 19, and on June 24, 2011, SNOC submitted Revision 5 of its final safety analysis report that incorporates by reference DCD Revision 19. The AP1000 FSER must be issued before the FSER for the Vogtle COLA can be issued. The staff expects to issue revised schedules for the AP1000 FSER and the Vogtle COLA FSER by early August.

The NRC staff issued the draft supplemental environmental impact statement (DSEIS) on September 3, 2010. A public meeting on the DSEIS took place October 7, 2010, in Waynesboro, GA. The public comment period ended November 24, 2010. On March 25, 2011, the NRC staff issued the final supplemental environmental impact statement (FSEIS), ahead of the published public milestone.

Summer Combined License Application Review

General Information

Design Type:	AP1000
Application Type:	Subsequent Combined License (SCOL)
Location:	Fairfield County, SC
Docket Date:	July 31, 2008

Project Schedule Risks

Design Certification

Currently, the AP1000 DC application rulemaking is the critical path for issuance of the Summer COL. Any delay in the rulemaking schedule will result in a delay to the Summer COL schedule.

Environmental Review

The final environmental impact statement (FEIS) was published in April 2011. The NRC staff continues to monitor the safety review for any changes that could affect the environmental review.

Schedule Status

Review Completion Date:

Original:	FSE—February 18, 2011	Current:	FSE—TBD
	FEIS—February 3, 2011		FEIS—April 2011 (complete)

On January 10–11, 2011, the NRC staff briefed the AP1000 subcommittee of the Advisory Committee on Reactor Safeguards (ACRS) regarding the Summer COLA. On February 10, 2011, the NRC staff briefed the ACRS full committee regarding the Summer COLA. ACRS issued a favorable letter report on February 17, 2011, concluding that there is reasonable assurance that Summer Units 2 and 3 can be built and operated without undue risk to public health and safety.

The staff is in the process of reviewing recent submittals in order to develop a schedule for the FSE. Specifically, on June 13, 2011, Westinghouse submitted AP1000 DCD Revision 19, and on June 28, 2011, South Carolina Electric and Gas Company submitted Revision 5 of its final safety analysis report that incorporates by reference DCD Revision 19. The AP1000 FSE and the Vogtle COLA FSE must be issued before the Summer COLA FSE can be issued. The staff expects to issue revised schedules for the AP1000 FSE and the Vogtle COLA FSE by early August.

Bellefonte Units 3 and 4 Combined License Application Review

General Information

Design Type:	AP1000
Application Type:	SCOL
Location:	Jackson County, AL
Docket Date:	January 18, 2008

Project Schedule Risks

Combined License Application Review Status

In a July 21, 2009, letter, the NRC staff informed the Tennessee Valley Authority (TVA) that it would not issue a draft environmental impact statement (DEIS) until after the TVA Board of Directors decides whether it will complete the Babcock & Wilcox (B&W) units. On August 20, 2010, the TVA Board authorized funding to proceed with engineering studies to support the completion of B&W Bellefonte Unit 1. Despite deciding to fund engineering studies of the partially constructed units, the COLA for Units 3 and 4 remains a viable option for TVA. The additional requisite site studies and changes to the COLA may be completed by the second quarter of calendar year (CY) 2013.

In a letter dated September 29, 2010, TVA requested that the NRC defer most of its review of the AP1000 COLA for Bellefonte Units 3 and 4, as detailed in the enclosure to its letter. TVA also asked the NRC to provide a plan and schedule for completing the requested work. TVA has made no decision on Bellefonte Unit 1. TVA expects Board consideration of the final approval of Bellefonte Unit 1 to occur sometime in August 2011. TVA informed the NRC that, if Unit 1 completion is pursued, TVA will notify the NRC.

By letter dated November 24, 2010, the NRC informed TVA that it agreed to defer the Bellefonte Units 3 and 4 COLA reviews indefinitely. The NRC also agreed to review hydrology topics following the receipt of critical hydrology studies. TVA estimates that these studies may take up to 15 months to complete.

Schedule Status

Review Completion Dates:

Original:	FSER—March 2011	Current:	FSER—suspended
	FEIS—January 2010		FEIS—suspended

Levy County Combined License Application Review

General Information

Design Type:	AP1000
Application Type:	SCOL
Location:	Levy County, FL
Docket Date:	October 6, 2008

Project Schedule Risks

Hydrology

The hydrology review requires resolution of open items related to tsunami flooding. The NRC issued supplemental RAIs in October 2010. The agency received some RAI responses in November 2010 and the remaining responses in December 2010. Applicant responses did not resolve all tsunami flooding issues. The applicant's tsunami flooding model does not correctly approximate site bathymetry and topography. On February 11, 2011, the NRC staff issued RAIs that served as the basis for a February 25, 2011, public meeting with the applicant. The NRC expects the applicant's final tsunami flooding RAI responses to reflect discussions from this public meeting. The NRC staff will evaluate the applicant's final RAI responses on tsunami flooding, which are expected in July 2011.

Foundation Design Review

The complex geologic site characteristics result in a complicated review of the applicant's proposed roller compacted concrete (RCC) foundation design. This unique design results in a complicated technical review of the site-specific seismic soil-structure interaction (SSI) analyses. The NRC staff held a public meeting with the applicant in July 2010, conducted an audit of the applicant's SSI analyses in March 2011, and performed an audit of the applicant's

RCC testing program in April 2011. The applicant provided final RAI responses in June 2011, which have resolved all issues related to the SSI analyses and RCC design.

Environmental Review

The U.S. Army Corps of Engineers (USACE) is a cooperating agency for developing the environmental impact statement (EIS) and requires information that affects its least environmentally damaging practicable alternative (LEDPA) decision under the Clean Water Act. USACE has identified several deficiencies in the applicant's LEDPA analysis and will coordinate with the applicant to address them. USACE issued a position letter on June 23, 2011, which requests additional information from the applicant. The applicant has 30 days to respond to the position letter.

Targeted Surveys for Federally Listed Threatened and Endangered Species

In its response to the NRC staff's biological assessment, the U.S. Fish and Wildlife Service (FWS) stated that targeted surveys for federally protected species should be completed before the conclusion of the formal consultation with FWS under Section 7 of the Endangered Species Act. Such surveys could take up to a year for the applicant to complete. The NRC and USACE staff met with FWS to discuss the timing of surveys and expectations for consultation under the Endangered Species Act. The applicant met independently with FWS and has initiated its targeted surveys.

Schedule Status

Review Completion Date:

Original: FSER—May 5, 2011
FEIS—September 22, 2010

Current: FSER—April 2012
FEIS—April 2012

William States Lee III Combined License Application Review

General Information

Design Type: AP1000
Application Type: SCOL
Location: Cherokee County, SC
Docket Date: February 25, 2008

Project Schedule Risks

None

Schedule Status

Review Completion Dates:

Original: FSER—February 2011
FEIS—March 2010

Current: FSER—August 2012
FEIS—August 2012

The NRC issued a letter dated January 11, 2011, to Duke Energy revising the public milestone review schedule for the William States Lee III COLA. The NRC changed the FSER date from February 2011 to August 2012, because technical issues regarding the AP1000 DC amendment required substantial resources well beyond those originally planned. As a result, the NRC staff's efforts to complete the AP1000 DC amendment resulted in a significant impact on the review schedules for plants referencing the AP1000 design. Currently, the NRC staff is reviewing the applicant's response to follow up RAIs regarding makeup pond C.

Shearon Harris Combined License Application Review

General Information

Design Type: AP1000
Application Type: SCOL
Location: Wake County, NC
Docket Date: April 17, 2008

Project Schedule Risks

Issuance of Draft Environmental Impact Statement

The NRC staff, working with USACE as a cooperating agency, has identified several issues that remain unresolved for the environmental review. The NRC staff anticipates that clarifying resolution strategies for these issues will lead to a revised environmental review schedule. The review team (NRC and USACE staff) is working with the applicant and relevant Federal and State agencies to determine necessary actions and schedules for resolving these issues. In a letter dated January 13, 2011, the NRC staff transmitted RAIs to the applicant regarding the need for power based on the information in the applicant's integrated resource plan. The NRC staff received a response dated March 31, 2011, to the RAI regarding the need for power. The staff expects to receive responses to all other RAIs by September 30, 2011.

LEDPA Analysis and Alternative Selection Process

USACE, a cooperating agency for development of the EIS, requires information to make its LEDPA decision under the Clean Water Act. USACE provided comments to the NRC on April 15, 2010, regarding supplemental information provided by the applicant on September 14, 2009. USACE identified deficiencies in the applicant's alternative sites analysis regarding alternative reservoir levels for the Shearon Harris site and aquatic impacts to the proposed and alternative sites. The applicant provided a revised analysis to USACE on September 22, 2010, which USACE and Region 4 of the U.S. Environmental Protection Agency (EPA) are reviewing. The NRC staff is reviewing the applicant's revised LEDPA analysis response for potential impact to the DEIS content and schedule with respect to the NRC's alternative siting guidance in NUREG-1555, "Environmental Standard Review Plan: Standard Review Plans for Environmental Reviews for Nuclear Power Plants," issued October 1999.

Clean Air Act

The Shearon Harris site is in a Clean Air Act maintenance area for ozone and carbon monoxide. The NRC staff must complete a Clean Air Act conformity analysis before issuing the Shearon Harris COL. Uncertainty regarding the applicant's anticipated construction schedule may affect the State of North Carolina's commitment to include project emissions in its revision to the State Implementation Plan, which would eliminate the need for the NRC staff to complete a detailed conformity analysis. The applicant submitted an updated air emissions analysis to the NRC and the State of North Carolina's Division of Air Quality (DAQ) on July 14, 2010. DAQ provided comments to the applicant on October 6, 2010. The applicant responded to the DAQ comments on November 3, 2010. The NRC staff is awaiting DAQ review of these technical comments and for the potential inclusion by DAQ of all project emissions in the State Implementation Plan.

National Historic Preservation Act Consultation

Uncertainty regarding the applicant's schedule for completing archaeological surveys could affect the NRC staff's ability to complete National Historic Preservation Act consultation. While the NRC staff can complete an impact assessment for the DEIS, it may not be possible to conclude the National Historic Preservation Act consultation until the applicant completes Phase II and III surveys and provides the results to the State Historic Preservation Office (SHPO). The NRC staff and USACE have discussed with SHPO a path forward in line with SHPO's expectations. This is likely to result in separate memoranda of agreement (MOA) for USACE and the NRC. The applicant drafted an MOA, submitted it to SHPO on September 22, 2010. The SHPO staff completed its review and submitted a revised draft MOA to the NRC on May 6, 2011 (ML111290205). The staff's review of the revised draft MOA is on-going.

Schedule Status:

Review Completion Dates:

Original:	FSE—April 2011	Current:	FSE—September 2013
	FEIS—May 2010		FEIS—January 2014

Progress Energy Carolinas, Inc. (PEC) submitted its 2010 integrated resource plan on September 13, 2010, to the North Carolina and South Carolina utilities commissions that contained a revised commercial operation date of 2025. On January 6, 2011, the NRC issued a letter to PEC revising the COLA review schedule to reflect the applicant's circumstances described above. The revised COLA schedule is consistent with NRC's practice of focusing resources on the completion of the review of DCs, LWAs, and COLAs needed for new nuclear projects that are expected to start operating during CY 2016-CY 2017. The NRC staff will continue to work on the COLA review as resources allow.

Turkey Point Combined License Application Review

General Information

Design Type:	AP1000
Application Type:	SCOL

Location: Homestead, FL
Docket Date: September 4, 2009

Project Schedule Risks

Areas That May Affect the Overall Combined License Application Review Schedule

The NRC staff is currently developing a review schedule for the geology and seismology areas, which will involve a first-time review of various seismology parameters and models for the Caribbean region. The safety review schedule is being revised based on the uniqueness of the geology/seismology review and is dependent on the review schedule for the AP 1000 Design Certification Amendment.

Environmental Review

Florida Power and Light delayed delivery of much of the information requested at the June 2010 environmental site audit, but provided the balance of the information on December 15, 2010, with the exception of revisions to the ground water model. This has delayed RAI development. The NRC staff will continue preparation of the DEIS and will review information as it becomes available. The National Park Service will be a cooperating agency on the NRC EIS. The National Park Service must perform a separate environmental review related to a potential land swap associated with one of the transmission lines for the proposed Turkey Point units.

Schedule Status

Review Completion Dates:

Current: FSER—December 2012
FEIS—October 2012

The NRC published the FR notice for environmental scoping on June 15, 2010, with the scoping period closing on August 16, 2010. The NRC issued the FR notice related to the notice of hearing and opportunity to petition for leave to intervene on June 18, 2010, with the opportunity to intervene closing on August 17, 2010. Oral argument for the 20 contentions that were submitted through three petitions was held on November 19, 2010. On February 28, 2011, the Atomic Safety and Licensing Board admitted portions of three contentions.

The NRC staff is developing a revised environmental schedule based on delays in responding to the NRC staff's information requests.

ESBWR

PROJECT	FSER	FEIS	Rulemaking
ESBWR DC	March 2011 (Complete)	N/A	September 2011
Fermi 3	September 2012	November 2012	N/A

ESBWR Design Certification Review

General Information

Design: ESBWR
Application Type: DC
Location: N/A
Docket Date: December 1, 2005

Project Schedule Risks

Technical Review

None

Office of Management and Budget Review of Rulemakings

NRC staff provided the proposed DC rule to the Commission on January 7, 2011, in SECY-11-0006, "Proposed Rule: Economic Simplified Boiling-Water Reactor Design Certification." The Commission issued its staff requirements memorandum (SRM) on March 8, 2011. The NRC issued the FSER and final design approval on March 9, 2011. The NRC published the proposed rule in the FR on March 25, 2011, and received several comments during the 75-day comment period which closed in June 2011. As discussed above, a schedule for completing the final rule is being developed.

Fermi 3 Combined License Application

General Information

Design: ESBWR
Application Type: RCOL
Location: Monroe County, MI
Docket Date: November 25, 2008

Project Schedule Risks

Soil Property Requirements

By letter dated December 9, 2010, the applicant provided safety analysis report markups and additional ITAAC to reflect the incorporation of soil properties requirements associated with the ESBWR DCD Revisions 7 and 8. The staff asked for additional information in this area. The RAI response dated March 29, 2011, did not fully address the staff's concerns regarding the description and extent of the seismic Category I side backfill, an explanation of how the minimum shear wave velocity requirement is met, and description of testing associated with the ITAAC. Therefore, the staff issued an RAI on April 28, 2011, requesting that the applicant describe the side backfill that will be used and address concerns the staff still had with the proposed ITAAC. In a letter dated May 27, 2011, the applicant indicated that while developing responses to the RAI, it recognized that there is not a practical backfill design that would be

satisfactory to NRC staff and that would meet the DCD soil properties requirements. Therefore, the applicant plans to change its approach and use a site-specific SSI analysis as the means for complying with the DCD. Detroit Edison (DTE) provided the response to the RAI on June 17, 2011. This is a significant change in the approach for resolving the concern regarding backfill design. It has taken time for the applicant to develop this approach and it may be time consuming for the staff to review. Going forward, the staff will review the site-specific SSI analysis and determine the impact on the review schedule for FSAR Chapters 2 and 3 resulting from the applicant's decision to change how the DCD requirements are met. The staff is also coordinating a public meeting in July 2011 to discuss the change in the applicant's approach to meet the DCD soil properties requirements as well as the site-specific SSI analysis after the staff reviews this new information.

Alternative Site Selection

The NRC staff has requested information from DTE to better understand the overall site selection methodology and the objective criteria used to identify and evaluate potential alternate sites. DTE was expected to respond to the staff's request in late June 2011. The staff will evaluate the adequacy of DTE's response and incorporate any pertinent information into the discussion of alternative sites in the DEIS.

Schedule Status

Current Phase Completion Dates:

- Safety Review
 - Phase 1 (preliminary SER)—completed August 20, 2010
 - Phase 2 (FSER)—November 2011

- Environmental Review
 - Phase 1 (scoping)—completed July 2, 2009
 - Phase 2 (DEIS)—October 2011

On December 15, 2010, the NRC staff issued a letter to DTE stating that it had reestablished public milestones for the COL review. On January 10, 2011, DTE submitted a significantly revised site layout plan to address the Detroit District USACE's concerns regarding impacts to water and wetland resources, which are critical for the USACE permit application.

On February 1, 2011, DTE presented the plan to USACE and other interested Federal and State agencies. It was noted in this meeting that some additional mitigation and adjustments might be identified before permits are issued, but participants expressed no significant concerns regarding the revised site layout.

The NRC staff has completed five chapters of the safety evaluation with no open items and presented them to the ACRS sub-committee. The staff continues to develop the additional 16 chapters of the SER.

ABWR

PROJECT	FSER	FEIS	Rulemaking
AIA DCR Amendment	Completed October 14, 2010	N/A	December 2011
STP Units 3 and 4	TBD	March 2011	N/A

ABWR Design Certification Rule Amendment for Aircraft Impact

General Information

Design: ABWR
Application Type: DCR Amendment
Location: N/A
Docket Date: November 23, 2009
Revision Submittal Date: June 30, 2009

Project Schedule Risk

None

Current Critical Path and Near Critical Path Tasks

The Commission approved publication of the proposed rule that will amend Appendix A, "Design Certification Rule for the U.S. Advanced Boiling Water Reactor," to 10 CFR Part 52, so that applicants or licensees intending to construct and operate an ABWR may comply with the AIA rule by referencing the amended design. The NRC published the proposed rule for public comment on January 20, 2011. The public comment period ended on April 5, 2011. The NRC received three comment letters on the proposed rule. The NRC staff is working to address the comments in the final rule package. The current public schedule for completing the final rule is December 2011.

Schedule Status

Review Completion Dates:

Original: Advanced SER—April 2010	Current: Advanced SER complete
Original: Environmental Assessment (EA)—June 2010	Current: EA complete
Original: Publish Proposed Rule—September 2010	Current: Proposed Rule FR Notice complete
Original: Publish Final Rule – August 2011	Current: December 2011

South Texas Project Combined License Application

General Information

Design: ABWR
Application Type: RCOL
Location: Matagorda County, TX

Docket Date: November 27, 2007
Revision 3 Submittal Date: October 5, 2010

Project Schedule Risks

The staff is continuing to hold the schedule milestones as “to be determined.” The applicant has agreed recently to provide a letter describing its perspectives that may have changed with respect to schedule needs for the COL relative to construction dates, and fuel topical report reviews. This information is expected in the next quarter; with that information, the staff expects to update the public milestones accordingly.

By letter dated January 26, 2011, the applicant for South Texas Project (STP) Units 3 and 4 changed from STPNOC to Nuclear Innovation North America, LLC. While the change in applicant resulted in revisions to several sections of the application it is not expected to affect the review schedule.

Seismic Analysis (Chapter 3)

Sections 3.7 and 3.8 of the application did not contain sufficient detail for the NRC staff to reach safety conclusions on issues of seismic analysis and SSI, leading to several rounds of RAIs. Between August 2010 and May 2011 the NRC staff conducted several audits and held several meetings with the applicant. These audits and meetings resulted in several rounds of requests for information. The NRC staff and the applicant are continuing to resolve open technical issues. Examples of these issues include seismic demand on stability analyses, applicability of computer code verification and validation of project calculations, and a possible problem with a specific application of a computer code. The applicant provided final responses to most RAIs in June 2011. The applicant is also completing confirmatory analyses and resolution of issues identified during audits to be submitted in August 2011. These analyses are not expected to affect the resolution provided to the staff on June 30, 2011.

Flow-Induced Vibration (Chapter 3)

The applicant changed its approach for addressing the area of flow-induced vibration. Rather than citing Kashiwazaki-Kariwa Unit 6 as the prototype, the applicant determined that STP Unit 3 should serve as the prototype. This change required the applicant to submit a significant amount of new information; thereby delaying, the review of Section 3.9.2 of the safety analysis report. The NRC staff has conducted several audits and is largely satisfied with the applicant’s approach toward resolving the technical issues; however, problems remain with the steam dryer predictive analysis and with development of the Comprehensive Vibration Assessment Program (CVAP).

Resolution of the steam dryer issues continues to delay the applicant’s submittal of the CVAP, which was originally scheduled for January of 2011. The CVAP was received in June 2011. This schedule also includes the revision and resubmittal of the dryer report, the measurement, test, and inspection report, and the nondryer report. The staff held a closed meeting on May 5, 2011, confirming that the dryer analysis and the submittal of associated technical reports are on schedule.

Spent Fuel Pool Criticality and Structural Evaluation (Chapter 9)

The original application did not address several COL information items that require new and spent fuel storage structural and criticality evaluations. The staff received responses to these COL information items in December 2010. The level of detail in the applicant's initial RAI responses required the staff to issue additional RAIs. The staff audited the criticality analysis on December 8 and 9, 2010. After the audit, the applicant agreed to perform a bounding criticality analysis to address enrichment contents, burnup credit, and the use of Gadolinium (Gd) rods in the fuel pools. Based on observations provided to the applicant after the December 2010 audit, the applicant resubmitted the criticality analysis on January 25, 2011. The staff has completed its review of the resubmitted criticality analysis.

The applicant completed the dynamic load drop analysis and submitted it in late December 2010. A closed proprietary meeting was held in May 2011. Following that meeting, the staff issued revised RAIs. The structural load drop analysis is still under NRC staff review. The staff is expecting RAI responses beginning in June 2011 and continuing through September 2011. The staff will schedule an audit in October 2011 to verify the calculations supporting these RAI responses. The NRC staff is also planning an audit of the applicant's dynamic analyses in October 2011.

Environmental Review

The NRC published the FEIS on February 24, 2011, and EPA published its FR notice of availability on March 4, 2011.

Advanced Boiling-Water Reactor Design Certification Rule Amendment

Issuance of the STP COL depends on the completion of the ABWR DCR amendment. The NRC staff is working on the ABWR DCR amendment final rule, in accordance with the schedule presented earlier.

Schedule Status

Review Completion Dates

Original: FSER—September 2011
FEIS—March 2011

Current: FSER—TBD
FEIS—March 2011—complete

During this reporting period, the NRC staff issued three of 19 chapters of the STP COL advanced FSER to ACRS and presented five chapters at two ACRS subcommittee meetings. Three chapter safety evaluations without open items remain to be presented to the ACRS subcommittee.

ABWR DESIGN CERTIFICATION RENEWAL

Project	FSER	FEIS	Rulemaking
Toshiba ABWR DC Renewal*	TBD	TBD	TBD
GEH ABWR DC Renewal*	TBD	TBD	TBD

*NRC Staff has not yet begun its review of the applications.

Toshiba ABWR Design Certification Renewal

General Information

Design: ABWR
Application Type: DC Renewal
Location: N/A
Docket Date: December 14, 2010

Project Risk

None

Schedule Status

On November 2, 2010, Toshiba Corporation (Toshiba) tendered an ABWR DC renewal application. By letter dated December 14, 2010, the NRC informed Toshiba that the agency had completed the acceptance review for Toshiba's ABWR DC renewal application and that it had determined that the application was acceptable for docketing. The NRC staff is developing information for a technical review schedule. However, by letter dated February 9, 2011, Toshiba notified the NRC staff of its intent to submit a revised application no later than June 30, 2012, and requested that the technical review begin after it submits the revision. On June 23, 2012, Toshiba presented its plans for updating the probabilistic risk assessment (PRA) during a public meeting. The NRC staff provided feedback on the scope and content of the planned PRA update. The staff performed no additional work on this application during this period.

GEH ABWR Design Certification Renewal

General Information

Design: ABWR
Application Type: DC Renewal
Location: N/A
Docket Date: TBD

Project Risk

None

Schedule Status

On December 8, 2010, GE-Hitachi Nuclear Energy Americas, LLC (GEH) tendered an ABWR DC renewal application. By letter dated February 14, 2011, the NRC informed GEH that the acceptance review for its ABWR DC renewal application was complete and that it had determined that the application was acceptable for docketing. The NRC staff has informed the applicant that it believes that additional amendments should be included in the ABWR renewal. In accordance with the applicant's request, the staff will share a list of additional amendments with the applicant to consider for incorporation in the application. This work has been progressing this quarter and will continue in the next quarter; the staff will develop a schedule after the scope of review is clearly defined.

EPR

Project	FSER	FEIS	Rulemaking	Comments
U.S. EPR DC	June 2012	N/A	February 2013	Revised schedule letter issued on January 6, 2011.
Calvert Cliffs, Unit 3	January 2013	TBD		Revised safety review schedule issued March 4, 2011
Nine Mile Point, Unit 3	TBD	TBD		Suspended at the applicant's request.
Bell Bend	August 2012	TBD		Schedule being revised based on site layout changes.
Callaway, Unit 2	TBD	TBD		Suspended at the applicant's request.

U.S. EPR Design Certification Application

General Information

Design: U.S. EPR
Application Type: DC
Location: N/A
Docket Date: February 25, 2008

Project Schedule Risks

Digital Instrumentation and Control

On May, 13 2010, the NRC staff informed AREVA that it had completed the review of the U.S. Evolutionary Power Reactor (U.S. EPR) digital instrumentation and control (DI&C) design with respect to communication independence and diversity, as well as defense-in-depth. However, the NRC staff could not approve this aspect of the design because AREVA had not provided sufficient information. On October, 1 2010, AREVA submitted Revision 3 of the

closure plan, addressing the NRC staff's concerns regarding a continuous connection between the nonsafety service unit and the safety division. AREVA no longer intends to pursue the continuous, bidirectional connection of the service unit. AREVA provided a scoping letter for the final closure plan on November, 23 2010, and has committed to submitting all necessary technical information by April 30, 2011. Subsequent interactions with AREVA identified emergent information needed to support the staff's review that could not be provided by the April 30th date. All final materials were received by June 22, 2011. As a result, the current phase review of DI&C may extend beyond the public milestone date of August 12, 2011.

Resolution of Generic Safety Issue 191

The applicant is trying to resolve an issue in its application related to Generic Safety Issue (GSI) 191, "Assessment of Debris Accumulation on PWR Sump Performance." Specifically, the NRC staff believes that the analysis and testing supporting the adequacy of the sump design do not sufficiently address key technical topics, such as downstream effects, and do not contain a complete evaluation of sump performance that considers the additional sump strainer testing performed in July and August 2010. AREVA did not meet its commitment to provide a revision to the technical report by October 22, 2010. AREVA also did not meet its commitment to provide a strategy for the path forward by the end of October, 2010, but did so on December 14, 2010. The NRC staff witnessed additional strainer head loss and bypass testing in early February 2011. AREVA has provided all technical information regarding GSI-191, with the exception of in-vessel downstream effects testing. AREVA provided a revision to the technical report on March 31, 2011. For in-vessel downstream effects, AREVA provided a strategy for the path forward on April 28, 2011. AREVA is performing additional in-vessel downstream effects testing and has committed to provide a complete revision to the technical report by August 31, 2011.

Seismic and Structural Design

AREVA changed its analytical methodology for completing the seismic and structural design. On April 26–30, 2010, the NRC staff conducted an audit of Sections 3.7 and 3.8 (seismic and structural design) of the U.S. EPR DC FSAR. The audit identified problems with the applicant's modeling and reanalysis. A path forward identified approximately 40 items that required revised analyses and calculations to resolve the NRC's technical concerns with the design. As a followup to this audit, the NRC conducted public meetings on June 9 and November 16, 2010, to discuss AREVA's new schedule for completing this reanalysis work and the associated RAI responses. As a result of information developed during the June, 2011 follow-up audit, the schedules for submitting a number of final RAI responses have slipped to July 2011. The current phase review schedule of August 12, 2011, was based on getting this information by February 2011. As a result, the current phase review may extend beyond the public milestone date of August 12, 2011.

Spent Fuel Cask Loading

The U.S. EPR FSAR included a new design for spent fuel dry cask loading that has a sealed penetration at the bottom of the cask loading pit, which is directly connected to the spent fuel pool through a gate. This design has not been previously approved, and it not currently used at U.S. operating nuclear plants. On December 8, 2010, the NRC staff held an internal stakeholder

meeting with other offices to discuss the scope of reviews under 10 CFR Part 52 and 10 CFR Part 72, "Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-level Radioactive Waste, and Reactor-Related Greater Than Class C Waste."

On March 15, 2011, the NRC staff held an external stakeholder public meeting to present the various options agreed to the internal meeting for the review scope for the DC and COLA. AREVA has since informed the staff that it has selected the option of providing the full design detail at the DC stage and committed to provide a revised FSAR section by the end of June 2011. The draft documentation was received on June 30, 2011. The staff plans to hold additional teleconferences and audits in July 2011 to determine whether further information is needed.

Schedule Status—Safety Review

The NRC staff issued a revised schedule on January 6, 2011. Information relied on to generate the revised schedule has since changed as a result of several delays in getting responses to the staff's RAIs. The staff is currently developing a revised schedule which will be issued before the expiration of the current phase public milestone date of August 12, 2011.

Review Completion Date:

Original: FSER—May 2011

Current: FSER—June 2012

Calvert Cliffs Combined License Application

General Information

Design: U.S. EPR

Application Type: RCOL

Location: Lusby, MD

Docket Date: January 25, 2008 (Part 1), and June 3, 2008 (Part 2)

Project Schedule Risks

Organizational and Financial Information

On November 3, 2010, Calvert Cliffs 3 Nuclear Projects, LLC, made a filing with the Atomic Safety and Licensing Board stating that Eléctricité de France (EDF) had acquired Constellation's interest in UniStar. A Schedule 13D filing on November 4, 2010, with the U.S. Securities and Exchange Commission (SEC) confirmed this transaction. Based on this information, the NRC staff issued an RAI asking the applicant to explain how UniStar complies with the requirements of 10 CFR 50.38, "Ineligibility of Certain Applicants." UniStar responded to the RAI on January 31, 2011. The NRC issued a letter to UniStar on April 6, 2011, stating that the response to the RAI did not meet the requirements of 10 CFR 50.38. While the NRC will continue to review the remaining portions of the application, the agency will not issue a license until the requirements of 10 CFR 50.38 are met.

Seismic Information

On December 29, 2009, UniStar submitted its package containing the seismic information for the review of FSAR Section 3.7. The applicant submitted its updated FSAR section to incorporate AREVA's results of the reanalysis conducted in response to a change in the dynamic model for the nuclear island. In a letter dated March 31, 2011. As a result, the NRC changed the Phase 2 completion date for the associated sections to July 29, 2011.

The supplementary package containing the seismic information is currently in review. Based on the applicant's responses to these RAIs, the NRC staff may plan an audit later in 2011 to review the associated supporting documentation.

Loss of Large Area Analysis

UniStar submitted its loss-of-large-area (LOLA) analysis in a letter dated March 23, 2011. The NRC staff plans to finish LOLA reviews by January 3, 2012.

Schedule Status

The NRC staff issued its FEIS for Calvert Cliffs 3 on May 20, 2011, as NUREG-1936.

Because of recent U.S. EPR DC schedule modifications, the FSER is being rebaselined and will be available soon.

Schedule Status

Review completion dates

Original:	FSER—August 2011	Current:	FSER—TBD
	DEIS—February 2009		DEIS—April 2010
	FEIS—April 2010		FEIS—May 20, 2011

As of March 2011, the NRC had issued safety evaluations with open items for 9 of the 19 chapters.

Nine Mile Point 3 Combined License Application

General Information

Design:	U.S. EPR
Application Type:	SCOL
Location:	Oswego, NY
Docket Date:	December 12, 2008

Status

On December 1, 2009, UniStar submitted a letter requesting that the NRC temporarily suspend the Nine Mile Point Unit 3 COLA review, including any supporting reviews by external agencies, until further notice. The NRC staff responded to UniStar on March 26, 2010, informing it of the

agency's plans to discontinue all activities on the COLA review in an orderly manner and to preserve the work that had been accomplished.

On December 9, 2010, UniStar requested an exemption from 10 CFR 50.71(e)(3)(iii) and proposed delaying its FSAR update submittal until December 31, 2012. The exemption request was granted on May 26, 2011.

Bell Bend Combined License Application

General Information

Design: U.S. EPR
Application Type: SCOL
Location: Luzerne County, PA
Docket Date: December 19, 2008

Project Schedule Risks

Site Layout

The applicant proposed site layout changes to reduce impacts to "exceptional value" wetlands to satisfy USACE's need for a Section 404 permit under the Clean Water Act. The NRC staff will need to revisit large portions of the geology, seismic design, and hydrology reviews based on the revised submittals. Revised portions of the application are currently being received and the staff expects the applicant to submit the full scope of the changes for the environmental review by the end of 2011 and the safety review by April 2012.

Water Storage

The Susquehanna River Basin Commission (SRBC) issues permits for water withdrawal from the Susquehanna River. The SRBC informed the applicant that it does not intend to approve water withdrawal during low-flow periods unless there is low-flow augmentation (water storage). The applicant is developing a pooled assets approach among its facilities within the Susquehanna River Basin, such that overall water withdrawal from the Susquehanna River remains at current levels. A one-dimensional instream flow incremental methodology (IFIM) study was submitted by the applicant to the SRBC on June 29, 2011, as part of the joint permit application to the USACE.

The EIS will need to evaluate impacts of proposed water storage and alternatives (e.g., flooding abandoned mines, building a reservoir). The applicant is developing its options and communicating with SRBC. An Instream Flow Incremental Methodology (IFIM) study is scheduled to be completed by Pennsylvania Power and Light (PPL) and approved by SRBC in April 2011. Using the results from the IFIM study, a proposed water storage and allocation asset pool plan for the Susquehanna River basin should be complete by March 2012. A final decision by the SRBC on the applicant's permit application could be made by December 2012.

LEDPA Analysis and Alternative Selection Process

USACE and EPA have concerns about PPL’s alternative sites analysis. USACE is requesting a detailed description of environmental impacts at all candidate sites to inform its LEDPA decision. The applicant has performed a sensitivity analysis on several criteria in the alternative site analysis to satisfy USACE concerns. The applicant revised its alternative site analysis as part of the joint permit application submitted on June 29, 2011. The joint permit application contains responses to USACE and EPA concerns, as well as addressing open issues with the SRBC regarding consumptive use.

Schedule Status

FSER issue date: August 2012 (under revision)
FEIS issue date: TBD
(Schedules will be revised upon receipt of sufficient information regarding site layout changes.)

Callaway Plant Unit 2 Combined License Application

General Information

Design: U.S. EPR
Application Type: SCOL
Location: Callaway County, MO
Docket Date: December 12, 2008

Status

The NRC has currently suspended the technical reviews on this application. The NRC staff will reevaluate all schedules issued in the letter dated May 26, 2009, if and when Ameren UE requests the resumption of reviews.

In a letter dated November 22, 2010, Ameren Missouri, a subsidiary of Ameren Corporation, notified the NRC that it now anticipates that it will submit an ESP application in the second half of 2011. Union Electric Company (doing business as Ameren Missouri) would be the applicant and license holder. Ameren stated that it would keep the NRC informed of its progress and any changes to this schedule. In its letter, Ameren also stated that it intends to maintain the present COLA as a suspended application and provide further correspondence on any future direction related to its status.

US-APWR

Project	FSER	FEIS	Rulemaking
US-APWR DC	May 2013	N/A	TBD
Comanche Peak, Units 3 and 4	June 2013	May 2011	N/A
North Anna Unit 3	July 2013	October 2012	N/A

US-APWR Standard Design Certification

General Information

Design: US-APWR
Application Type: DC
Location: N/A
Docket Date: February 29, 2008

Project Schedule Risks

Digital Instrumentation and Control Issues

In August 2009, Mitsubishi Heavy Industries, Ltd. (MHI) began addressing DI&C issues in the areas of software program manuals, independence of communications, and quality assurance (QA) for the U.S. advanced pressurized-water reactor (US-APWR). On October 13, 2010, MHI submitted to the NRC the documents identified in its closure plan to address all deficiencies. The NRC staff determined that the revised software program manuals did not resolve the deficiencies, and, in its December 22, 2010, letter to MHI, identified specific deficiencies. On January 31, 2011, MHI submitted revised manuals. The NRC established a new review schedule and, on February 22–23, 2011, conducted a public meeting on the software program manuals. The NRC staff is reviewing the MHI submittals and conducting public meetings.

Structural Design Changes

The MHI changes in the design-basis seismic model and analysis methodology for the reactor building complex require additional staff review. The lumped mass stick model did not capture all seismic responses. MHI has a comprehensive approach to address issues identified by staff including seismic design basis models, effects of concrete cracking, soil profiles, structure-soil-structure interaction, water table effects, embedment effects on seismic response, high frequency consideration of certified seismic design response spectra, foundation analysis, sliding stability, gap between structures, steel concrete modules, and steel liner plate strain near prestressed concrete containment vessel. MHI formed a Seismic and Structures Task Force to address seismic and structures issues. The task force members include MHI, Mitsubishi Nuclear Energy Systems, Inc. (MNES), URS Corporation, Luminant Generation Company LLC (Luminant), and Dominion Virginia Power (Dominion). MHI submitted to the NRC a revised completion plan for the US-APWR seismic and structural analyses on May 12, 2011. MHI delayed the submittal of seismic reports from March 31, 2011, to October 31, 2011. MHI submitted the first set of seismic reanalysis technical reports to NRC on June 15, 2011. A public meeting was held on May 19, 2011, to discuss NRC staff's review approach with MHI. A public meeting was held on the steel concrete issue on June 15, 2011.

Sump Design

MHI issued a GSI-191 closure plan letter to the NRC in May 2011 and is conducting strainer Head Loss testing and Core Inlet Blockage (CIB) testing. Staff audited and inspected the sump head loss testing in June 2011 and will audit and inspect the core inlet blockage testing in July 2011. MHI's containment sump design performance is in the process of demonstrating

adequate core cooling capability to meet requirements of 10 CFR 50.46 “Acceptance Criteria for Emergency Core Cooling Systems for Light-Water Nuclear Power Reactors.” The applicant will submit new sump design reports and testing results will be submitted to the NRC by mid October 2011.

Schedule Status—Safety Review

FSER Completion Date:

Original: September 2011

Current: May 2013 (under review)

Comanche Peak Combined License Application

General Information

Design: US-APWR
Application Type: RCOL
Location: Somervell County, TX
Docket Date: December 2, 2008

Project Schedule Risks

RCOL Review Schedule

The NRC staff will evaluate any changes to the DC schedule to determine if they will impact the RCOL schedule.

Hydrology I (FSAR, Section 2.4)

The NRC staff has determined that Luminant has provided inadequate responses to the staff’s RAIs on watershed analysis, onsite flooding, groundwater, and postulated release of radiological effluent. In addition, Luminant discovered an error in its precipitation calculations, which will result in changes to the site grading plan. On June 7-9, 2011, the staff audited Luminant’s groundwater analysis. On June 23, 2011, Luminant provided a schedule for submitting supplemental responses to the staff’s groundwater RAIs. Luminant has estimated completing the revised site grading plan and calculations in August 2011.

Administrative and Financial Information

The NRC staff has determined that Luminant did not provide sufficient information in Part 1 of the application, “Administrative and Financial Information,” with regard to negation of foreign ownership. The NRC staff issued RAIs in March 2010, and October 2010. Luminant provided its responses to these RAIs in June 2010, and December 2010, respectively. The NRC staff reviewed Luminant’s responses and determined that the responses did not address the negation of foreign ownership. The staff informed Luminant of this open item in January 2011.

Risk Informed Technical Specifications

Luminant has requested NRC staff approval to use risk informed technical specifications (TS) in its COLA. The NRC staff held public meetings on November 3, 2010, and January 11, 2011, to discuss the technical issues. Luminant submitted draft TS methodology for NRC staff review in March 2011. The staff conducted a public meeting in March 2011 to provide feedback on Luminant's draft TS methodology. Luminant plans to submit the final version of its TS methodology in late June 2011.

Environmental Reviews:

On August 6, 2010, the NRC issued the DEIS.
On May 13, 2011, the staff issued the FEIS.

Schedule Status

By letter dated March 2, 2011, the NRC staff issued a letter to Luminant containing changes to the public milestone review schedule. This schedule change was the result of delays arising from the US-APWR DC review schedule.

Review completion dates:

Original: FSER—December 2011

Current: FSER—June 2013

Original: FEIS—January 2011

Current: FEIS—May 2011 (completed)

North Anna 3 Combined License Application

General Information

Design: US-APWR
Application Type: SCOL
Location: Louisa County, VA
Docket Date: January 28, 2008

Project Schedule Risks

None

Schedule Status

The NRC staff has conducted its preliminary assessment of the COLA revisions and established a revised review schedule. The NRC staff has also revised the review schedules for the US-APWR DCD and Comanche Peak (RCOLA) to facilitate the reviews of recent submittals. The new schedule for North Anna Unit 3 incorporates the review schedule changes for the DCD and RCOLA. The NRC environmental staff is developing a supplement to the FSEIS that was completed in February 2010, which was originally based on the ESBWR design.

Review completion dates:

Original: FSER—February 2011
Original: FEIS— April 2010

Current: FSER—July 2013
Current: FSEIS—October 2012

EARLY SITE PERMIT

PROJECT	FSER	FEIS	Rulemaking
Victoria	April 2013	August 2013	N/A
Public Service Enterprise Group (PSEG) Incorporated	TBD*	TBD*	N/A

*Lack of contract funds a result of the FY 2011 continuing resolution.

Victoria County Station Early Site Permit Application

General Information

Design: Plant Parameter Envelope Approach
(no design specified at this time)
Application Type: ESP
Location: Victoria, TX
Docket Date: June 7, 2010

Project Risks

None

Schedule Status

On August 31, 2010, the NRC issued a schedule letter to Exelon Nuclear Texas Holdings, LLC (Exelon), for the review of the Victoria County Station ESP application. The safety and environmental reviews began on October 1, 2010. However, the unavailability of funds for contractor support has affected the review. NRC management is reassessing the impacts to the overall schedule.

The NRC published the FR notice for environmental scoping on November 2, 2010, with the scoping period closing on January 3, 2011. The agency held public scoping meetings on December 2, 2010, in Victoria, TX. The NRC environmental staff is working to prepare and issue the scoping summary report and to prepare for upcoming site audits.

The NRC published the notice of opportunity to petition for leave to intervene in a hearing in the FR on November 23, 2010. The 60-day period to petition to intervene ended on January 24, 2011. Twenty three contentions were filed. Oral argument for the 23 contentions was held on March 16–17, 2011, in Victoria, TX.

Review completion dates:

Original: FSER—April 2013

Current: FSER—April 2013

Original: FEIS— August 2013

Current: FSEIS—August 2013

PSEG Incorporated Early Site Permit Application

General Information

Design: Plant Parameter Envelope Approach
(no design specified at this time)
Application Type: ESP
Location: Salem County, NJ
Docket Date: August 4, 2010

Project Risks

The lack of contract funds prevented the NRC staff from performing the scheduled environmental audits in March and April 2011.

Schedule Status

The NRC staff issued a review schedule for this application on November 29, 2010, and held the environmental scoping meeting on November 4, 2010. The staff also conducted the hydrology audit on February 15–16, 2011. However, lack of contract funds as a result of the FY 2011 continuing resolution resulted in the NRC staff's inability to conduct the geology, seismology, and geotechnical engineering audits as planned in the review schedule. The NRC staff is preparing a letter to revise the review schedule's public milestones.

OTHER LICENSING ACTIVITIES

Expected New Applications During the Third Quarter of FY 2011

None

Other Licensing Activities

No new letters of intent have been submitted to the NRC during this reporting period.

Review schedules and other pertinent information are available on the public Web page at <http://www.nrc.gov/reactors/new-reactors.html>.

LICENSING SUPPORT

Licensing Activities

Application Review Process

The NRC staff continues to perform activities to enhance the effectiveness and efficiency of the review processes for new reactor applications. These activities include updating key guidance documents for NRC activities and application preparation, developing strategies and work products for optimizing the review of applications received, and continuing activities in the preapplication and DC review processes.

Issue Management

Issues currently under evaluation include the following:

- review of the design change processes during construction
- standardized approach to license conditions
- review of construction impacts on existing units
- DC amendment and renewal processes and standards

Generic Combined License

The NRC staff continues to develop the generic model COL that was included in SECY-00-0092, "Combined License Review Process," dated April 20, 2000, and approved by the Commission. Recent updates to this model COL have included standardized approaches to generic license conditions and the results of staff reviews of several COLAs. The NRC presented the updated generic model COL at a public meeting on February 16, 2011, and included responses to industry comments on a previous version. Additional changes prompted staff reviews of COLAs and potential new generic license conditions that the NRC staff is considering adding to the model COL. The NRC staff is using the updated generic model COL as the basis for developing the Vogtle and Summer COLs.

Guidance Activities

Regulatory Guides

The Web site for the Office of Nuclear Regulatory Research (RES) describes its program to update the NRC's regulatory guides (RGs). The Web site also identifies those RGs for which NRO is the lead office for preparing the update. During the third quarter of FY 2011, NRO reviewed approximately 12 draft and final RGs in preparation for their issuance for public comment, for final issuance, or for withdrawal. For those RGs for which NRO is the lead office, four were issued as a final guide in the third quarter.

Additionally, NRO is updating RG 1.218, "Condition Monitoring Program for Electric Cables Used in Nuclear Power Plants" and has issued and posted Draft RG (DG)-1253,

76 FR 32878 (proposed RG 1.79), “Preoperational Testing of Emergency Core Cooling Systems for Pressurized Water Reactors” for public comment.

Interim Staff Guidance

Interim staff guidance (ISG) documents serve as temporary sources of guidance for NRC staff during licensing reviews. These documents are also an important reference for applicants and licensees to help them understand staff expectations. The information contained in ISGs is incorporated into other permanent NRC documents, such as RGs and standard review plans, when they are periodically updated. ISGs issued by NRO are available to the public on the NRC Web site. The NRC did not issue any ISGs in the third quarter of FY 2011.

Changes during Construction under 10 CFR Part 52 Guidance

During the second quarter of FY 2010, NRO continued efforts to clarify the processes available for plant changes or modifications during the construction of new nuclear power plants. A new reactor application is frozen during the review process with subsequent proposed modifications to the licensing basis carried forward until after the COL is issued. The new licensee submits the license amendment requests (LARs) for plant changes or modifications that were identified after the licensing basis freeze point. The NRC staff continues to work with the industry on clarifying the change processes to maintain the licensing basis during the construction period until the 10 CFR 52.103(g) finding. The NRC staff is engaged in discussions with industry to establish an elective preliminary acceptance review process as part of the LAR process established by a license condition, so a licensee may request to proceed with certain proposed plant changes or modifications requiring a license amendment during the NRC’s review of the LAR. The NRC presented the proposed process to industry in December 2010 and to the public during the 2011 Regulatory Information Conference.

Standard Review Plan

NUREG-0800, “Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition” (also known as the SRP), is the primary document for the NRC staff to use in reviewing and evaluating proposed licensing actions for nuclear power plants. It contains guidelines to ensure that NRC staff evaluations lead to clear and defensible findings that demonstrate that public health and safety will be maintained.

The SRP contains approximately 250 sections covering the entire scope of a nuclear power plant. Updating the SRP and other associated guidance documents is critical to ensuring that staff evaluations reflect the latest information and knowledge related to the safe operation of nuclear power plants. The comprehensive SRP review and update program occurs on a 4-year cycle. It involves a review of all sections of the SRP to determine which sections require an update and to budget and schedule the resources necessary to perform the updates. Some SRP updates must be completed in shorter timeframes than those supported by the review and update program. The NRC is compiling the staff inputs received agencywide for the update project and expects to announce the results shortly. Preliminary results indicate approximately 220 sections may require technical updates for the agency offices (Office of Nuclear Reactor Regulation, Office of Nuclear Security and Incident Response, Office of Nuclear Regulatory Research, and NRO). The staff is currently estimating resources for this update and formulating

plans for updating the SRP guidance in a timely manner. These plans will also take into account the requirement to develop guidance for ARP (see below).

During the third quarter of FY 2011, the NRC staff issued guidance updates to the following SRP sections: (i) Revision 2 to SRP Section 1.0 "Introduction and Interfaces," which added a new requirement on deficiency notifications under 10 CFR Part 21, "Reporting of Defects and Noncompliance," for 10 CFR Part 21 for 10 CFR Part 52 applicants and (ii) Revision 4 to SRP Section 8.1, "Electric Power—Introduction," which issued a new Branch Technical Position 8-8 on Onsite Emergency Diesel Generators, "Offsite Power Sources Allowed Outage Time Extensions." These two proposed guidance updates are currently in the public comment period. In assisting the Advanced Reactors Project (ARP) division, the staff is also currently engaged in implementing SECY-11-0024, "Use of Risk Insights to Enhance the Safety Focus of Small Modular Reactor Reviews," dated February 18, 2011, and associated SRM for activities associated with developing standard review/design review guidance for ARP.

Late-Filed Allegations

Management Directive (MD) 8.8 Section II.P is entitled "*Handling Allegations That May Impact Licensing or Certification Decisions or Allegations That Are Filed Late*". Current guidance (MD 8.8, the Allegations Manual, and the NRO allegations office instruction) do not provide details regarding an expedited process to address and resolve allegations received late in the rulemaking/licensing process. The allegations office instruction NRO-ADM-120 only mentions "emergent situation," which are based on safety significance. The staff has mapped out an expedited process against the nominal review phase/rulemaking schedule used by NRO. The goal is to develop an allegations/licensing interface process that can be used to make coordinated decisions and take timely actions based on input criteria noted in MD 8.8.

NRO is working with the Office of Enforcement to draft an allegation guidance memorandum (AGM) to provide additional guidance on implementation of Section P to MD 8.8, incorporating revised language. The goal is to finalize and issue the AGM by July 15, 2011, and update NRO-ADM-120 by August 31, 2011, to incorporate guidance/process for handling late-filed allegations based on AGM guidance.

Rulemaking Activities

Design Certification Rulemakings

The status of DC rulemakings can be found earlier in this document under the associated safety review of that DC application.

Aircraft Impact Assessment Rulemaking Implementation

The NRC published the final rulemaking on AIAs in the FR on June 12, 2009 (74 FR 28111), the rule became effective on July 13, 2009. The rule at 10 CFR 50.150, "Aircraft Impact Assessment," requires applicants for new nuclear power reactors to perform a design-specific assessment of the effects of the impact of a large commercial aircraft. The rule requires applicants to use realistic analyses to identify and incorporate design features and functional capabilities to show, with reduced use of operator actions, that either the reactor core remains

cooled or the containment remains intact, and either spent fuel cooling or spent fuel pool integrity is maintained. The NRC staff proposed to endorse industry guidance on the methodology for performing an AIA for new plant designs in DG-1176, "Guidance for the Assessment of Beyond-Design-Basis Aircraft Impacts."

The NRC has received information to comply with the rule for all design centers currently under NRC review. Review of the amended ABWR design is complete, and, in January 2011, the NRC issued a proposed rule for public comment certifying an amendment to the ABWR DC to comply with the AIA rule. During the first half of FY 2011, the NRC staff also completed its review of the ESBWR and AP1000 designs and began reviewing the AIA submittals for the U.S. EPR and US-APWR designs. In addition, the NRC staff issued inspection reports for the ESBWR and AP1000 AIA inspections. Inspections for the U.S. EPR and US-APWR are planned for the latter half of FY 2011. The NRC staff presented the AIA review and inspection results for both the ESBWR and AP1000 designs to the Advisory Committee on Reactor Safeguards (ACRS) in early FY 2011. In addition to performing AIA reviews and inspections in FY 2011, the NRC staff began to incorporate lessons learned during these early reviews and inspections into the AIA guidance documents.

10 CFR Part 21 Rulemaking

The NRC staff identified several areas in 10 CFR Part 21, that could be enhanced through rulemaking and issuing associated guidance. Additionally, the Office of the Inspector General recently completed an audit of the NRC's vendor inspection program, and recommended that the NRC issue guidance to help vendors implement 10 CFR Part 21. NRO is collaborating with NRR, the Office of Federal and State Materials, Environmental Management Programs, and the Office of Nuclear Material Safety and Safeguards to develop a Commission paper, targeted for completion in September 2011, recommending options to clarify the requirements of 10 CFR Part 21 and address the need and priority for rulemaking, guidance, and outreach efforts.

10 CFR Part 52 Licensing Lessons-Learned Rulemaking

The NRC staff has identified a number of improvements to 10 CFR Part 52 as a result of lessons learned during its review of DCs and COLAs. NRO is planning to work on a proposed rule in FY 2012.

ITAAC Maintenance Rulemaking

The NRC has developed a proposed rulemaking to amend the regulations related to the verification of nuclear power plant construction activities through ITAAC under a COL. The NRC staff provided the proposed rulemaking package to the Commission for review in SECY-10-0117, "Proposed Rule: Requirements for Maintenance of Inspections, Tests, Analyses, and Acceptance Criteria," dated August 30, 2010. Specifically, the NRC is proposing new provisions that apply after a licensee has completed an ITAAC and submitted an ITAAC closure letter. The new provisions would require a licensee to report new information materially altering the basis for determining that inspections, tests, or analyses were performed as required or that acceptance criteria were met, and to notify the NRC of completion of all ITAAC activities. These notifications would support the finding that the Commission must make under

10 CFR 52.103(g), that all ITAAC in the COL are met, before it allows fuel load and operation. These notifications would also ensure that interested persons have access to information on ITAAC at a level of detail sufficient to address the Atomic Energy Act threshold for requesting a hearing on ITAAC closure. The NRC worked with external stakeholders to establish thresholds for determining what types of unplanned events or licensee actions would materially alter the original ITAAC determination basis and developed regulatory guidance for implementing the proposed rule. On February 4, 2011, the Commission approved publication of the proposed rule, with changes. In May 2011, the NRC staff issued the proposed rule for public comment, as well as the draft revision of RG 1.215, "Guidance for ITAAC Closure under 10 CFR Part 52."

Interoffice Rulemaking Contract

The NRC staff is working to award a single rulemaking support contract, thus preventing duplicate efforts to issue individual contracts by each of the offices within the NRC that conduct rulemaking. Each lead office, and possibly other support offices, would be able to write task orders against the contract. The Office of Administration posted the request for quotation on the U.S. General Services Administration's eBuy system, with the contract scheduled to be awarded in the fourth quarter of FY 2011.

Design Certification with Multiple Vendors

NRO is discussing plans for addressing industry activities related to the ABWR DC. Two parties have submitted renewals for the ABWR DC. In addition, in June 2009, STP submitted an application for an amendment to the ABWR DC to comply with the AIA rule. The NRC staff issued the FSER on the AIA DC amendment and submitted the associated proposed rule to the Commission, which approved it, including the NRC staff's proposal to address the treatment of multiple suppliers for a single design. The NRC published the proposed rule, which seeks public comment on the NRC staff's recommendation, in the FR on January 20, 2011. The public comment period ended on April 5, 2011. The NRC staff is working on the ABWR DCR amendment final rule, in accordance with the schedule presented earlier.

CONSTRUCTION INSPECTION ACTIVITIES

Construction Inspection Program

NRC has begun executing construction related inspection activities for Vogtle Units 3 and 4. Infrastructure is in place to support FY 2011 and FY 2012 inspection activities to verify quality construction and the completion of ITAAC. On March 8, 2010, safety-related construction officially began at Vogtle Units 3 and 4, with the start of engineered backfill operations authorized under the LWA. Construction inspectors from the NRC Region II Center for Construction Inspection (CCI) and Headquarters technical staff were present to observe the licensee's initial activities and conduct the first onsite ITAAC inspection. CCI opened the Vogtle construction resident inspector's office with a construction senior resident inspector and resident inspector in 2010. CCI has conducted multiple inspections of the quality assurance program associated with LWA activities, in accordance with Inspection Procedure 35007, "Quality Assurance Program Implementation during Construction." The Vogtle construction assessment process under Inspection Manual Chapter 2505, "Periodic Assessment of Construction

Inspection Program Results,” started on July 1, 2010, and will cover the period between July 1, 2010, and July 1, 2011. The latest construction milestone is completion of the basemat/mudmat for the Unit 3 nuclear island, that level was reached in April 2011. The next milestone, installation of the rubber waterproof membrane, is ongoing. CCI has conducted LWA ITAAC inspections on the activities noted above. V.C. Summer continues with its site preparation and preconstruction activities.

Inspections, Tests, Analyses, and Acceptance Criteria

The NRC staff continues to refine concepts for ITAAC closure and maintenance of closed ITAAC. The NRC staff conducted numerous public meetings within the past year to provide a forum for stakeholders to participate in and comment on staff proposals for ITAAC closure, ITAAC maintenance, and other construction inspection program issues. In SRM M090922, the Commission directed the staff to complete the proposed revisions to the regulatory guidance that address ITAAC maintenance and supplemental reporting. The ITAAC maintenance period covers the time from when the licensee submits an ITAAC closure letter to the time when the Commission authorizes the facility to operate.

On May 13, 2011, the staff issued for public comment DG-1250, “Guidance for ITAAC Closure under 10 CFR Part 52,” (76-FR 27924). DG-1250 is the proposed Revision 1 to RG 1.215, issued October 2009, and describes a method that the staff considers acceptable for use in satisfying the requirements for documenting the completion of ITAAC. DG-1250 endorses the industry guidance document, NEI 08-01, Revision 4 “Industry Guideline for the ITAAC Closure Process under 10 CFR Part 52,” issued July 2010, for the implementation of 10 CFR 52.99, “Inspection during Construction.”

In addition to refinements to the ITAAC process since October 2009, DG-1250 incorporates the reporting requirements in the proposed amendment to 10 CFR Part 52, incorporating “Requirements for Maintenance of Inspection, Tests, Analyses, and Acceptance Criteria” also published on May 13, 2011 (76 FR 27925). Both the proposed rule amendment and draft guidance are being concurrently published for a 75-day public comment period.

The NRC staff and various industry stakeholders recently participated in a simulated ITAAC closure and verification demonstration project. The demonstration was intended to verify that both the industry ITAAC closure process and the NRC ITAAC verification process could reliably and efficiently support ITAAC closure. In addition to the NRC, participants in this exercise included the U.S. Department of Energy (DOE) as project sponsor, Nuclear Energy Institute, Westinghouse, and Southern Nuclear Company. The demonstration began in July 2010 and concluded in April 2011. The results of the demonstration, and interactions among the participants identified several lessons learned and next steps, which will be documented in a summary report to be issued by the end of July 2011.

The demonstration has been extremely valuable in exercising many aspects of the ITAAC closure and verification process. The lessons learned from the demonstration have already proven valuable in the many resultant changes and refinements, including associated developments to office instructions for the ITAAC closure verification process and the 10 CFR 52.103(g) process.

As a next step to lessons learned in the simulated ITAAC closure and verification demonstration, the NRC staff and industry are discussing enhancements to guidance to reduce uncertainty when developing ITAAC closure notifications (ICNs). The discussions include the development of additional ICN examples that will be added to those already in NEI 08-01. After the completion of this effort, ICN examples in NEI 08-01 will cover approximately 90 percent of the AP1000 ITAAC types. The staff expects to review and discuss the additional ICN examples submitted by industry during the Construction Inspection Program Workshop series through CY 2012.

The staff recently initiated efforts to develop a process for its recommendation to the Commission for making a finding in accordance with the requirements of 10 CFR 52.103(g). A draft office instruction is being developed, which will provide guidance to the staff in collecting the necessary information and communicating the staff's determination that all inspections, tests, and analyses are performed and the acceptance criteria are met for a given facility, and for documenting the completion of necessary activities for the Commission to make its finding under 10 CFR 52.103(g).

The staff is also finalizing the complete ITAAC lists for Vogtle Units 3 & 4 to be included in their COL for each unit. The lists combine DCD, COL, and ESP ITAAC into one comprehensive list for each unit that both the licensee and NRC will use as the official ITAAC lists. Additionally, the NRC staff is revising the AP1000 complete ITAAC list to reflect changes in the latest revision to the DCD.

Construction Reactor Oversight Process

The Commission directed the NRC staff in December 2009 to develop construction assessment program options for Commission consideration. In response to this direction, the staff formed the construction reactor oversight process (cROP) working group. The NRC staff focused its development efforts on the inclusion in the cROP of objective elements such as construction program performance indicators and significance determination processes analogous to those used in the Reactor Oversight Process. In August 2010, the working group completed development of its initial staff proposal, which was forwarded to the Commission as SECY-10-0140, "Options for Revising the Construction Reactor Oversight Process Assessment Program," dated October 26, 2010. The NRC staff briefed the Commission on its proposals for revising the cROP on December 16, 2010.

In SRM SECY-10-0140, dated March 21, 2011, the Commission directed the staff to develop a construction assessment program that includes a regulatory framework, the use of a construction significance determination process to determine the significance of findings identified during the construction inspection program, and the adoption of a construction action matrix to determine the appropriate NRC response to degrading licensee performance. The staff will routinely meet with external stakeholders to finish the developmental work for this task, and pilot the new construction assessment program in parallel with the current assessment process for 12 months beginning October 1, 2011. The staff will provide updates to the Commission and brief the ACRS as directed in the SRM.

Quality Assurance and Vendor Inspections

During this quarter, the NRC staff conducted six vendor inspections and one quality assurance implementation inspection. The NRC staff also supported the Office of Investigation on an assist activity in support of an allegation. The NRC staff continued its participation in several quality assurance outreach activities including meetings related to the Nuclear Procurement Issues Committee (NUPIC), American Society of Mechanical Engineers (ASME) Section III and Nuclear Quality Assurance (NQA). The staff is continuing its work to develop an agency approach for minimizing the potential for counterfeit, fraudulent and suspect items to enter the nuclear supply chain. The staff is committed to developing a Commission paper with its evaluation and recommendations by September 30, 2011. The NRC staff is continuing to progress on actions in response to the Office of Inspector General (OIG) audit of the vendor inspection program. On May 26, 2011, the staff provided the first six month update to the OIG.

Engineering Design Verification (EDV) Inspection

The NRC staff began the first of its engineering design verification (EDV) inspections with the AP1000 project design. The staff completed two of the three weeks for this inspection activity.

Through a detailed technical review of selected systems, the EDV inspection will provide the NRC an opportunity to assess the design authority's implementation of its processes for completing and controlling the detailed design. The objective of this inspection is to verify that the design authority's processes are sufficient to result in the complete and accurate transfer of the high level design information contained in the FSAR into detailed engineering, procurement, and /or construction documents consistent with NRC requirements and FSAR.

Successful completion of these inspections will also provide confidence in the validity of the resulting detailed design information which may ultimately be utilized by Combined License holders to support the closure of Inspections, Tests, and Acceptance Criteria (ITAAC).

ADVANCED REACTORS

The NRC staff has undertaken a variety of activities to prepare for applications for SMRs that may arrive as early as CY 2012. The NRC staff has evaluated past advanced reactor experience and interacted with stakeholders to identify issues that should be addressed to support design and licensing reviews of SMR designs and deployment. Although approached by vendors and advocates for a variety of reactor technologies, the NRC staff has focused its attention on the NGNP Program and on integral pressurized-water reactors (iPWRs).

Next Generation Nuclear Plant (NGNP)

The NRC and DOE staffs are coordinating research and preapplication activities related to Phase 1 of the NGNP Program. The NRC staff communicates often with DOE and the lead laboratory, Idaho National Laboratory (INL), regarding research and development activities, as well as the efforts to support the future licensing of the NGNP prototype and subsequent commercial units.

The NRC staff is currently reviewing white papers submitted by INL that address topics such as the risk-informed, performance-based regulatory framework (e.g., defense-in-depth, licensing basis event selection, and safety classification and treatment of structures, systems, and components); materials that may be used in the NGNP high-temperature gas-cooled reactor (HTGR); fuel qualification; mechanistic source term; modular plant licensing; and emergency planning. These white papers are intended to serve as a basis for initial discussions between DOE and the NRC regarding the overall approach and issues associated with each topic, informing the prospective designer of issues that should be addressed in a future licensing application. The NRC staff is preparing assessment reports for these white papers and is requesting additional information, as needed, to address the objectives described by INL. The NRC is addressing some topics, such as emergency planning and modular plant licensing, as part of its resolution of generic SMR issues.

In addition to routine interactions with DOE and INL on major research and development efforts sponsored by DOE (e.g., fuels and materials testing programs), RES has activities underway to support the NGNP licensing program. The most significant of these research activities involves the development of computer codes and models to support independent NRC evaluations of the behavior of HTGR systems.

The DOE Nuclear Energy Advisory Committee (NEAC) is reviewing progress in NGNP research, design, and preapplication licensing discussions (project Phase 1, as described in the Energy Policy Act of 2005). The committee's recommendations include accelerate efforts to form a public-private partnership to provide end-user input into design and licensing activities, and continuing interaction with NRC on regulatory framework development. The NEAC recommends that licensing under 10 CFR 50 be adopted, as opposed to the existing plan to license the facility using a combined license issued under 10 CFR Part 52. It is expected that these recommendations will be forwarded to the Secretary of Energy, and that a decision on Phase 2 will be made later this year.

Integral Pressurized-Water Reactors

NuScale Power, Inc.

The NuScale Power, Inc. (NuScale) modular reactor is a 160 megawatt thermal (MWt), 45 megawatt electric (MWe), natural circulation pressurized-water reactor (PWR) design that consists of an integrated reactor vessel assembly that includes the reactor core, pressurizer, control rods, and two helical steam generators, all located within the reactor vessel. NuScale is proposing that each plant be designed to accommodate up to 12 totally independent modules (reactor vessel and containment) for a total plant electrical capacity of up to 540 MWe.

The NRC staff has been engaged in preapplication activities with NuScale since early 2008. In January 2011, the SEC initiated a civil action against affiliates of the Michael Kenwood Group, NuScale's principal investor. This action has prevented the firm from meeting funding obligations to NuScale and has forced NuScale to significantly reduce its spending. The SEC has not made any allegations of improper activities by NuScale, and NuScale is not a party in the SEC action. As a result, NuScale began pursuing alternative financing strategies. On March 18, 2011, NuScale submitted a letter to the NRC requesting that the NRC suspend most preapplication activities.

Interactions with NuScale have continued to be limited. However, the staff has completed some actions at their request. These include the approval of a new safeguards information reviewing official, a report of a preapplication audit of its PRA, and a draft safety evaluation of its quality assurance program.

Babcock and Wilcox mPower™

The mPower™ reactor is a 400-MWt (125-MWe) light-water reactor that consists of a self-contained module with the reactor core, reactor coolant pumps, and steam generator located in a common reactor vessel installed in an underground containment. B&W is considering designing the standard plant for two modules.

In response to Regulatory Issue Summary 2011-02, "Licensing Submittal Information and Design Development Activities for Small Modular Reactor Designs," dated February 2, 2011, B&W announced a new DC application submittal date of the fourth quarter of CY 2013 in support of the TVA Clinch River construction permit application.

The NRC staff has been engaged in preapplication activities with B&W since mid-2009. During this quarter, the NRC transmitted the large aircraft impact characteristics to B&W following approval of its safeguards information protection plan order actions. To date, the NRC has received technical reports on the following topics: quality plan for the DC, plant design overview, critical heat-flux test and correlation development plan, core nuclear design codes and methods qualification, integrated system test (facility description and test plan), instrument setpoint methodology, control rod drive mechanism design and development, and the security design assessment and program plan.

The NRC staff is establishing review schedules and is providing feedback to B&W through meetings and other appropriate methods. On May 4, 2011, the staff issued the final safety evaluation for the B&W quality assurance topical report. During this quarter, the NRC staff held detailed technical meetings with B&W on the mPower™ design overview, seismic design methodology, instrumentation and control quality assurance, the integrated system test facility and test plan and scaling analysis, fuel assembly mechanical design, and reactor physics design and analysis. The next meeting with B&W is scheduled for August 3, 2011, to discuss the mPower™ emergency core cooling system.

Tennessee Valley Authority

By letters dated October 8 and November 5, 2010, TVA stated that it was evaluating SMR activities under 10 CFR Part 50 instead of 10 CFR Part 52. In subsequent interactions with the NRC, TVA described its key assumptions to support a licensing review, under 10 CFR Part 50, for construction and operation of mPower™ SMR modules at the Clinch River site in Roane County, TN. TVA plans to develop a detailed regulatory framework for up to six SMR modules.

On January 31, 2011, the NRC staff responded to TVA's assumptions letters, concluding that no legal or licensing issues would prohibit TVA from applying for a construction permit or operating license under 10 CFR Part 50 for the licensing of a new nuclear facility. The NRC staff plans to begin a series of public meetings with TVA to discuss the details associated with the regulatory framework for the Clinch River construction permit application in the near future. Related

activities are anticipated to continue from FY 2011 through FY 2012. These include visits to the Clinch River site by NRC staff to observe site preparation activities and preliminary environmental review efforts.

As noted in TVA's response to RIS 2011-02 "Licensing Submittal Information and Design Development Activities for Small Modular Reactor Designs," dated February 2, 2011, TVA plans to submit a construction permit application in the fourth quarter of FY 2012.

Other iPWR Vendors

Two other vendors have contacted the NRC to propose submitting small light-water reactor designs for NRC review. Westinghouse is developing its SMR design and is planning to submit a DC application late in CY 2012. Holtec is developing the Holtec inherently safe modular underground reactor (HI-SMUR) design and is also planning to submit a DC application. The NRC staff met with Westinghouse to discuss schedule and preapplication activities on April 11, 2011, and intends to meet with Holtec, as resources allow, to gain a basic understanding of these vendors' designs.

Other Reactor Technologies

The NRC staff has occasional interactions with potential applicants using other advanced reactor designs, such as sodium-cooled fast reactors, lead-bismuth-cooled fast reactors, and fluoride salt-cooled high-temperature reactors. The NRC staff activities related to these designs are limited to low-level efforts (e.g., knowledge management) and nonresource-intensive interactions with vendors (e.g., occasional meetings). No interactions nor development progress has been reported for fusion technologies during this reporting period (SRM 09-0064).

Generic Policy Issues

In SECY-10-0034, "Potential Policy, Licensing, and Key Technical Issues for Small Modular Nuclear Reactor Designs," dated March 28, 2010, the NRC staff committed to providing the Commission with periodic updates (through this quarterly report) on its development and implementation of issue resolution plans related to advanced reactors. The SRM dated August 31, 2010, "Use of Risk Insights to Enhance Safety Focus of Small Modular Reactor

Reviews," also instructed the NRC staff to provide an update on the issue resolution plans described in SECY-10-0034. An update on the NRC staff's activities in this area follows.

License Structure for Multimodule Facilities

One of the policy issues being assessed is the license structure for multimodule facilities. NRO developed SECY-11-0079, "License Structure for Multi-Module Facilities Related to Small Modular Nuclear Power Reactors," dated June 12, 2011, describing the different license structure alternatives and the NRC staff's recommendations. The NRC staff considered papers on this topic submitted by the NGNP Program and NEI in the development of the Commission paper. The configurations of multimodule facilities are also a topic within other issue resolution plans and will need to be addressed in the proposed approaches for resolving those broader issues. Examples include the need to address risk assessments for multimodule facilities, the

handling of multimodule facilities in the NRC fee structure, and the requirements for liability and property insurance.

Manufacturing License Requirements for Future Reactors

The NRC staff and various stakeholders have raised questions about using the manufacturing license provisions in 10 CFR Part 52 for SMRs. The NRC has issued only one manufacturing license, in 1982, for Offshore Power Systems' floating nuclear plants. The first issue related to manufacturing licenses for SMRs is how the provisions could apply to a reduced scope, as compared to the total plant licensed, in the case of Offshore Power Systems, and whether the industry is actually interested in using such provisions, assuming that clarifications or changes to the requirements are pursued. The NRC staff has discussed this topic at several public meetings with the industry, requested additional information in RIS-2011-02, and plans to continue discussions with stakeholders during future interactions. The responses to RIS-2011-02 indicate limited potential interest in pursuing manufacturing licenses, but no firm commitments have been provided at this time.

Risk-Informed Licensing Approaches

In SRM COMGBJ-10-0004/COMGEA-10-0001, the Commission directed the staff to develop a framework to apply risk insights in the licensing of SMRs to improve the efficiency and safety focus of the NRC staff's reviews. In SECY-11-0024 "Use of Risk Insights to Enhance Safety Focus of Small Modular Reactor Reviews," dated February 11, 2011, the NRC staff proposed a more risk-informed and more integrated review framework for preapplication and application review activities pertaining to iPWR designs. The proposed iPWR review framework is consistent with current regulatory requirements and Commission policy statements and builds on the NRC staff's current application review process. The proposed design-specific review plans would be derived from the framework and be prepared for the anticipated near-term iPWR design applications. The staff incorporated issues described in SECY-10-0034, related to defense-in-depth, licensing-basis event selection, and PRAs, into its recommendations in SECY-11-0024. In addition, the staff proposed an approach for creating, over the longer term, a new risk-informed and performance-based regulatory structure for licensing advanced reactor designs (e.g., HTGRs and liquid-metal reactors). This regulatory structure would build on insights from iPWR reviews and ongoing interactions with the NGNP Program. In the SRM for SECY-11-0024, dated May 11, 2011, the Commission approved the staff's use of the risk-informed and integrated review framework for staff preapplication and application review activities pertaining to iPWR design applications and the consolidation of staff activities currently underway regarding a risk-informed regulatory structure into the staff's plan discussed in SECY-11-0024 for the longer term development of a recommendation related to a new risk-informed regulatory structure. The staff is currently developing the first design-specific review standard for the mPower™ design utilizing this new framework.

Appropriate Source Term, Dose Calculations, and Siting

The NRC staff plans to address the introduction of a mechanistic source term (MST) into the licensing process that could be utilized by advanced reactor designs and SMRs. The NRC staff has formed an NRC source term working group, instituted an IIRP, and completed a statement

of work to the national laboratories that will provide insights into the technical, policy, and licensing issues that the NRC staff is considering.

A modernization of the source term for siting and accident consequence analysis, using a (technology-neutral) risk-informed, performance based best-estimate analysis framework as an option for nuclear plant licensing, would be the basis for an expected Commission paper in late 2011. SECY paper alignment meetings have been established on a proposed mechanistic source term information paper.

The NRC staff source term working group has reviewed INL white papers submitted by the DOE sponsored NGNP Program on the use of an MST for HTGRs and fuel qualification. The NRC staff has issued RAIs on these topics to INL and drafted an assessment paper on the INL proposal for a mechanistic source term. The MST IIRP meetings have been completed and the draft report will be finalized by the end of July 2011. Sandia National Labs participated in the MST IIRP and provided positive feedback on the direction of the NRC staff on the issue of a mechanistic source term for advanced and SMRs.

Appropriate Requirements for Operator Staffing for Small or MultiModule Facilities

Given the low power output, modular nature, and passive design of advanced reactors, the NRC staff is engaged in addressing the appropriateness of staffing requirements set forth in 10 CFR 50.54(m). The NRC staff has established a working group and developed an issue resolution plan to resolve the issue for near-term applications and to inform long-term decisions, research, and potential rulemaking. The working group is currently implementing its issue resolution plan. In the near term, the NRC staff is focusing on developing the technical basis and guidance to support the review of submittals related to Human Factors Engineering and on giving reviewers the tools to address exemption requests to 10 CFR 50.54(m) for the first round of anticipated SMR COLAs. NRC established a user need with RES for long-term rulemaking efforts and has also contracted with the DOE national laboratories to support development of regulatory guidance documents and training with both near-term and long-term deliverables. The NRC staff is actively seeking stakeholder interaction by discussing this topic at regular SMR generic topic meetings, reviewing position papers from an American Nuclear Society special committee and NEI, and evaluating topical reports and white papers from potential vendors. The NRC staff is developing input for a SECY paper intended for summer 2011, to clearly define the problem and inform the Commission of best approaches to resolve the issue. Throughout the execution of the issue resolution plan, updated user needs and priorities are communicated to RES for longer-term investigations. Since the establishment of the working group, it has become clear that requests for near-term application exemptions to 10 CFR 50.54(m) will focus on task and workload analyses to form the technical basis of the exemption. Task and workload analyses are methods following established NRC guidance and for which the agency has strong experience and an existing framework.

Offsite Emergency Planning and Preparedness Requirements

The NRC staff discussed this theme at several public meetings on SMR generic topics and is reviewing position papers along with other assessments from vendors, the NGNP Program, and other sources to develop possible approaches to establishing emergency planning and preparedness (EP) requirements for SMRs. NEI has formed a task force that is addressing EP

for SMRs. The NRC staff completed a series of internal meetings, which identified possible policy and key technical issues associated with EP requirements, and has identified emergency planning zones (EPZs) as a key issue affecting SMR EP licensing activities and programs. The NRC staff is developing and has drafted an information SECY paper to the Commission describing possible alternatives for EP approaches for SMRs. One alternative involves establishing a graded approach to EP, which includes options for determining EPZ sizes for SMRs.

Security and Safeguards Requirements

As with EP, the NRC staff is assessing various documents related to security and possible approaches for increasing the degree to which security concerns are addressed in plant designs. This is another topic that the NRC staff will address during routine meetings with the SMR community and for which the NRC staff will solicit position papers from NEI and more detailed information from vendors. The NRC staff expects a position paper from NEI in the fourth quarter of FY 2011. The NRC staff will inform the Commission and, if appropriate, seek Commission direction on the activities and approaches being pursued by the NRC staff, vendors, and likely licensing applicants. The NRC staff is currently conducting an IIRP to find potential issues that were not identified during earlier analyses. The NRC staff is also working with Sandia National Laboratories to put contracts in place for preliminary vital equipment identification, target set analysis, and source term evaluation. The NRC staff continues to work with vendors to provide safeguards-level information that will assist them in incorporating security elements during design development.

NRC Annual Fees

The NRC staff has assessed the public comments received in response to an advance notice of proposed rulemaking issued in 2009 that sought views on possible changes to the current NRC annual fee structure to incorporate SMRs. An NEI task force has presented a position paper to the NRC staff for consideration in the development of a possible variable fee structure for SMRs. The NRC staff assessed the industry position paper and considered it while developing a memorandum to the Commission dated February 7, 2011, which describes a variable annual reactor fee approach based on licensed thermal power. The NRC staff will prepare a proposed rule to codify the variable annual fee for reactors and expects to provide the proposed rule to the Commission in FY 2013.

Insurance and Liability Requirements

The NRC staff has conducted internal meetings and has met with the NEI working group evaluating possible approaches to address SMR insurance and liability requirements, especially those requirements related to the Price-Anderson Act. This issue was discussed at the SMR generic topics public meeting held in November 2010. NEI issued a position paper on June 6, 2011. This is primarily an industry led activity. The NRC staff is developing a commission paper to address this issue along with several others.

Decommissioning Funding Requirements

The NRC staff's working group assessed an industry position paper submitted by NEI, which addressed requirements for decommissioning funding assurance for SMR facilities. The NRC staff will describe the planned approach and the resolution of several other policy issues in a staff-developed paper.

Infrastructure Development

Focusing the attention of staff on the NGNP Program and on iPWRs continues to enhance the effectiveness and efficiency of other advanced reactor activities by doing the following:

- providing the information necessary to develop resource estimates for reviewing the designs for advanced reactors
- allowing the NRC technical review staff sufficient time to become familiar with advanced reactor design concepts
- providing feedback to potential applicants on key design, technology, safety research, and licensing issues
- identifying interrelated or cross-cutting regulatory safety issues and reasonable resolution paths for these issues
- identifying technical skills necessary to review these designs and, as appropriate, hiring staff and contractors who possess the requisite knowledge, skills, and abilities

The NRC staff is working with the DOE laboratories for support in the resolution of generic policy and technical issues, development of guidance documents for both staff and industry, development of training for staff, and preapplication reviews of topical reports and white papers submitted by potential applicants. The NRC staff is developing its longer term contracting strategy, which will likely involve commercial contractors for the review of actual design and licensing applications.

INTERNATIONAL ACTIVITIES

The NRC is continuing to use international experience and lessons learned to ensure safe designs both domestically and internationally. All of the new reactor designs under review in the United States are also under review, being constructed, or in operation in other countries. During this period, NRO participated in multilateral and bilateral activities as part of the MDEP, attending conferences and workshops, hosting assignees from other regulators, and supporting requests for expert participation by the International Atomic Energy Agency

Multinational Design Evaluation Program and Bilateral Cooperative Activities

NRO staff chaired or participated in the following meeting MDEP meetings:

- April 27-29, 2011, a meeting of the MDEP Steering Technical Committee to enable the 10 participating MDEP countries to evaluate the progress of the MDEP working groups

and the overall project, recommend changes if necessary, and discuss interactions with other groups.

- April 18-20, 2011, a meeting of the MDEP Codes and Standards Working Group in Paris to discuss the next steps to achieve harmonization of pressure-boundary codes and standards for nuclear power plant components.
- May 12-13, 2011, a meeting of the MDEP AP1000 Working Group in the UK to share information on the status of AP1000 reviews in the participating countries and discuss identified issues.
- May 11-13, 2011, a meeting of the Vendor Inspection Cooperation Working Group in Paris to identify opportunities for cooperating on vendor inspections, and compare quality assurance requirements among the member countries.
- May 16-18, 2011, a meeting of the EPR Working Group and technical expert subgroups in Paris to share information on ongoing reviews of the EPR in each country, and cooperate on the review of selected technical issues.
- June 27-29, 2011, a meeting of the Digital I&C Working Group in Paris to discuss and finalize common positions in the area of digital I&C.

On May 2-5, 2011, several NRO staff and managers participated in the International Conference on Advances in Power Plants, held in Nice, France. The staff made presentations on licensing of new reactors, construction oversight, and SMRs.

On June 7, 2011, NRO staff made a presentation to a visiting delegation of 15 representatives of the Turkish regulatory agency.

FUNDING

Committed and Obligated Funding

The following tables reflect the FY 2011 committed and obligated funding by FY quarter:

NRO CASE WORK ONLY

FY 2011 Funding	1st Quarter	2nd Quarter	3rd Quarter	Cumulative
Commitments	\$1,445,794.42	\$5,421,935.40	\$4,477,951.60	\$11,345,681.42
Obligations	\$856,372.42	\$5,821,257.40	\$3,879,792.71	\$10,557,422.53

NRO—ALL (NONPROGRAM MANAGEMENT, POLICY, AND ANALYSIS MANAGED WORK)

FY 2011 Funding	1st Quarter	2nd Quarter	3rd Quarter	Cumulative
Commitments	\$4,937,602.91	\$10,198,519.70	\$4,081,273.19	\$19,217,395.80
Obligations	\$2,593,565.86	\$12,132,848.60	\$4,153,114.30	\$18,879,528.76