Protecting People and the Environment

SEMIANNUAL STATUS REPORT ON THE LICENSING ACTIVITIES AND REGULATORY DUTIES OF THE UNITED STATES NUCLEAR REGULATORY COMMISSION

April 2013–September 2013

Note: The period of performance covered by this report includes activities that occurred from the first day of April 2013 to the last day of September 2013. The transmittal letter to Congress accompanying this report provides additional information to keep Congress fully and currently informed of the licensing and regulatory activities of the U.S. Nuclear Regulatory Commission.

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I Implementing Risk-Informed and Performance-Based Regulations

Currently, 37 operating nuclear power reactors have committed to transition to the risk-informed, performance-based fire protection licensing basis permitted under Title 10 of the *Code of Federal Regulations* (10 CFR) 50.48(c). This licensing basis is also known as National Fire Protection Association Standard 805 (NFPA 805), "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants." This number does not include the seven reactor units represented by two pilot plants and two non-pilot plants that have already made the transition.

In April 2011, the Commission approved a policy paper (see SECY-11-0033, "Proposed NRC [U.S. Nuclear Regulatory Commission] Staff Approach To Address Resource Challenges Associated with Review of a Large Number of NFPA 805 License Amendment Requests," dated March 4, 2011). This policy paper allows submittal of the remaining license amendment requests (LARs) on a staggered basis, similar to the approach used for license renewal applications (LRAs). Correspondingly, the Commission changed the Enforcement Policy (see SECY-11-0061, "A Request to Revise the Interim Enforcement Policy for Fire Protection Issues on 10 CFR 50.48(c) To Allow Licensees to Submit License Amendment Requests in a Staggered Approach (RIN 3150-AG48)," dated April 29, 2011) to match this staggered approach. Five LARs (for six reactor units) were submitted in fiscal year (FY) 2011; one licensee (one reactor unit) withdrew its application. Nine LARs (for 13 reactor units) were submitted in FY 2012. One licensee's application, submitted in FY 2012, was not accepted for review (one reactor unit). Eight of the 11 LARs (for 19 reactor units) that are scheduled to be submitted in FY 2013 have been received. The remaining three LARs (for four reactor units) are scheduled to be submitted in FY 2014. One licensee has informed the NRC that it intends to start the transition to NFPA 805 at one of its plants after the agency approves its two other plants for transition. Licensees for five reactor plants that were actively transitioning have informed the staff that they will not transition to NFPA 805, including three plants that have announced plans to decommission. Therefore, the staff is currently planning on a total of 44 reactor units transitioning to NFPA 805 (including the four pilot reactor units), which represents 44 percent of the current commercial power reactor units licensed to operate in the United States.

Southern Nuclear Operating Company (Southern) submitted its proposal to implement 10 CFR 50.69, "Risk-Informed Categorization and Treatment of Structures, Systems and Components for Nuclear Power Reactors," for Vogtle Electric Generating Plant (VEGP), Units 1 and 2, on August 31, 2012. Southern submitted a second proposal to implement risk-informed allowed outage times for VEGP's technical specifications on September 13, 2012. These two submittals are currently under staff review and a number of Requests for Additional Information (RAIs) have been issued by the NRC staff. The implementation of these voluntary risk-informed initiatives is complex. The NRC sometimes waives its staff review fees because lessons learned from the efforts are used to improve staff guidance and to contribute to the efficiency and effectiveness of future reviews and submittals. The NRC has granted Southern's request to waive review fees for both the allowed outage time and the 10 CFR 50.69 submittals.

The NRC staff continues to work on a proposed initiative to improve nuclear safety and regulatory efficiency by applying probabilistic risk assessment to determine the risk significance of current and emerging issues in an integrated manner and on a plant specific basis. The NRC staff will provide a notation vote paper to the Commission on options to consider in July 2014.

II Reactor Oversight Process

The NRC continues to implement the Reactor Oversight Process (ROP) at all nuclear power plants and to meet with interested stakeholders periodically to collect feedback on the effectiveness of the process, which is then considered in making future refinements to the ROP. Additionally, the NRC is making progress on the ROP Enhancement Project, which is the NRC's internal self-assessment project to determine the effectiveness of the ROP. Recent activities included issuing a *Federal Register* notice that requested input from external stakeholders and holding a day-long public meeting with external stakeholders. Responses to the *Federal Register* notice and information provided at the public meeting are being considered in the staff's review. Also, NRC staff completed flooding and seismic walkdown audits at selected U.S. nuclear power plants to support the NRC's staff evaluation of licensee's responses to the Near-Term Task Force review of the accident at the Fukushima Dai-ichi nuclear facility.

The agency's most recent performance assessments show that all plants continue to operate safely. The NRC's Office of Public Affairs issued a press release on September 6, 2013, summarizing the 2013 mid-cycle performance assessments for all nuclear plants and associated mid-cycle assessment letters, which are publicly available on the NRC Web site.

On April 5, 2013, the staff sent a paper, SECY-13-0037, entitled, "Reactor Oversight Process Self-Assessment for Calendar Year (CY) 2012," to the Commission. The self-assessment results for 2012 indicated that the ROP met program goals and achieved its intended outcomes and that the NRC appropriately monitored operating nuclear power plant activities and focused agency resources on performance issues. The staff implemented several ROP improvements in 2012 and will continue to further improve the ROP based on feedback and lessons learned. On April 8, 2013, the staff also sent a paper, SECY-13-0038 entitled, "Fiscal Year 2012 Results of the Industry Trends Program for Operating Power Reactors," to the Commission. These assessments were made publicly available in April 2013 and were discussed at the Agency Action Review Meeting (AARM) on April 24, 2013. The results of that AARM were discussed at a public Commission meeting on May 29, 2013.

The NRC hosted public meetings on the ROP on May 8, June 26, August 7, and September 11, 2013. The ROP Working Group and other interested stakeholders attended these and other public meetings to provide a forum for external feedback on staff initiatives such as risk informing the ROP for new reactors, incorporating safety culture common language into the ROP, and enhancing the ROP inspection and assessment programs. The ROP Working Group is comprised of representatives from industry and the NRC staff who work toward continuously improving the ROP and reactor safety.

III Status of Issues Tracked in the Reactor Generic Issues Program

The Generic Issues Program has closed one generic issue (GI):

GI-189, "Susceptibility of Ice Condenser and Mark III Containments to Early Failure from Hydrogen Combustion during a Severe Accident"

This GI involves the early containment failure probability of ice condenser containments from hydrogen combustion events. The staff subsequently extended the issue to include boiling-water reactor (BWR) Mark III containments because their relative low free volume and strength are comparable to pressurized-water reactor (PWR) ice condenser containments.

The NRC staff reviewed proposals from licensees affected by GI-189 and concluded that the proposed modifications will resolve GI-189 and provide benefit for some separate security scenarios identified during the course of the GI-189 review. On June 15, 2007, the NRC staff issued letters to affected licensees accepting their commitments to changes that enhance plant capabilities to mitigate the potential for early containment failure from hydrogen combustion. Since that time, licensee implementation and NRC verification inspections performed under NRC Temporary Instruction (TI) 2515/174, "Hydrogen Igniter Backup Power Verification," dated February 12, 2008, have been completed at all nine affected sites. In November 2010, the staff received a commitment from the Tennessee Valley Authority to implement measures at Watts Bar Unit 2, currently under construction, equivalent to those carried out at Watts Bar Unit 1.

Assessments of the March 2011 nuclear accident in Japan continue and may touch on other issues associated with hydrogen combustion under Near-Term Task Force Recommendation 6. The NRC Japan Lessons-Learned Project Directorate will proceed independently to address other hydrogen combustion issues, if required. On January 31, 2013, the staff transmitted a technical report supporting closure of GI-189 to the Advisory Committee on Reactor Safeguards (ACRS) for review, and the ACRS supported the report. In a memorandum to the NRC Executive Director for Operations dated June 12, 2013, the Director of the Office of Nuclear Reactor Regulation reported that GI-189 was closed. Therefore, this issue is resolved.

The Generic Issues Program is tracking four open GIs. The status of each open issue is described below:

GI-191, "Assessment of Debris Accumulation on Pressurized-Water Reactor (PWR) Sump Performance"

This GI concerns the possibility that, following a loss of coolant accident (LOCA) in a PWR, debris accumulating on the emergency core cooling system sump screen may result in clogging and restrict water flow to the pumps.

As a result of this GI and a related Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation during Design Basis Accidents at Pressurized-Water Reactors," dated September 13, 2004, all PWR licensees increased the size of their containment sump strainers, significantly reducing the risk of strainer clogging. A related issue, which needs to be resolved to close GI-191, is the potential for debris to bypass the sump strainers and enter the reactor core. In 2008, the NRC staff determined that additional industry-sponsored testing was necessary to resolve this issue. Some testing was performed, but continued testing and NRC evaluation of the testing are ongoing. In December 2010, the Commission determined it was prudent to allow the nuclear industry to complete testing on in-vessel effects and zone of influence and to develop a path forward by mid-2012. The Commission directed the staff to evaluate alternative approaches, including risk-informed approaches, for resolving GI-191 and to present them to the Commission by mid-2012.

The staff provided the Commission with a notation vote paper in July 2012 with options for the path forward to resolve GI-191, including risk-informed options. The Commission endorsed the staff's proposed options for resolving GI-191 in a Staff Requirements Memorandum dated December 14, 2012. As part of the resolution process, licensees have the flexibility to choose one of the proposed options to resolve GI-191. Licensees seeking additional time to pursue new testing or new approaches (including risk-informed option) will implement measures to mitigate the potential for debris blockage of the strainer or debris entry into the reactor core.

GI-193, “Boiling-Water Reactor (BWR) Emergency Core Cooling System (ECCS) Suction Concerns”

This GI is evaluating possible failure (or degraded performance) of the ECCS pumps caused by noncondensable gas in the suction piping that could cause gas binding, vapor locking, or cavitation.

Early work on this issue resulted in a basic understanding of the overall phenomena and a preliminary assessment that continued work on the GI is warranted. The next phase will attempt to quantify the gas void fraction present at different locations in the suppression pool as a function of time following a LOCA. Ultimately, this may identify the possible need for a post-LOCA suppression pool ECCS pump suction strainer “exclusion zone.” An “exclusion zone” is the volume below or around the downcomer exhaust, which is expected to contain a large concentration of noncondensable gas from the drywell. If a suction strainer is located in an “exclusion zone”, the ECCS pump may be vulnerable. Computational fluid dynamic models are being developed to estimate the noncondensable concentration. European test data will be used to benchmark the models.

GI-199, “Implications of Updated Probabilistic Seismic Hazard Estimates in Central and Eastern United States for Existing Plants”

This GI addresses estimated seismic hazard levels at some current central and eastern U.S. nuclear sites that may be higher than the values used in designs and previous evaluations.

The NRC evaluated the effects of new seismic hazard data and methods on U.S. nuclear plants, and it collaborated with the Electric Power Research Institute to ensure a sound technical approach. The Safety/Risk Assessment Panel issued its report on September 2, 2010. The panel recommended that further actions be taken to address GI-199 outside the GI program. The NRC issued Information Notice 2010-18, “Implications of Updated Probabilistic Seismic Hazard Estimates in Central and Eastern United States on Existing Plants,” on September 2, 2010, to inform stakeholders that the GI-199 Safety/Risk Assessment Report had been issued. The information notice also stated that the NRC will follow the appropriate regulatory process to request that operating plants and independent spent fuel storage installations provide specific information about their facilities to enable the staff to complete the regulatory assessment and identify and evaluate candidate backfits. The agency incorporated GI-199 into the work done by the Japan Lessons-Learned Project Directorate in response to the March 2011 Japan nuclear event. The NRC has requested that all nuclear power plants reevaluate seismic hazards using present-day guidance and methods. For plants in the central and eastern United States, the seismic hazard reevaluations will be completed by March 2014. Plants in the western United States will complete their seismic hazard reevaluations by March 2015. In addition, some plants will be required to complete a risk assessment if the reevaluated hazard exceeds the plant’s design basis. If required, those risk assessments must be completed in June 2017 or December 2019, depending on the amount of ground motion exceedance.

GI-204, “Flooding of Nuclear Power Plant Sites Following Upstream Dam Failures”

This GI relates to potential flooding effects from upstream dam failure(s) on nuclear power plant sites, spent fuel pools, and sites undergoing decommissioning with spent fuel stored in spent fuel pools. The Office of Nuclear Reactor Regulation proposed this GI in July 2010, and the GI Program accepted it for screening in August 2010. The NRC completed the screening

analysis and, after coordination with the other Federal agencies, it publicly announced the GI on March 6, 2012.

This GI is being addressed as part of the agency's efforts associated with responding to the lessons learned from the Fukushima nuclear accident in Japan. Licensees must submit their flood hazard reevaluations to the NRC in three prioritized categories with deadlines in March 2013, March 2014, and March 2015.

Out of the 22 sites that must submit their flood hazard reevaluation reports (FHRRs) by March 2013, 16 sites have submitted the FHRR on time. One site requested an extension and submitted the FHRR on May 2013. The remaining five sites requested an extension, which the NRC approved with the earliest response due December 31, 2013. The other responses were extended to prioritized response due dates of March 2014 or March 2015. The FHRRs are currently under review by staff. All other sites are on schedule to submit the FHRRs by their prioritized response due dates.

IV Licensing Actions and Other Licensing Tasks

Operating power reactor licensing actions are defined as orders, license amendments, exemptions from regulations, relief from inspection or component testing, topical reports submitted on a plant-specific basis, notices of enforcement discretion, or other actions requiring NRC review and approval before they can be implemented by licensees. The FY 2013 NRC Performance Budget plan incorporates two output measures related to licensing actions: the number of licensing actions completed per year and the age of the licensing action inventory.

Other licensing tasks for operating power reactors are defined as (1) licensee responses to NRC requests for information through generic letters or bulletins; (2) NRC responses to petitions filed under 10 CFR 2.206, "Requests for Action under this Subpart"; (3) NRC review of generic topical reports, (4) responses by the NRC's Office of Nuclear Reactor Regulation to NRC regional office requests for assistance; (5) NRC review of licensee analyses under 10 CFR 50.59, "Changes, Tests and Experiments"; (6) final safety analysis report (FSAR) updates; or (7) other licensee actions not requiring NRC review and approval before licensees can implement them. The FY 2013 NRC Performance Budget plan incorporates two output measures related to other licensing tasks: the number of other licensing tasks completed each year and the age of the other licensing task inventory.

The following table shows the actual FY 2011 and FY 2012 results, FY 2013 goals, and the FY 2013 results for the NRC Performance Budget plan output measures for operating power reactor licensing actions and other licensing tasks. The metrics for licensing actions completed and other licensing tasks completed were challenged due to Fukushima-related work competing for the same critical area skill sets and personnel.

PERFORMANCE BUDGET PLAN				
Output Measure	**FY 2011 Actual**	**FY 2012 Actual**	**FY 2013 Goals**	**FY 2013 Actual**
Licensing actions completed per year	849	770	802	668
Age of licensing action inventory	90.3% ≤ 1 year and 99.9% ≤ 2 years	95.8% ≤ 1 year and 100% ≤ 2 years	95% ≤ 1 year and 100% ≤ 2 years	95% ≤ 1 year and 100% ≤ 2 years
Other licensing tasks completed per year	465	674	577	529
Age of other licensing tasks inventory	94.2% ≤ 1 year and 99.6% ≤ 2 years	94.6% ≤ 1 year and 100% ≤ 2 years	90% ≤ 1 year and 100% ≤ 2 years	97.6% ≤ 1 year and 100% ≤ 2 years

V Status of License Renewal Activities

The NRC has issued renewed licenses to 73 power reactor units licensed to operate.

Waste Confidence Decision

Since the inception of the NRC's reactor license renewal program, NRC reactor license renewal environmental reviews have relied on the Commission's Waste Confidence Decision and Rule (10 CFR 51.23, "Temporary Storage of Spent Fuel after Cessation of Reactor Operation—Generic Determination of No Significant Environmental Impact") to address the environmental impacts of continued spent-fuel storage. As a result of the 2012 vacatur and remand of the 2010 update to the Waste Confidence Rule, final issuances of renewed licenses are currently on hold.

The NRC staff continues its review of LRAs and continues to issue draft and final supplemental environmental impact statements (SEISs) (license renewal environmental impact statements are supplements to NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants") consistent with Commission direction. The staff has developed explanatory text for use in SEISs that addresses waste confidence activities and their relationship to license renewal environmental reviews. In addition, as part of the license renewal process, the NRC staff continues to perform its safety evaluation work on each application for license renewal and to issue safety evaluation reports (SERs). After the NRC appropriately addresses the waste confidence remand—and after adjudicatory contentions (including those related to waste confidence, where applicable) have also been appropriately resolved—the NRC will be able to resume issuing final renewed licenses.

Applications Currently under Review

The NRC currently has 10 LRAs for 18 reactor units under review. The following is the status of each application currently under review. Previously issued semiannual reports describe activities that occurred before April 2013.

Indian Point Nuclear Generating, Units 2 and 3

On April 30, 2007, Entergy Nuclear submitted an LRA for Indian Point Nuclear Generating, Units 2 and 3, to extend the operating licenses for an additional 20 years beyond the current license periods. In June 2013, the staff issued a final supplement to the December 2010 final SEIS to address information regarding the plants' effect on aquatic organisms that was identified subsequent to the publication of the final SEIS. Additionally, activities related to the Atomic Safety and Licensing Board (ASLB) hearing process continued.

On September 28, 2013, Indian Point Nuclear Generating Unit 2, entered a period of extended operation. Given the timely submittal of the LRA, Unit 2 continued operation is permitted under NRC regulations until the NRC makes a final determination on whether to issue a renewed license. A final determination will be made once the ASLB hearing is concluded and a final Waste Confidence Rule is issued. During the Unit 2 period of extended operation, the licensee has voluntarily made regulatory commitments regarding the establishment and use of aging management programs, and the NRC continues normal reactor oversight to ensure safe operations.

Diablo Canyon Nuclear Power Plant, Units 1 and 2

On November 24, 2009, Pacific Gas and Electric Company (PG&E) submitted an LRA for the Diablo Canyon Nuclear Power Plant, Units 1 and 2, to extend the operating licenses for an additional 20 years beyond the current license periods. PG&E requested that the NRC put its review of the LRA on hold in April 2011 because of a delay in PG&E's ability to satisfy requirements of the Coastal Zone Management Act, for which PG&E needs to complete a seismic study. The anticipated completion date for the seismic study is to be determined, and thus, the NRC's review remains on hold. In addition, an admitted contention remains pending before the ASLB.

Seabrook Station, Unit 1

On June 1, 2010, NextEra Energy Seabrook, LLC, submitted an LRA for the Seabrook Station, Unit 1, to extend the operating license for an additional 20 years beyond the current license period. In April 2013, the staff issued a second draft SEIS, which included a revised Severe Accident Mitigation Alternatives (SAMA) analysis and updates in compliance with the NRC's revised environmental protection regulations at 10 CFR Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions." During the reporting period, the staff also worked toward resolution of the open items identified in the staff's June 2012 SER. Additionally, activities related to the ASLB hearing process continued.

Davis-Besse Nuclear Power Station, Unit 1

On August 30, 2010, FirstEnergy Nuclear Operating Company submitted an LRA for the Davis-Besse Nuclear Power Station, Unit 1, to extend the operating license for an additional 20 years beyond the current license period. The staff issued the final SER in September 2013. During the reporting period, the staff continued work on the environmental review. Additionally, activities related to the ASLB hearing process continued.

South Texas Project, Units 1 and 2

On October 28, 2010, South Texas Project Nuclear Operating Company submitted an LRA for the South Texas Project, Units 1 and 2, to extend the operating licenses for an additional 20 years beyond the current license periods. During the reporting period, the staff continued work on the environmental review. The safety review for this application has been temporarily paused until 2014 at the request of the applicant so that the applicant could focus its resources on addressing aging management issues identified during the safety review of the license renewal application.

Limerick Generating Station, Units 1 and 2

On June 22, 2011, Exelon Generating Co., LLC, submitted an LRA for the Limerick Generating Station, Units 1 and 2, to extend the operating licenses for an additional 20 years beyond the current license periods. In April 2013, the staff issued the draft SEIS, and the safety review continued during the reporting period. Additionally, activities related to the ASLB hearing process continued.

Grand Gulf Nuclear Station, Unit 1

On November 1, 2011, Entergy Nuclear submitted an LRA for the Grand Gulf Nuclear Station, Unit 1, to extend the operating license for an additional 20 years beyond the current license period. During the reporting period, the staff continued work toward resolution of the open items identified in the staff's January 2013 SER. The staff also continued the environmental review of the application.

Callaway Plant, Unit 1

On December 19, 2011, Union Electric Company submitted an LRA for Callaway Plant, Unit 1, to extend the operating license for an additional 20 years beyond the current license period. The staff published the SER with open items in April 2013. During the reporting period, the staff also continued work on the environmental review.

Sequoyah Nuclear Plant, Units 1 and 2

On January 15, 2013, Tennessee Valley Authority submitted an LRA for Sequoyah Nuclear Plant, Units 1 and 2, to extend the operating licenses for an additional 20 years beyond the current license periods. During the reporting period, the staff conducted onsite audits related to the environmental review of the application. Additionally, work continued on the safety review and on activities related to the ASLBP hearing process.

Byron Station, Units 1 and 2, and Braidwood Station, Units 1 and 2

On May 29, 2013, Exelon Generation Company, LLC, submitted an LRA for Byron Station, Units 1 and 2, and Braidwood Station, Units 1 and 2, to extend the operating licenses for an additional 20 years beyond the current licensing periods. During the reporting period, the staff conducted onsite audits related to the environmental and safety reviews of the application. Additionally, activities related to the ASLBP hearing process continued.

Decommissioning of San Onofre Nuclear Generating Station, Units 2 and 3

On June 7, 2013, Southern California Edison announced plans to permanently retire San Onofre Nuclear Generating Station, Units 2 and 3 (SONGS). The NRC had previously anticipated receiving a license renewal application for SONGS as one of the STARS Alliance applications in either 2016 or 2018. However, the NRC will no longer be receiving this application because of the decommissioning of SONGS. At this time, the NRC staff is establishing an inspection and oversight program that is appropriate for the licensee's proposed decommissioning activities.

Generic Environmental Impact Statement Update

The NRC completed the process of revising NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants," issued in May 1996, and the associated guidance documents to update the environmental protection regulations for renewing nuclear power plant operating licenses. Effective in June 2013, the NRC amended its environmental protection regulations governing environmental impact reviews for nuclear power plant operating license renewals to accomplish three objectives: (1) to update the Commission's 1996 findings on the environmental effect of renewing the operating license of a nuclear power plant; (2) to redefine the number and scope of the environmental impact issues that must be addressed by the NRC during license renewal environmental reviews; and (3) to incorporate lessons learned and knowledge gained from license renewal environmental reviews conducted by the NRC since 1996. The NRC published the revised generic environmental impact statement and associated guidance documents on June 20, 2013.

VI Summary of Reactor Enforcement Actions

The reactor enforcement statistics in the tables below are arranged by region, half year, most recent half year, fiscal year to date, and two previous fiscal years for comparison purposes. Separate tables provide the non-escalated and escalated reactor enforcement data, as well as the escalated enforcement data associated with traditional enforcement and the ROP. The severity level assigned to the violation (i.e., traditional enforcement) generally reflects the significance of a violation. However, for most violations, the significance of a violation is assessed using the significance determination process under the ROP, which uses risk insights, where appropriate, to assist the NRC in determining the safety or security significance of inspection findings identified within the ROP.

These tables are followed by brief descriptions of the escalated reactor enforcement actions associated with traditional enforcement and the ROP (as well as any other significant actions) taken during the applicable calendar half-year.

NON-ESCALATED REACTOR ENFORCEMENT ACTIONS						
		Region I	Region II	Region III	Region IV	TOTAL
Cited Severity Level IV or Green	1st Half FY 13	4	5	0	4	13
	2nd Half FY 13	2	3	1	0	6
	FY 13 YTD Total	6	8	1	4	19
	FY 12 Total	4	8	1	8	21
	FY 11 Total	4	16	1	5	26
Non-Cited Severity Level IV or Green	1st Half FY 13	67	70	98	155	390
	2nd Half FY 13	88	47	103	48	286
	FY 13 YTD Total	155	117	201	203	676
	FY 12 Total	143	151	227	296	817
	FY 11 Total	165	113	228	260	766
TOTAL Cited and Non-Cited Severity Level IV or Green	1st Half FY 13	71	75	98	159	403
	2nd Half FY 13	90	50	104	48	292
	FY 13 YTD Total	161	125	202	207	695
	FY 12 Total	147	159	228	304	838
	FY 11 Total	169	129	229	265	792

NOTE: The non-escalated enforcement data above reflect the cited and non-cited violations either categorized at Severity Level IV or associated with green findings during the referenced time periods. The numbers of cited violations are based on Enforcement Action Tracking System data that may be subject to minor changes following verification. The monthly totals generally lag by 30 days because of the time needed for inspection report and enforcement development. These data do not include green findings that do not have associated violations.

ESCALATED REACTOR ENFORCEMENT ACTIONS ASSOCIATED WITH TRADITIONAL ENFORCEMENT						
		Region I	Region II	Region III	Region IV	TOTAL
Severity Level I	1st Half FY 13	0	0	0	0	0
	2nd Half FY 13	0	0	0	0	0
	FY 13 YTD Total	0	0	0	0	0
	FY 12 Total	0	0	0	0	0
	FY 11 Total	0	0	0	0	0
Severity Level II	1st Half FY 13	0	0	0	0	0
	2nd Half FY 13	0	0	0	0	0
	FY 13 YTD Total	0	0	0	0	0
	FY 12 Total	0	0	0	0	0
	FY 11 Total	0	0	0	0	0
Severity Level III	1st Half FY 13	0	2	0	1	3
	2nd Half FY 13	1	4	1	1	7
	FY 13 YTD Total	1	6	1	2	10
	FY 12 Total	0	2	0	2	4
	FY 11 Total	0	1	0	1	2
TOTAL Violations Cited at Severity Level I, II, or III	1st Half FY 13	0	2	0	1	3
	2nd Half FY 13	1	4	1	1	7
	FY 13 YTD Total	1	6	1	2	10
	FY 12 Total	0	2	0	2	4
	FY 11 Total	0	1	0	1	2

NOTE: The escalated enforcement data above reflect the Severity Level I, II, or III violations or problems cited during the referenced time periods.

ESCALATED REACTOR ENFORCEMENT ACTIONS ASSOCIATED WITH THE REACTOR OVERSIGHT PROCESS						
		Region I	Region II	Region III	Region IV	TOTAL
Violations Related to Red Findings	1st Half FY 13	0	0	0	0	0
	2nd Half FY 13	0	0	0	0	0
	FY 13 YTD Total	0	0	0	0	0
	FY 12 Total	0	0	0	1	1
	FY 11 Total	0	1	0	0	1
Violations Related to Yellow Findings	1st Half FY 13	0	0	0	0	0
	2nd Half FY 13	0	1	1	0	2
	FY 13 YTD Total	0	1	1	0	2
	FY 12 Total	0	1	1	1	3
	FY 11 Total	0	0	0	1	1
Violations Related to White Findings	1st Half FY 13	1	2	3	2	8
	2nd Half FY 13	1	5	4	0	10
	FY 13 YTD Total	2	7	7	2	18
	FY 12 Total	4	5	3	0	12
	FY 11 Total	2	4	5	2	13
TOTAL Related to Red, Yellow, or White Findings	1st Half FY 13	1	2	3	2	8
	2nd Half FY 13	1	6	5	0	12
	FY 13 YTD Total	2	8	8	2	20
	FY 12 Total	4	6	4	2	16
	FY 11 Total	2	5	5	3	15

NOTE: The escalated enforcement data above reflect the violations or problems cited during the referenced time periods that were associated with either red, yellow, or white findings. These data do not include red, yellow, or white findings that do not have associated violations.

Reactor Escalated Enforcement Actions and Other Significant Actions Taken

The list below includes security-related actions and confirmatory actions not included in the tables above. The NRC does not make details of security-related violations publicly available.

Dominion Energy Kewaunee, Inc. (Kewaunee Power Station) EA-12-272

On April 4, 2013, the NRC issued a notice of violation to Dominion Energy, Kewaunee, Inc., for a violation of 10 CFR 50.54, “Conditions of Licenses,” and risk significant planning standards 10 CFR 50.47(b)(4) and (b)(8) associated with a White Significance Determination Process

finding, which involved the loss of the auxiliary and reactor building system particulate iodine and noble gas (SPING) indication. Specifically, from February 28, 2011, to March 30, 2011, SPING indication on the plant process computer system and local server station was inoperable, which rendered emergency action levels ineffective. Kewaunee neither identified nor took timely corrective action to repair failed equipment necessary to support the emergency preparedness program.

Dominion Energy Kewaunee, Inc. (Kewaunee Power Station) EA-12-266
On April 30, 2013, the NRC issued a notice of violation to Dominion Energy Kewaunee, Inc. (licensee) for a Severity Level III problem with a proposed civil penalty of $70,000 and a White Significance Determination Process finding for an associated performance deficiency. The violations were based on the licensee's failure to follow License Condition 2.C.(3), "Fire Protection" and 10 CFR 50.9(a), "Completeness and Accuracy of Information." Specifically, from at least August 19, 2009, to December 20, 2011, a Kewaunee fire brigade trainer willfully failed to conduct announced fire drills in accordance with the Kewaunee license condition and implementing procedure and falsified fire drill evaluation and critique forms.

Exelon Generation Company, LLC (Three Mile Island Unit 1) EA-13-046

On April 30, 2013, the NRC issued a notice of violation to Exelon Generation Company, LLC (Three Mile Island) for a violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," associated with a White Significance Determination Process finding involving Three Mile Island's failure to identify, during external flood barrier walkdowns, that electrical cable conduit couplings in the Three Mile Island Nuclear Station, Unit 1 Air Intake Tunnel (AIT) were not sealed, as designed, to maintain the integrity of the external flood barrier system. Specifically, Exelon staff, during visual inspections of the couplings and conduits in the AIT, did not identify that flood seals and material had not been installed, as designed.

Southern Nuclear Operating Company, Inc. (Farley Nuclear Plant) EA-12-145

On May 6, 2013, the NRC issued a Confirmatory Order to Southern Nuclear Operating Company, Inc. (SNC) to formalize commitments made as a result of an Alternative Dispute Resolution mediation session held on March 15, 2013. The commitments were made as part of a settlement agreement between SNC and the NRC regarding apparent violations of NRC requirements. The agreement resolves the apparent deliberate violations involving falsification of radiation worker training exams by security officers at Farley Nuclear Plant. The proctors and security officers self-proctoring the radiation worker exams failed to ensure that the exams were not compromised either by someone providing answers, hinting to the answers, or using material such as study guides during the exams. As such, the security officers did not complete their radiation worker training requalification exams in accordance with SNC procedures to maintain unescorted access to protected or vital areas or radiation controlled areas, yet they continued to have unescorted access to those areas. SNC agreed to a number of corrective actions, issuing fleet-wide messages that will clearly articulate that willful misconduct is incompatible with safe nuclear construction and operation, conducting fleet-wide stand-downs with all employees and contractors to address trustworthiness and integrity, and modifying guidance involving investigations based on allegations to include an initial evaluation of potential nuclear safety implications and to identify any appropriate immediate mitigating measures to be taken while the investigation is ongoing.

Tennessee Valley Authority (Watts Bar Nuclear Plant) EA-13-018

On June 4, 2013, the NRC issued a notice of violation associated with a Yellow Significance Determination Process finding, a White SDP finding, and a Severity Level III violation to Tennessee Valley Authority. The Yellow finding, a violation of Technical Specification (TS) 5.7.1, "Procedures," was issued for the failure of Watts Bar personnel to maintain an adequate procedure to implement its flood mitigation strategy within 27 hours as described in Watts Bar's updated final safety analysis report from initial licensing to July 2012. The White finding, a violation of Technical Specification 5.7.1, was issued for the failure of Watts Bar personnel to establish and maintain an adequate procedure to implement its flood mitigation strategy before September 30, 2009, such that earthen dams located upstream of the facility could potentially overtop, causing a subsequent breach and resulting in onsite flooding and the submergence of critical equipment. The Severity Level III violation involved the failure of Watts Bar personnel to implement 10 CFR 50.72(b)(3)(ii)(B) on December 30, 2009, when Watts Bar personnel failed to notify the NRC within 8 hours upon confirmation that a postulated probable maximum flood (PMF) level would exceed the current licensing basis and the design basis PMF flooding event would result in overtopping of critical earthen dam structures upstream of the Watts Bar facility.

Tennessee Valley Authority (Sequoyah Nuclear Plant, Units 1 and 2) EA-13-023

On June 4, 2013, the NRC issued a notice of violation associated with a White Significance Determination Process finding and a Severity Level III violation to Tennessee Valley Authority. The White finding, a violation of Technical Specification 6.8.1, "Procedures and Programs," involved the failure of Sequoyah personnel to establish an adequate Abnormal Condition Procedure to implement its flood mitigation strategy. Specifically, before September 30, 2009, AOP-N.03, "External Flooding," was inadequate to mitigate the effects of a PMF event, in that earthen dams located upstream of the facility could potentially overtop, causing a subsequent breach and resulting in onsite flooding and the submergence of critical equipment. The Severity Level III violation of 10 CFR 50.72(b)(3)(ii)(B) involved the failure of Sequoyah personnel to report within 8 hours an unanalyzed condition that significantly degraded plant safety. Specifically, on December 30, 2009, Sequoyah personnel failed to notify the NRC upon confirmation that a postulated PMF level would exceed the current licensing basis and the design basis PMF flooding event would result in overtopping of critical earthen dam structures upstream of the Sequoyah facility.

Tennessee Valley Authority (Sequoyah Nuclear Plant, Units 1 and 2) EA-13-045

On June 4, 2013, the NRC issued a notice of violation to Tennessee Valley Authority for a violation of 10 CFR 50, Appendix B, Criterion III, "Design Control," associated with a White Significance Determination Process finding involving the failure of Sequoyah personnel to translate the design basis related to onsite flooding into specifications, drawings, procedures, and instructions. Specifically, before December 15, 2012, Sequoyah's design documentation for the essential raw cooling water (ERCW) pumping station did not contain information to identify design basis flood barriers to prevent water from flooding the building during a design basis flood. As a result, the ERCW pump station would not remain functional when subjected to the maximum flood level, the ERCW intake station would not remain dry during flood mode, and portions of the ERCW walls and penetrations would not withstand all static and dynamic forces imposed by the design basis flood.

Entergy Operations, Inc. (Arkansas Nuclear One) EA-12-275

On June 10, 2013, the NRC issued a notice of violation to Entergy Operations, Inc. (Entergy) for a Severity Level III violation of NRC Regulations. Between December 14, 2010, and January 11, 2012, the licensee failed to maintain information required by the Commission's regulations as complete and accurate in all material respects. Specifically, a senior emergency planner formerly employed by Arkansas Nuclear One, deliberately falsified documents regarding the performance of Emergency Preparedness drills and communication surveillances. The senior emergency planner documented that the drills and surveillances were completed when they had not actually been performed. These actions caused Arkansas Nuclear One to be in violation of 10 CFR 50.9(a), which requires, in part, that information provided to the Commission by the licensee, or information required by the Commission's regulations to be maintained by a licensee, shall be complete and accurate in all material respects.

Tennessee Valley Authority (Sequoyah Nuclear Plant) EA-13-044

On June 12, 2013, the NRC issued a notice of violation to Tennessee Valley Authority for a violation associated with a Greater-than-Green Significance Determination Process finding at the Sequoyah Nuclear Plant. The details of the finding are official use only–security-related information.

Tennessee Valley Authority (Watts Bar Nuclear Plant) EA-13-019

On June 18, 2013, the NRC issued a notice of violation and proposed civil penalty in the amount of $70,000 to the Tennessee Valley Authority TVA for a Severity Level III problem involving three violations of NRC requirements relating to the commercial grade dedication program at the Watts Bar Nuclear Plant, Unit 2 (WB2). Specifically Tennessee Valley Authority failed to: (1) verify the proper critical characteristics for certain safety-related items procured for the WB2 project starting with the resumption of construction activities in 2008 as a result of a breakdown in its 10 CFR Part 50, Appendix B, quality assurance (QA) program; (2) report the breakdown in its QA program to the NRC as required by 10 CFR 50.55(e)(4) and (e)(5); and (3) follow plant procedures and identify a significant condition adverse to quality and, thus, reevaluate corrective action categorization when the QA program breakdown was found to be more significant than originally reported.

Duke Energy Carolinas, LLC (Oconee Nuclear Station) EA-13-010

On July 1, 2013, the NRC issued a confirmatory order (CO) and a notice of violation for a Severity Level III violation to Duke Energy Carolinas, LLC (Duke). These actions are based on Duke's failure to comply with a license condition associated with the amendment to complete the transition to the NFPA 805 for its Oconee Nuclear Station, Units 1, 2, and 3. Duke received the notice of violation for not incorporating the protected service water (PSW) modification into its fire protection program site documents and confirming the risk reduction from the modification before January 1, 2013, as called for in its transition license condition. A CO was issued to provide a heightened regulatory accountability for the completion of the PSW system and interim milestones associated with this modification.

Entergy Nuclear Operations, Inc. (Pilgrim Nuclear Power Station) EA-11-260

On July 17, 2013, the NRC issued a notice of violation to Entergy Nuclear Operations, Inc. (Entergy) for a Severity Level III problem involving two violations of NRC requirements associated with licensed reactor operator medical examinations and reporting at the Pilgrim Nuclear Power Station (PNPS). The first violation involved Entergy's failure to ensure licensed operators at PNPS meet medical prerequisites for performing NRC-licensed operator activities and Entergy's failure to obtain prior NRC approval, as required by 10 CFR 55.3, "License Requirements"; 10 CFR 55.31, "How to Apply"; and 10 CFR 55.23, "Certification." Specifically, on various dates, licensed reactor operators performed duties without meeting medical prerequisites (blood pressure limits and stamina tests) and without prior NRC approval. The second violation involved Entergy's failure to provide the NRC with information that is complete and accurate in all material respects, as required by 10 CFR 50.9, "Completeness and Accuracy of Information." Specifically, Entergy submitted NRC Form-396s for renewal of two reactor operator licenses that certified that the operators met the medical requirements of ANSI/ANS 3.4-1983, when, in fact, the facility licensee had not verified, by conducting a stamina test, that the operators had met the requirements.

Exelon Generation Company, LLC (Dresden Nuclear Power Station) EA-13-079

On July 31, 2013, the NRC issued a notice of violation to Exelon Generation Company, LLC, for a violation of Technical Specification Section 5.4.1, "Procedures," associated with a White Significance Determination Process finding involving the failure of Dresden personnel to establish a written procedure to address the effect of an external flooding scenario on the plant. Specifically, before November 21, 2012, procedure DOA 0010-04, "Floods," did not account for reactor vessel inventory make-up during an external flooding scenario up to and including the probable maximum flood event that could result in reactor vessel water level lowering below the top of active fuel.

NextEra Energy, Point Beach, LLC (Point Beach Nuclear Plant) EA-13-125

On August 9, 2013, the NRC issued a notice of violation to NextEra Energy, Point Beach, LLC, for a violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," associated with a White Significance Determination Process finding involving the failure of Point Beach personnel to have a procedure appropriate to the circumstances to address flooding as described in the FSAR. Specifically, from January 19, 1996, to March 13, 2013, procedure PC 80 Part 7, "Lake Water Determination," as implemented, would not protect safety-related equipment in the turbine building or pump house because the procedure: (1) did not appropriately prescribe the installation of barriers such that gaps between the barriers were eliminated to prevent water intrusion; (2) did not protect equipment by requiring barriers to be placed in front of the doors, from1996 to 2008, as described in the FSAR; and (3) did not require the barriers to protect the plant to an elevation of at least 2.7 meters (9 feet) as described in the FSAR.

Tennessee Valley Authority (Browns Ferry Nuclear Plant) EA-13-118

On August 23, 2013, the NRC issued a notice of violation to Tennessee Valley Authority for a violation of Technical Specification Section 5.4.1, "Procedures," associated with a White Significance Determination Process finding involving the failure of Browns Ferry personnel to properly implement a procedure recommended in Regulatory Guide 1.33, Revision 2, Appendix A, dated February 1978. Specifically, on December 22, 2012, the licensee failed to

properly implement the procedure for Startup, Operation, and Shutdown of the Reactor Protection System (RPS), 2-OI-99, Reactor Protection System, step 5.1[3], when an operator incorrectly opened the RPS motor generator set tie to battery board 2 Breaker on the A RPS bus motor generator set while attempting to start the B RPS bus motor generator set. The failure to properly implement 2-OI-99 caused a Unit 2 reactor SCRAM and main steam isolation valve closure.

Northern States Power Company (Monticello Nuclear Generating Plant) EA-13-096

On August 28, 2013, the NRC issued a notice of violation to Northern States Power Company, MN, for a violation of Technical Specification Section 5.4.1, "Procedures," associated with a Yellow Significance Determination Process finding involving the failure of Monticello personnel to maintain a flood plan to protect the site against external flooding events. Specifically, from February 29, 2012, to February 15, 2013, the site failed to maintain flood Procedure A.6, "Acts of Nature," such that it could support the timely implementation of flood protection features within the 12-day timeframe credited in the design basis, as stated in the updated safety analysis report.

Carolina Power and Light (H.B. Robinson Steam Electric Plant, Unit 2) EA-13-129

On September 19, 2013, the NRC issued a notice of violation to Carolina Power and Light for a violation of 10 CFR 50.63(c)(2), "Loss of all Alternating Current Power, Implementation-Alternating AC Source," associated with a White Significance Determination Process finding involving the failure of Robinson to have an alternate AC power source with acceptable capability to withstand station blackout for the required durations specified in its coping analysis. Specifically, during surveillance testing of the Dedicated Shutdown Diesel Generator (DSDG) on October 2, 2012, the DSDG automatically shut down on high engine temperature caused by a failure of the radiator drive belts. Based on the failure of the DSDG and necessary repair time, this degraded condition would have prohibited the DSDG from supplying power to shutdown equipment within 1 hour following a station blackout and could have rendered the plant unable to cope for 8 hours after a postulated station blackout or to provide emergency power for certain selected Fire Safe Shutdown scenarios.

VII Power Reactor Security and Emergency and Incident Response Activities

The NRC continues to establish an appropriate regulatory infrastructure, and perform its licensing and oversight functions, to ensure protection of public health and safety and the environment. NRC's Security and Emergency Preparedness (EP) programs provide important contributions to fulfilling this mission.

The NRC continues to conduct force-on-force (FoF) inspections at each nuclear power reactor and Category I fuel cycle facility on a regular 3-year cycle. The FoF inspections assess the defensive strategies in place at licensed facilities and highlight areas that need improvement. The current 3-year FoF cycle began in January 2011. Since that time, the NRC has completed 46 FoF inspections at power reactor sites and one FoF inspection at a Category I fuel cycle facility. The NRC has also conducted three FoF re-inspections at power reactor sites as follow-ups to previous inspections.

The NRC is developing a final rule that amends security requirements in 10 CFR Part 73, "Physical Protection of Plants and Materials," to implement the new statutory authority provided by Section 161A of the Atomic Energy Act of 1954, as amended. The revised regulation will

allow certain classes of NRC licensees to apply for NRC authorization to use enhanced weapons and large capacity ammunition feeding devices, notwithstanding State, local, and other Federal firearms laws (referred to as preemption authority and enhanced weapons authority, respectively). In advance of the rulemaking, the NRC has designated, through orders, seven power reactor licensees and one Category I fuel facility as being eligible to apply for preemption authority. The NRC has received, and is considering, seven applications (from plants in New York, Maryland, and California) for NRC authorization to use enhanced weapons in consultation with the U.S. Department of Justice.

In accordance with 10 CFR Part 73.54, "Protection of Digital Computer and Communication Systems and Networks," nuclear power plant licensees and combined license (COL) applicants are required to implement a cyber security program to provide high assurance that safety, important-to-safety, security, and emergency preparedness functions are protected from cyber attacks. As a result of the significant amount of work and lead time required to fully implement the provisions called for in the licensees' NRC-approved cyber security plans, interim milestones were established to focus efforts on the highest priority activities. Licensees completed the highest priority activities in December 2012.

The NRC has developed an oversight program for cyber security that includes inspector training, an inspection program, and a process for evaluating the significance of inspection findings. This program also included the development of temporary instructions to be used in inspections of both the interim milestones and the full-implementation of licensees' cyber security programs. This was accomplished collaboratively with stakeholders, including members of industry, and representatives from the U.S. Department of Homeland Security, the Federal Energy Regulatory Commission, and the National Institute of Standards and Technology. The NRC has begun inspecting the interim milestones and will complete these inspections at 44 facilities in CY 2014. The remaining facilities will be inspected for full cyber security program implementation in CY 2015.

The NRC has developed and is implementing a cyber security roadmap (SECY-12-0088, "The Nuclear Regulatory Commission Cyber Security Roadmap") to evaluate the need for cyber security requirements for fuel cycle facilities, non-power reactors (NPRs), independent spent fuel storage installations (ISFSIs), and byproduct materials licensees. This roadmap's implementation will ensure that appropriate levels of cyber security actions are implemented in a timely and efficient manner at all NRC-licensed facilities. Additionally, the implementation will identify if, or to what extent, the program needs to be improved.

The NRC has developed and is implementing a path forward on EP communications and staffing issues identified in NRC's assessment of the Japan Earthquake and accident at the Fukushima Dai-ichi nuclear power plant (Near-Term Task Force Recommendation 9.3). The NRC has received, and is reviewing, responses to information requests concerning licensee EP staffing and communications capabilities during severe accidents. The staff completed its reviews of the communication assessments submitted to the NRC by licensees and determined that proposed interim actions (e.g., portable satellite phones) combined with long-term enhancements (e.g., new radio systems, utilizing sound powered telephones, battery powered radio repeaters, and satellite phone systems) will help to ensure that licensees can effectively communicate during a station blackout event affecting multiple units. In addition, the staff is addressing other EP items associated with Recommendation 9.3 (i.e., facilities and equipment, training and exercises or drills, and multiunit dose assessment). The NRC issued letters to all licensees to better understand their existing capabilities and plans for addressing staffing and communications during a response to a multiunit event. The staff is currently reviewing the

staffing assessments submitted to NRC by licensees, conducting public meetings, and working to develop guidance regarding the implementation of facilities and equipment, training and exercises (drills), and multiunit dose assessment.

NRC revised EP regulations in 10 CFR Part 50, “Domestic Licensing of Production and Utilization Facilities,” effective December 23, 2011. This was the first significant revision to the EP rules in over 30 years, and implementation continues into FY 2013. Specifically, during this reporting period, the staff was focused on its next key action under EP rule implementation, which is to conduct hostile-action-based exercises at all nuclear power reactor sites. Among other changes, the EP regulations were amended to require licensees to include hostile action scenarios, and other scenario variations, in drills and exercises to ensure that licensees experience and benefit from more challenging exercise scenarios.

In April 2012, the NRC and the Federal Emergency Management Agency (FEMA) began a multi-year initiative to revise NUREG-0654/FEMA-REP-1, “Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants,” one of the key guidance documents for developing and evaluating onsite and offsite emergency plans for nuclear power plants and State and local governments. This initiative continued through FY 2013. Extensive stakeholder involvement will be provided throughout the revision process, including public meetings and FEMA working group meetings that will focus on stakeholder input on emergency planning guidance topics that should be addressed in the revised document.

Consistent with the Commission’s policy to provide States with potassium iodide upon request, the NRC continues to work with States to replenish potassium iodide supplies for use as a supplement to public protective actions within the 10-mile emergency planning zones around nuclear power plants.

All physical security and EP program licensing reviews for new power reactor applications remain on schedule. The NRC staff is using its established licensing process to ensure the safety and environmental reviews meet all milestones and provide appropriate opportunities for stakeholder input.

VIII Power Uprates

There are three types of power uprates. A measurement uncertainty recapture power uprate is a power uprate of less than two percent and is based on the use of more accurate feedwater flow measurement techniques. Stretch power uprates are power uprates that are typically up to seven percent and are within the design capacity of the plant. Stretch power uprates require only minor plant modifications. Extended power uprates are power uprates beyond the original design capacity of the plant; therefore, they require major plant modifications.

Licensees have applied for and implemented power uprates since the 1970s as a way to increase the power output of their plants. The NRC staff has reviewed and approved 148 power uprates to date. Approximately 20,586 megawatts thermal (MWt) or 6,862 megawatts electric (MWe) in electric generating capacity (the equivalent of about seven large nuclear power plant units) have been gained through the implementation of power uprates at existing plants. The NRC currently has 14 power uprate applications under review, which would add an additional 3,001 MWt or 1,000 MWe to the Nation’s electrical grid.

In December 2012, the NRC staff conducted its most recent survey of nuclear power plant licensee's plans to submit power uprate applications over the next 5 years. This latest information indicates that licensees plan to request power uprates for 3 nuclear power plants during the next 5 years. This estimate includes the cancellation of 7 proposed power uprates since the previous Semi-Annual Report.

IX New Reactor Licensing

The NRC is focusing on licensing and construction activities that support large, light-water reactor applicants and licensees and is positioning itself for success in the advanced reactor program by investing in activities to establish the necessary regulatory framework and infrastructure for advanced reactors. The NRC's new reactor program also is actively engaged in several international cooperative activities to promote enhanced safety in new reactor designs, strengthen reactor siting reviews, and improve the effectiveness and efficiency of inspections and the collection and sharing of construction experience.

Large, Light-Water Reactor Application Reviews

The NRC expects to review the applications for most new large, light-water reactor nuclear power plants using 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants," which governs the issuance of standard design certifications (DCs), early site permits (ESPs), and combined licenses (COLs) for nuclear power plants. The NRC is making progress on the 10 CFR Part 52 applications currently under review as discussed below.

Early Site Permit Reviews

PSEG Power, LLC, and PSEG Nuclear, LCC

PSEG Power, LLC, and PSEG Nuclear, LLC, submitted an ESP application on May 25, 2010. This application uses the plant parameter envelope approach, which includes design parameter information from four reactor designs, namely, the U.S. Evolutionary Power Reactor (U.S. EPR), the Advanced Boiling-Water Reactor (ABWR), the U.S. Advanced Pressurized-Water Reactor (US-APWR), and the Advanced Passive 1000 (AP1000). On September 12, 2013, the NRC staff issued a revised review schedule for the PSEG ESP application. The NRC staff now expects to issue the final safety evaluation report (FSER) in April 2015 and the final environmental impact statement (FEIS) in May 2015.

Design Certification Reviews

Economic Simplified Boiling-Water Reactor

The NRC staff issued the FSER and final design approval for the ESBWR on March 9, 2011, and published the proposed rule in the *Federal Register* on March 25, 2011. On January 19, 2012, the staff informed GE Hitachi Nuclear Energy (GEH) that issues have been identified that are relevant to the conclusions in the staff's March 9, 2011, FSER. Specifically, errors were identified in the benchmarking that GEH used as a basis for determining fluctuating pressure loading on the steam dryer, and errors have been identified in a number of GEH's modeling parameters. The NRC staff informed GEH that these errors may affect the conclusions in the staff's FSER and need to be addressed before the staff completes the ESBWR DC. The staff audited the steam dryer analysis at the GEH offices in March 2012, issued requests for additional information (RAIs) to GEH in May 2012, and issued supplemental

RAIs in March 2013. GEH submitted the remaining RAI responses to the NRC at the end of September 2013. The NRC staff plans to prepare a supplemental FSER and will re-establish a rulemaking schedule after the issue has been satisfactorily resolved.

U.S. Evolutionary Power Reactor Design Certification

AREVA submitted the U.S. EPR DC application on December 11, 2007.

In December 2011, the NRC staff issued the safety evaluation with open items. Significant open items that remain unresolved include seismic and structural analysis, fuel seismic design and methodology, digital instrumentation and controls and Fukushima lessons learned. On March 5, 2013, the NRC staff issued a revised schedule letter to AREVA stating that the NRC staff expects to issue the FSER in November 2014 and complete the EPR Rulemaking by June 2015. This revised schedule assumed AREVA's ability to provide quality and timely information to the NRC to complete the review.

On July 2, 2013, the staff issued a letter informing AREVA that it has not demonstrated sufficient independence and diversity in its current U.S. EPR digital instrumentation and controls (I&C) design to meet the regulatory requirements. The staff asked AREVA to provide a resolution plan that reflects an integrated approach across all areas of the design that are impacted by AREVA's I&C design.

On October 21, 2013, AREVA issued a letter to the NRC stating that they are in the process of revising their plans to respond to remaining open items in support of the U.S. EPR design certification application. AREVA will present its revised closure plans to the NRC in a series of meetings to take place prior to the end of CY 2013. The NRC will adjusts its design certification review schedule accordingly.

U.S. Advanced Pressurized-Water Reactor Design Certification

Mitsubishi Heavy Industries Ltd. (MHI) submitted its US-APWR DC application on December 31, 2007. On August 29, 2012, MHI informed the staff of its plans to make changes to the seismic and structural design. On February 28, 2013, the NRC staff issued a revised schedule letter to MHI with an FSER completion date of September 2015 and a final US-AWPR Rulemaking date of February 2016. MHI recently informed the staff of its plan to focus their attention in the near-term on supporting the restart of MHI-designed reactors in Japan. As a result, the schedule for NRC certification will be revised.

U.S. APR1400 Design Certification

Korea Hydro and Nuclear Power Company (KHNP)/Korea Electric Power Corporation (KEPCO) submitted a design certification application for the APR1400 standard plant design on September 30, 2013. The staff is currently conducting its review to determine if the application is sufficient for docketing.

Design Certification Renewals

Advanced Boiling-Water Reactor Renewal (Toshiba)

On November 2, 2010, Toshiba tendered an ABWR DC renewal application. 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. Toshiba submitted Revision 1 of its ABWR DC renewal application on June 22, 2012.

On October 22, 2012, the NRC staff sent a letter to Toshiba requesting consideration of additional amendments to address potential backfits and other technical issues. In response, Toshiba stated in a letter dated December 14, 2012, that it would carefully consider each of the desired amendments by late 2013 and submit Revision 2 no sooner than fourth quarter of CY 2014. In order to avoid duplicate reviews, Toshiba requested that the NRC delay reviewing its application until it submits Revision 2.

Advanced Boiling-Water Reactor Renewal (GEH)

On December 7, 2010, GEH tendered an ABWR DC renewal application. The NRC staff issued a letter to the applicant on July 20, 2012, that described certain design changes that the staff believes the applicant should consider for amendments to the application. NRC staff requested that GEH identify the design changes that it intends to incorporate into its application and to provide a schedule for submitting a revised application. By letter dated September 17, 2012, GEH indicated that it plans to submit a revised application by the second quarter of 2014.

Combined License Application Activities

As of March 31, 2013, the NRC had received 18 COL applications for review. Six of the reviews have been suspended because of changes in the applicants' business strategies. On May 2, 2013, Progress Energy Carolinas, Inc. issued a letter to the NRC requesting that the NRC suspend its review of the Shearon Harris, Units 2 and 3 COL application. The Victoria COL application was withdrawn following docketing of the Victoria ESP application. (The Victoria ESP application was subsequently withdrawn on August 28, 2012.) COLs were issued for the Vogtle and V.C. Summer sites. The NRC is actively reviewing 9 COL applications for a total of 14 units, as discussed below.

Levy County Combined License Application

On July 30, 2008, Progress Energy Florida, Inc. submitted a COL application for two AP1000 units to be located at its site in Levy County, FL.

The NRC staff completed all technical reviews for the Levy County COL application and issued all safety evaluation chapters with no open items to the applicant in September 2011. The staff issued the FEIS on April 27, 2012.

On March 15, 2012, the staff requested the applicant to provide additional information related to Fukushima recommendations. On July 31, 2012, the applicant submitted Revision 5 to its COL application, which contained additional information to address the Fukushima recommendations and seismic reevaluation. The NRC staff completed its review of the applicant's seismic results and issued its SER in December 2012.

The applicant subsequently revised its application to reflect a modification to the containment condensate return system. On June 25, 2013, NRC staff extended the review schedule and now expects to issue the FSER in September 2014, principally as a result of the revised design.

William States Lee III Combined License Application

On December 13, 2007, Duke Energy Carolinas, LLC (Duke), submitted a COL application for two AP1000 units to be located at its Lee site near Charlotte in Cherokee County, South Carolina.

The NRC issued the draft environmental impact statement (DEIS) on December 13, 2011. Significant open issues include; a seismic reevaluation as a result of Fukushima; the applicant's decision to relocate the nuclear island approximately 15 meters (50 feet) to the east and 20 meters (66 feet) to the south; and to raise the base elevation by 1 meter (3 feet). The applicant's changes have impacted the NRC staff's schedule for completing both the SER and the FEIS. On July 22, 2013, the NRC staff notified the applicant that it now expects to issue the FSER in December 2015.

Turkey Point Combined License Application

On June 30, 2009, Florida Power & Light (FPL) submitted a COL application for two AP1000 units to be located at the existing Turkey Point Nuclear Generating site in Miami–Dade County, FL.

Significant issues include the regional geology and seismology review that involves a first-time review of various seismology parameters and models for the Caribbean region, and the site selection process. The NRC staff expects FPL to submit additional information related to geotechnical engineering sections of the application by early January 2014. Regarding the alternative site selection process, the NRC staff has determined that the information provided by the applicant to date regarding the viability of the inland sites is inconsistent with NRC guidance and with related case law. The NRC staff issued a letter on February 28, 2013, to inform FPL that the alternative sites review is suspended until the NRC staff and the U.S. Army Corps of Engineers (USACE) are satisfied that the proposed alternative sites meet all applicable requirements.

South Texas Project Combined License Application

On September 20, 2007, South Texas Project (STP) Nuclear Operating Company submitted a COL application for two ABWR units to be located at its site near Bay City, in Matagorda County, TX. Subsequently, Nuclear Innovation North America LLC (NINA) became the lead applicant for STP, Units 3 and 4. The NRC published the FEIS on February 24, 2011.

A significant open issue is the financial qualification of the applicant to receive a license. By letter dated May 31, 2012, NINA informed the NRC that, as a merchant power plant, it would be difficult to secure funding before the issuance of a COL. By the same letter, NINA requested that the Commission provide guidance to the NRC staff regarding financial qualification of merchant plants. Based on the staff's review of the information submitted to date, the applicant does not appear to meet the requirements of 10 CFR Part 50.33, "Contents of Applications; General Information," for financial qualification to receive a license. The NRC is not prepared to issue its determination until the issues raised by the applicant's May 31, 2012, letter are addressed.

By letter dated June 6, 2013, the staff informed the applicant that budgetary constraints have impacted the schedule for the staff's review and the staff now expects to issue the FSER in September 2015.

Calvert Cliffs Combined License Application

On July 13, 2007, Calvert Cliffs Unit 3 Nuclear Project, LLC, and UniStar Nuclear Operating Services, LLC (UniStar), submitted a partial COL application for a U.S. EPR to be located at the Calvert Cliffs site near Lusby, in Calvert County, Maryland.

On November 3, 2010, the counsel for Calvert Cliffs Unit 3 Nuclear Project, on behalf of the applicants, filed a letter indicating that Électricité de France, a foreign business entity, had acquired Constellation's 50-percent interest in UniStar. The NRC staff concluded that the proposed ownership structure did not comply with the requirements of 10 CFR 50.38, "Ineligibility of Certain Applicants." By letter dated August 27, 2012, UniStar requested that the NRC defer any outstanding issues related to foreign ownership control or domination (FOCD) and financial qualifications.

On September 24, 2012, UniStar filed a petition to the Commission for review of the decision on foreign ownership. On March 11, 2013, the Commission denied UniStar's petition. In a staff requirements memorandum, SECY-12-0168, dated March 11, 2013, the Commission directed the staff to complete a fresh assessment on issues relating to foreign ownership including recommendations on any proposed modifications to guidance or practice on foreign ownership, domination, or control that may be warranted.

By letter dated July 26, 2013, UniStar stated that it intends to develop an updated response to the staff's questions on FOCD within 3 months following the Commission's approval and issuance of any revised guidance.

Bell Bend Combined License Application

On October 10, 2008, PPL Bell Bend, LLC, submitted a COL application for a U.S. EPR to be located at a new site adjacent to its Susquehanna Steam Electric Station, in Luzerne County, PA.

The applicant proposed site layout changes to reduce impacts to "exceptional value" wetlands to satisfy the USACE 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. Another issue being addressed in the environmental review involves water withdrawal permits issued by the Susquehanna River Basin Commission. The schedule for completion of the FSER and FEIS are currently under review.

Comanche Peak Combined License Application

On September 19, 2008, Luminant submitted a COL application for two US-APWR units to be located at its Comanche Peak site near Glen Rose, in Somervell County, TX. The FEIS was issued in May 2011.

The NRC staff determined that Luminant did not provide sufficient information in its application on negation of foreign ownership. Luminant planned to submit its negation of foreign ownership plan in late 2014.

The NRC staff determined that the applicant provided inadequate responses to the staff's questions on watershed analysis, onsite flooding, ground water, and the postulated release of

radiological effluent. Luminant provided a revised integrated seismic closure and hydrology plan on May 1, 2013, and has since submitted its surface water and ground water analyses to the NRC staff.

The staff expects to issue the FSER in June 2015.

On November 7, 2013, Luminant submitted a letter announcing their decision to suspend the Commanche Peak Units 3 and 4 COL application review activities as of March 31, 2014.

North Anna Combined License Application

On November 27, 2007, Dominion Virginia Power (Dominion) submitted a COL application for an ESBWR to be located at its North Anna Power Station site near Richmond, in Louisa County, VA. On June 28, 2010, Dominion submitted a revised application to reference the US-APWR design. However, on April 25, 2013, Dominion notified the NRC of its intent to revert back to the ESBWR design. Dominion submitted its partially revised COL application in July 2013 to reflect its revised nuclear technology decision. Dominion plans to submit all application sections to the NRC by December 2013.

Fermi Combined License Application

On September 19, 2008, Detroit Edison Company (DTE) submitted a COL application for an ESBWR to be located at its Fermi site near Newport City, in Monroe County, MI.

The staff published the FEIS in January 2013. Contested hearing activities occurred in late October and early November 2013.

By letter dated June 6, 2013, the NRC staff informed DTE Electric Company that budgetary constraints have impacted the schedule for the staff's review of the Fermi 3 COL application. The NRC staff expects to issue the FSER in July 2015.

Bellefonte Combined License Application

On October 30, 2007, the Tennessee Valley Authority submitted a COL application for two AP1000 units (Units 3 and 4) to be located at its Bellefonte site near Scottsboro, in Jackson County, Alabama.

On August 18, 2011, the TVA board approved plans for the completion of Bellefonte Unit 1, with the goal of having it completed and operational by 2020. Despite the decision on the completion of Bellefonte Unit 1, the COL application for Units 3 and 4 remains a viable option for TVA. However, the completion and operation of Unit 1 (and potentially Unit 2) would create the need for additional site studies and significant revisions to the environmental report and the site safety analysis report supporting the COL application. By letter dated December 19, 2011, TVA reaffirmed that the Bellefonte Units 3 and 4 COL applications continue to be deferred indefinitely.

Nine Mile Point Combined License Application

On September 30, 2008, Nine Mile Point Nuclear Project, LLC, and UniStar Nuclear Energy submitted a COL application for a U.S. EPR (Unit 3) to be located at its Nine Mile Point Nuclear Station site in Oswego, NY. On December 1, 2009, UniStar Nuclear Energy submitted a letter

asking the NRC to suspend the COL application review, including any supporting reviews by external agencies, until further notice. On November 26, 2013, UniStar Nuclear Energy submitted a letter withdrawing its COL application for Unit 3.

Callaway Combined License Application

On July 28, 2008, Ameren UE submitted a COL application for a U.S. EPR to be located at its Callaway plant site in Callaway County, MO. The NRC suspended the Callaway review at the request of the applicant in June 2009, and it remains suspended. On April 19, 2012, Ameren Missouri issued a press release announcing that it has entered into an agreement with Westinghouse, as part of the NexStart Small Modular Reactor (SMR) Alliance. On July 3, 2012, Ameren Missouri informed the NRC that on May 18, 2012, Ameren Missouri and Westinghouse Electric submitted an application to the U.S. Department of Energy (DOE) in response to DOE's funding opportunity announcement for design and licensing of small modular reactors. In November 2012, DOE announced their selection of the Babcock and Wilcox (B&W) mPower™ as the awardee. Ameren Missouri plans to provide the NRC with its updated plan for the Callaway site.

Grand Gulf Combined License Application

On February 27, 2008, Entergy submitted a COL application for an ESBWR to be located at its Grand Gulf Nuclear Station site near Port Gibson, in Claiborne County, MS.

By letter dated January 9, 2009, Entergy asked the NRC to suspend, until further notice, its review of the docketed COL applications for the River Bend Station, Unit 3, and Grand Gulf Unit 3. Entergy plans to reconsider the GEH ESBWR reactor technology, which was the basis for the COL application. The NRC responded to the request and suspended the review; the review remains suspended.

River Bend Station Combined License Application

On September 25, 2008, Entergy submitted a COL application for an ESBWR to be located at its River Bend Station site near St. Francisville, LA. By letter dated January 9, 2009, Entergy requested a suspension, until further notice, of the NRC's review of the docketed COL applications for River Bend Station, Unit 3, and Grand Gulf Unit 3. The review remains in suspension.

Expected Application Submittal to the NRC

The NRC staff anticipates the submittal of one ESP application (Blue Castle) during 2014.

Regulatory Infrastructure

The NRC is further refining its approaches to review processes for new reactor applications and future reviews of advanced reactor designs by implementing timely and effective policy decisions, enhancing and revising guidance to previous large light-water reactor review schedules, and by introducing more efficiency into the application review process. The NRC has emphasized the timely identification and resolution of potential policy and regulatory issues identified in the licensing of new and advanced reactor designs, by updating affected guidance documents and developing guidance for new regulatory requirements, pursuing changes to

regulations where needed, engaging potential applicants early in the pre-application phase, and further solidifying inspection procedures and programs surrounding new construction activities.

Examples of infrastructure activities completed over the last 6 months are described below.

New Reactor Licensing Process Lessons Learned Review: 10 CFR Part 52 (April 2013)

Following the issuance of the combined licenses for Vogtle Units 3 and 4, and Summer Units 2 and 3, the NRC initiated a lessons learned review to identify potential enhancements to the 10 CFR Part 52 licensing process. The report identified seven key items and associated potential actions to enhance the licensing process and improve the efficiency of future licensing reviews. These items include enhancing the application acceptance review process, updating pertinent new reactor review guidance, addressing potential technical issues associated with the approach to standardization, enhancing the NRC's management system that tracks NRC questions to the applicants, streamlining the rulemaking approach to design certifications, and updating 10 CFR Part 52 and other pertinent regulations to further simplify and enhance the reviews of future applications.

SECY-13-0033: "Allowing Interim Operation under Title 10 of the Code of Federal Regulations Section 52.103", April 4, 2013

This paper informed the Commission on several issues associated with interim operation of the facility while Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) hearings are pending. The paper also presents options that the NRC may take in order to make the 10 CFR 52.103(g) finding that the acceptance criteria in the ITAAC are met, regardless of the pendency of a hearing, and recommended that the Commission delegate the 10 CFR 52.103(g) finding to the staff. The Commission issued a staff requirements memorandum for SECY-13-0033 on July 19, 2013, approving the staff's recommendation and further directing the staff to develop a range of options for ITAAC hearing formats for Commission review and approval.

Draft COL-ISG-025: Interim Staff Guidance on Changes during Construction under 10 CFR Part 52

The NRC reissued Draft COL-ISG-025 for use and comment to provide the methods for NRC staff to respond to a preliminary amendment request (PAR) from a licensee by performing a review of the PAR's impact on ITAAC and verifying that the PAR is accurately reflected in the license amendment request.

Draft COL/ESP-ISG-026: Environmental Issues Associated with New Reactors (August 2013)

This guidance is intended to assist staff in conducting environmental reviews associated with early site permit and combined license applications. This Interim Staff Guidance (ISG) complements existing NRC guidance included in NUREG-1555, "Standard Review Plans for Environmental Reviews for Nuclear Power Plants: Environmental Standard Review Plan (with Supplement 1 for Operating Reactor License Renewal)," including the 2007 draft revisions. Use of this guidance will assist the staff in addressing certain aspects of the environmental reviews for ESP and COL applications that: (1) have evolved since the last update to NUREG-1555, (2) were identified during ESP and COL reviews as needing updating, or (3) involve the USACE as a cooperating agency. Specific topics discussed include updated guidance to the staff on the assessment of construction impacts, greenhouse gases and climate change, socioeconomics,

environmental justice, need for power, alternatives, cumulative impact assessments, and historic and cultural resource issues.

Draft COL/ESP-ISG-027: Specific Environmental Guidance for iPWR Reviews (August 2013)

The purpose of this ISG is to clarify the NRC guidance and application of the Environmental SRP to environmental reviews for applications to construct and operate an integrated pressurized-water reactor (iPWR). This guidance applies to applications for limited work authorizations, construction permits, and operating licenses as well as applications for ESPs and COLs. Specific topics discussed include purpose and need, alternatives, cumulative impacts, the need for power, and benefit-cost. This ISG is complementary to Draft COL/ESP-ISG-026 discussed above.

Construction Inspection

Construction under 10 CFR 50

Watts Bar Nuclear Plant Unit 2 (WB2) is the only nuclear power plant currently being constructed under 10 CFR 50. The Tennessee Valley Authority received a construction permit for Watts Bar Nuclear Plant units 1 and 2 in 1973. Because of the identification of a large number of deficiencies, WB2 construction was suspended in the mid 1980's, with major structures in place and equipment such as reactor coolant system piping installed. TVA resumed construction on Unit 2 in late 2007. TVA estimates that the unit will be complete and ready for operation between September and December of 2015.

Many of the required NRC construction inspections for plants being licensed under 10 CFR Part 50 were completed or partially completed before suspension of Unit 2 construction in the mid-1980s. When Unit 2 construction resumed, the NRC staff reassessed the inspection program for WB2 and identified over 500 items that required inspection and closure. Over the past year, construction inspections have continued. Currently 338 of the 543 inspection items have been closed. These inspections were conducted by the three permanently assigned construction resident inspectors and by inspectors from the NRC regional office in Atlanta, GA. As TVA has completed construction on individual safety-related systems, NRC inspections of pre-operational testing have commenced. These inspections will continue in 2013 with the majority of pre-operational testing inspections anticipated for 2014.

Construction under 10 CFR 52 Licenses

The NRC issued COLs to Southern Nuclear Operating Company on February 10, 2012, for two AP1000 units at the Vogtle site near Augusta, GA, and to South Carolina Electric & Gas Company on March 30, 2012, for two AP1000 units at the V.C. Summer site near Columbia, SC. As construction progresses, the NRC has increased the pace of construction inspections to verify compliance with the agency's regulations and ensure that the new plants are constructed in accordance with their combined license. The inspections are conducted by three permanently assigned construction resident inspectors at each site and by teams of inspectors from the NRC regional office in Atlanta, GA.

Safety related construction activities at Vogtle Units 3 and 4 and V.C. Summer Units 2 and 3 have focused on the construction of the nuclear island basemats, fabrication of steel containments, and fabrication of structural modules for the auxiliary building. In addition, both licensees have a wide variety of non-safety related construction activity ongoing. Recent NRC

inspections have focused on activities such as welding, fitness for duty, civil/structural engineering activities, and digital instrumentation and control system engineering. NRC inspection activities will continue to increase as licensees broaden the scope of construction activities.

The NRC staff continues to implement and refine the processes and guidance developed for closure verification of inspections, tests, analyses, and acceptance criteria (ITAAC). The staff facilitated several public workshops to solicit input, exchange views, and reach consensus on several construction inspection issues, including the development of additional ITAAC closure notification (ICN) examples. Members of the public, Nuclear Energy Institute (NEI), industry representatives, and other external stakeholders participated in these public workshops.

Several ICNs have been submitted for Vogtle Units 3 and 4. The staff continues to review these ICNs to determine whether they contain sufficient information to demonstrate that the ITAAC have been successfully completed by the licensee, as required by 10 CFR 52.99(c)(1). On June 17, 2013, the first *Federal Register* notice was published documenting the NRC staff's verification of the completion of Vogtle Unit 3 ITAAC for backfill compaction under the Seismic Category 1 structures, as required by 10 CFR 52.99(e)(1).

In December 2012, the NRC completed a 12-month pilot of a new Construction Reactor Oversight Process (cROP) to monitor and assess the construction activities at Vogtle Units 3 and 4 and V.C. Summer Units 2 and 3. The staff subsequently hosted four public meetings to solicit input from external stakeholders on the effectiveness of the cROP. After incorporation of lessons-learned into the cROP, the NRC fully implemented the cROP at the four new reactor units on July 1, 2013. Similar to ROP practices, the NRC will continue to periodically meet with interested stakeholders to collect feedback on the effectiveness of the process, which is then considered in making future refinements to the cROP. The agency's most recent performance assessments show that reactor construction is being conducted safely as all four units are in the licensee response band of the construction action matrix. Plant assessments and the latest cROP-related information are publicly available on the NRC Web site.

In July 2013, the NRC completed an assessment of NRC licensing and inspection requirements, policies, procedures, and practices during the first year of post-COL implementation of 10 CFR Part 52 "Licenses, Certifications, and Approvals for Nuclear Power Plants." The assessment concluded that the NRC staff conducted regulatory activities with safety as its primary goal but that efficiency could be improved through some minor changes to the NRC processes.

Vendor Inspections

The NRC staff continued to implement a Vendor Inspection Program of vendors supporting both new and existing reactor licensees. The vendor inspections have identified issues related to design control, control of purchased material, equipment and services, test control, and corrective actions. These inspection findings represent instances where vendors supplying goods and services were not implementing quality assurance requirements necessary to assure their products fully bound all of the necessary design requirements. As part of efforts to improve industry performance, the NRC staff continued its participation in several quality assurance and inspection outreach activities, including: biennial vendor oversight workshops; meetings related to the Nuclear Procurement Issues Committee; American Society of Mechanical Engineers, Section III and Nuclear Quality Assurance; as well as meeting with NEI.

The NRC staff continues its rulemaking efforts to clarify 10 CFR Part 21, "Reporting of Defects and Noncompliance" consistent with its proposal in Commission paper SECY-11-0135, "Staff Plans to Develop the Regulatory Basis for Clarifying the Requirements in 10 CFR Part 21." The draft regulatory basis was made public in December 2012 to solicit early stakeholder feedback and the staff subsequently hosted a series of public meetings.

Advanced Reactors

Although vendors and advocates have approached the NRC for a variety of reactor technologies, the NRC staff has focused its attention on small light-water reactors, referred to as small modular reactors (SMRs) due to expected near-term application submittals. The NRC staff has undertaken a variety of activities to prepare for applications for SMRs that may arrive as early as 2014. Reactors that do not use conventional fuels and moderators are referred to as Advanced Reactors. Below is a status update of the pre-application activities that the NRC has engaged in with advanced reactor designers.

Next Generation Nuclear Plant

The staff has been working with DOE on resolving policy issues identified within the Next Generation Nuclear Plant (NGNP) program. Resolution of these issues is intended to support licensing of any future high-temperature gas-cooled reactor designs that might be submitted or other advanced reactor technologies.

In letters dated October 17, 2011, Secretary of Energy Chu informed Congress that, given current fiscal constraints, competing priorities, projected cost of the NGNP prototype, and inability to reach agreement with industry on cost share, DOE would not proceed with the Phase II NGNP design activities at this time. The project would continue to focus on high temperature reactor research and development activities, interactions with the NRC to develop a licensing framework, and establishment of a public-private partnership until conditions warrant a change in direction.

On February 15, 2012, the NRC staff issued a letter to DOE outlining the scope of remaining activities that would support DOE's interest in making progress on a licensing framework. Subsequent interactions accordingly focused on four key issues previously highlighted in the NGNP Licensing Strategy Report that DOE and the NRC jointly issued to Congress in 2008. These issues concern: (1) licensing basis event selection; (2) radionuclide release source terms; (3) containment functional performance; and (4) emergency preparedness.

The staff will summarize the results from these NGNP interactions, along with supporting technical observations, in updated assessment reports on DOE's proposed approaches to these key issues. The updated assessment reports will be issued following ACRS review, at the end of CY 2013.

Integral Pressurized-Water Reactors (iPWRs)

NuScale Power, LLC

In response to Regulatory Issue Summary (RIS) 2012-12, "Licensing Submittal Information and Design Development Activities for Small Modular Reactor Designs," dated December 28, 2012, NuScale Power, LLC, announced a new DC application submittal date of the third quarter of CY 2015, with the objective of obtaining design certification from the NRC.

NRC and NuScale personnel continue to meet to discuss various aspects of the design such as steam and power conversion systems, auxiliary systems, instrumentation and control, and containment design.

Babcock and Wilcox (B&W) mPower™ and Tennessee Valley Authority

In response to RIS 2012-12, Babcock and Wilcox (B&W) mPower™, Inc., announced a new DC application submittal date of the third quarter of CY 2014 in support of the TVA Clinch River construction permit application. They also announced that Generation mPower™ LLC intends to assume responsibility for submittal of the DC application.

The NRC staff has been engaged in pre-application activities with B&W, since mid-2009, and the NRC has received numerous technical reports and position papers on various aspects of the mPower™ design. Through these early interactions, the NRC staff anticipates many of the most critical technical issues will have success paths before the application is received.

The NRC staff is developing the first design specific review standard (DSRS) for the mPower™ design. The DSRS will function like the standard review plan and will consider safety and risk categorization for the systems, structures, and components associated with the mPower™ design. The DSRS will allow the staff to work through complex technical issues in advance of the application, allowing the applicant to provide a more complete product that will be easier to review. The staff issued the draft version of the mPower™ DSRS in May 2013 for interim use and comment through the *Federal Register*. The staff also will engage public stakeholders through meetings to discuss selected sections before issuing the final mPower™ DSRS.

On February 11, 2013, TVA responded to RIS 2012-12, stating that it currently plans to apply for a construction permit for up to four mPower™ reactors at the Clinch River site in Tennessee in the second quarter of CY 2015. The NRC staff is conducting meetings with TVA to discuss the regulatory framework and expectations for this submittal.

Westinghouse and Ameren

Westinghouse is developing a 225 MWe power output SMR (WSMR) design and has stated that the smaller scale features of the WSMR are analogous to those of the AP1000 design certified under 10 CFR Part 52. The NRC staff met with Westinghouse at NRC headquarters on several occasions during this time period, on topics such as digital instrumentation and control and fuel design. In addition, the NRC staff is conducting a technical review of a topical report regarding Westinghouse's identification and ranking of small break loss-of-coolant accident phenomena. Westinghouse responded to RIS 2012-12 and stated that it intends to submit a design certification amendment for the WSMR in the second quarter of CY 2014 and subsequently Ameren Missouri intends to submit a COL application for multiple WSMR units to be located at the existing Callaway site.

Holtec

Holtec is developing the Holtec Inherently Safe Modular Underground Reactor SMR-160 design that has a 160 MWe electrical power output. On March 20, 2013, Holtec responded to RIS 2012-12 and informed the NRC of their intention to submit a Design Certification Application during the fourth quarter of 2016. The NRC staff will continue meeting with Holtec, as resources allow, to gain a better understanding of its SMR-160 design.

Other Reactor Technologies

Several private industry reactor designers and vendors have held discussions with the NRC regarding different non-light-water reactor (LWR) designs. In addition, the NRC staff maintains awareness of DOE's research programs for non-LWR technologies and the development of non-LWRs within the international community.