November 26, 2014

The Honorable Sheldon Whitehouse
Chairman, Subcommittee on Clean Air
and Nuclear Safety
Committee on Environment and Public Works
United States Senate
Washington, DC 20510

Dear Mr. Chairman:

On behalf of the U.S. Nuclear Regulatory Commission (NRC), I am pleased to submit the NRC's semiannual report on the status of our licensing and other regulatory activities. The enclosed report covers activities conducted by the NRC during the period from April through September 2014.

The NRC's response to the lessons learned from the Fukushima accident in Japan continued during the period and has focused on the highest-priority (Tier 1) activities, but work on the other activities (Tiers 2 and 3) also progressed in line with the agency's established schedules. Additionally, some intermediate activities (Tier 2) have been integrated into activities related to the highest priority actions. The agency continued to assign resources to address these activities and ensure a balance between implementing lessons learned from Fukushima and the need to ensure that those efforts do not displace ongoing work of greater safety benefit, work that is necessary to maintain safety, or other higher-priority work. In particular, the agency is mindful of complexities in completing many licensing activities due to some non-Fukushima-related and Fukushima-related work competing for the same critical skill sets.

The NRC continues to review the licensees' plans to achieve compliance with the Mitigation Strategies Order and the Spent Fuel Pool Instrumentation Order, which were issued in March 2012. Immediately after the current reporting period ended, on October 4, 2014, the first licensee informed NRC staff that a nuclear plant was fully compliant with both Orders. The NRC has issued interim staff evaluations and is in the process of auditing the licensees' implementation of these safety improvements. In June 2014, the NRC staff received the licensees' integrated plans for compliance with the revised Severe Accident Capable Hardened Vents Order, which was issued in June 2013, and is now reviewing these plans.

The NRC has also reviewed the licensees' final reports on the seismic and flooding hazard walkdowns performed at each nuclear power plant and has issued safety assessments related to those reports. The NRC requested that nuclear power plant licensees reevaluate potential seismic and flooding hazards. For the flooding hazard reevaluations, plants were divided into three groups based on the complexity of the analysis and other factors. The NRC staff is reviewing the flooding hazard reevaluations for the first and second set of plants asked to provide reports. Licensees for plants in the third group will submit their flooding hazard reevaluation reports by March 2015. Several licensees whose plant report was originally scheduled to be submitted by March 2014 have been granted extensions to allow for the U.S. Army Corps of Engineers to provide necessary input to complete the analyses. These licensees are expected to submit their reports before February 2016.

By March 31, 2014, licensees of nuclear plants in the Central and Eastern United States (CEUS) submitted reports on the reevaluated seismic hazard for their sites. NRC staff reviewed the CEUS reports in accordance with the NRC-endorsed guidance. By letter dated May 9, 2014, the NRC issued a screening review and prioritization letter to the 61 CEUS sites regarding whether they needed to complete future seismic risk evaluations. The letter placed 44 CEUS sites into 3 priority groups for completion of seismic risk evaluations. Ten of those plants were conditionally screened in as potentially having to do further seismic risk evaluations pending further information from licensees or analysis from the NRC staff. Since that time, most of the sites that were conditionally screened in have screened out because licensees have provided additional information. The 17 sites that were not placed into one of the three priority groups either are required to respond only to limited-scope evaluations (i.e., high-frequency evaluation, low-frequency evaluation, or spent fuel pool evaluation) or have been screened-out of all further evaluations. Of the plants that screened in for further evaluations, Group 1 plant seismic risk submittals are due by June 2017, and Group 2 plant submittals are due by December 2019. Group 3 plants are sites with reevaluated hazards that exceeded ground motions for the current design basis by a relatively small amount, and the NRC staff is evaluating whether those plants will need to perform a full seismic risk evaluation in order for the NRC to determine whether additional regulatory action in warranted.

The NRC staff is preparing to review Expedited Approach reports required for those sites that screened-in for further seismic evaluations. The Expedited Approach submittals, due in December 2014, serve as an engineering review of interim evaluations done to support continued operation while further seismic risk studies are conducted. The evaluations look at the systems and components that can be used to safely shut down a plant under certain accident conditions. The Expedited Approach will either confirm that a plant has sufficient margin to continue with a longer-term evaluation without any modifications or identify the need to enhance the seismic capacity of the plant. Seismic hazard re-evaluations from licensees of western plants will be submitted by March 2015.

Various rulemaking activities related to the requirements of the orders and other Japan Near-Term Task Force recommendations are also proceeding as scheduled. The Commission approved consolidating the station blackout mitigation strategies rulemaking with the onsite emergency response capabilities rulemaking, as well as including portions of the emergency planning recommendations. The consolidation enables the NRC to use resources in a more efficient manner to produce an integrated and coherent set of requirements for addressing beyond-design-basis accidents. The staff is also currently developing the regulatory basis for the Containment Protection and Release Reduction (formerly called “filtering strategies”) rulemaking.

The agency completed its consideration of the Near-Term Task Force recommendation to establish a logical, systematic, and coherent regulatory framework for addressing beyond-design-basis events that appropriately balances defense-in-depth and risk considerations (also known as Recommendation 1). The staff proposed a limited set of regulatory improvement activities to the Commission in December 2013. In May 2014, the Commission largely disapproved the staff recommendations and instead directed that the objectives of the activities be reevaluated in the context of the ongoing work on the Risk Management Regulatory Framework (RMRF). This work stems from a June 2012 tasking memorandum from the former NRC Chairman to the former Executive Director for Operations directing the NRC staff to consider recommendations from NUREG-2150, “A Proposed Risk Management Framework,” developed by NRC’s Risk Management Task Force led by former

Commissioner George Apostolakis. Work on the RMRF is progressing and will be treated outside the scope of NRC's post-Fukushima actions.

In November 2013, the NRC staff submitted a paper to the Commission concerning the expedited transfer of spent fuel from the spent fuel pool to dry cask storage. In May 2014, the Commission concluded that expedited transfer of spent fuel was not necessary, but directed the staff to take some additional actions associated with the spent fuel loading patterns and seismic reevaluations of spent fuel pools. These activities are now in progress.

For all of the activities stemming from the Fukushima lessons learned, the NRC continues to place a high level of importance on public interaction. In fiscal year (FY) 2014, the NRC has held more than 50 public meetings related to Fukushima lessons learned, and these opportunities for collaboration with the public, industry, and other stakeholders have improved the effectiveness and efficiency of the NRC's actions.

Shortly after the close of this reporting period, and after extensive public involvement, the agency published its final rule and generic environmental impact statement (GEIS) on continued storage of spent nuclear fuel (previously referred to as "waste confidence"). This action was in response to a remand by the D.C. Circuit Court of Appeals of the NRC's 2010 waste confidence rule, which the Court found did not satisfy agency obligations under the National Environmental Policy Act. The new continued storage rule adopts the findings of the GEIS regarding the environmental impacts of storing spent fuel at any reactor site after the reactor's licensed period of operations ends. As a result, those generic impacts do not need to be reanalyzed in the environmental reviews for individual licenses. In a related matter, the Commission issued an order lifting its suspension of final licensing actions impacted by the Court's decision when the continued storage final rule became effective on October 20, 2014.

During the reporting period, the NRC was actively reviewing 11 license renewal applications covering 19 reactor units. The staff also continued reviewing eight new reactor combined license applications for 12 proposed new reactor units.

In April, the NRC issued new uranium recovery facility operating licenses to Powertech USA for the Dewey Burdock facility in Fall River and Custer Counties, SD, and to Strata Energy, Inc. for the Ross facility in Crook County, WY. These licenses are the fourth and fifth issued by the NRC for new uranium-recovery facilities in recent years.

On May 30, the agency released its annual report on abnormal occurrences for FY 2013, citing 10 events involving radioactive materials. An accident or event is considered an abnormal occurrence if it involves a major reduction in the degree of protection of public health and safety. Of the 10 events reported, two involved exposure of an embryo or fetus and eight were associated with the use of radioactive material during diagnostic or therapeutic medical procedures, and all occurred in Agreement States (i.e., States that regulate industrial and medical uses of radioactive materials under an agreement with the NRC). No events at NRC-licensed facilities, including nuclear power plants, were significant enough to be reported as abnormal occurrences.

On June 10 and 11, the NRC held its 9th annual Fuel Cycle Information Exchange, during which several hundred licensees, interested stakeholders, and NRC staff discussed regulatory issues related to uranium enrichment and conversion, nuclear fuel fabrication, and the deconversion of depleted uranium tails. The conference included discussions and

presentations on nuclear safety standards, guidance development and rulemaking, operating experience, security and safeguards, and emergency planning.

In July, the agency received the final report from the International Atomic Energy Agency's International Regulatory Review Service (IRRS) February 2014 follow-up mission to its initial October 2010 mission. The purpose of the IRRS effort was for an international team of experts to review the regulatory framework for the safety of operating nuclear power plants in the U.S. and evaluate the effectiveness of regulatory functions implemented by the NRC. The final report concluded that the recommendations and suggestions from the 2010 IRRS mission had been taken into account systematically, that significant progress had been made in many areas, and that many improvements were carried out. The IRRS team also observed that the NRC has acted promptly and effectively after the Fukushima Dai-ichi accident in the interest of public health and safety in the U.S.

Also in July, the NRC, the Department of Energy (DOE), the Department of State, and the Environmental Protection Agency jointly completed the fifth report updating the U.S. National Report prepared under the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management. The Joint Convention establishes an international peer review process among Contracting Parties and provides incentives for nations to take appropriate steps to bring their nuclear activities into compliance with international safety standards and practices. The report was provided to the other Contracting Parties for review. The DOE has the lead for the working group that prepared the national report.

On August 1, the NRC received an "A" from the U.S. Small Business Administration for its FY 2013 efforts to meet the Federal contracting goal for small businesses. This marks the third consecutive year the NRC has earned this recognition. In FY 2013, the NRC had $254.56 million in eligible contracting dollars. Of that amount, approximately 33 percent went to small businesses, exceeding the agency goal of 29 percent.

Also in August, the agency announced the award of $15 million in FY 2014 grants to academic institutions through the Nuclear Education Program. The grants are used for scholarships, fellowships, trade school and community college scholarships, and faculty development with the objective of helping to maintain a work force of highly qualified nuclear professionals. This fiscal year, the NRC awarded 49 grants to 37 higher education institutions, including Minority-Serving Institutions, located in 23 States and in Puerto Rico. Since the program began in 2007, the NRC has awarded nearly $122 million in grants.

In early September, the NRC issued mid-cycle assessment letters to the Nation's operating commercial nuclear power plants regarding their performance through the first half of 2014. The mid-cycle assessment period concluded June 30, with 90 plants in the two highest performance categories. Of the 100 operating plants, 78 facilities fully met all safety and security performance objectives and will continue to receive baseline inspections. Twelve reactors were assessed as needing to resolve one or two items of low to moderate safety significance and thus will receive supplemental inspection attention from the agency to follow up on corrective actions. Eight nuclear reactors were in the third performance category with a degraded level of safety performance. For this category, regulatory oversight will include additional NRC inspections, senior management attention, and oversight focused on the causes of the degraded performance. One reactor, Browns Ferry Unit 1 in Alabama, was in the fourth performance category through the end of the assessment period and required significantly more oversight because of a pre-existing safety finding of high significance. However, since then, Browns Ferry 1 transitioned to the second-highest-performing level after resolving its significant

performance issues and, on October 20, 2014, after the reporting period ended, all three units at Browns Ferry were returned to the normal levels of inspection and oversight for the first time in more than four years.

The Fort Calhoun plant remains under an increased NRC oversight program, distinct from the normal reactor oversight process, because of an earlier extended shutdown associated with significant performance issues. Therefore, the licensee did not receive a mid-cycle assessment letter. The plant will remain under increased NRC oversight until the agency determines that the licensee's performance warrants returning it to the normal oversight process based on overall licensee performance.

Also in early September, the agency issued a new strategic plan covering FY 2014 through FY 2018, which provides a blueprint for the agency to plan, implement, and monitor the work needed to achieve the NRC's mission for the next four years. In the plan, the NRC established two strategic goals: (1) to ensure the safe use of radioactive materials, and (2) to ensure the secure use of radioactive materials. The plan also includes a new vision statement: "A trusted, independent, transparent, and effective nuclear regulator." In addition, it sets strategic objectives that describe what is needed to achieve the agency's goals and describes strategies that reflect how the agency will respond to new challenges affecting nuclear regulations. The NRC staff also initiated Project Aim 2020 to improve the agency's planning, agility, and performance. We have worked with internal and external parties to forecast the future workload and operating environment in 2020. The intent of the project is to position the agency to be more proactive rather than reactive to circumstances that may be outside NRC control.

In September, the NRC sent the third quadrennial report of the Radiation Source Protection and Security Task Force to President Obama and to Congress, outlining the Federal government's efforts over the past four years to enhance the security of radioactive sources. The task force was established by the Energy Policy Act of 2005, with the NRC as its chair, to evaluate the security of radioactive sources in the U.S. and provide recommendations on guarding them from potential criminal or terrorist threats. The 2014 report presents the status of open recommendations, including actions taken on the remaining recommendations from the 2006 and 2010 reports, as well as three new recommendations addressing cybersecurity, financial planning or other mechanisms to address costs for disposal/disposition of radioactive sources, and transition to effective alternative technologies that could replace all or some current technologies that use radioactive sources of concern.

The NRC submitted one event to the IAEA for inclusion in the International Nuclear and Radiological Event Scale (INES). The INES is a worldwide tool for member nations to communicate to the public, in a consistent way, the safety and significance of nuclear and radiological events. The event, involving overexposure to a radiographer, was rated as level 2, the second-lowest level on the INES scale.

In addition to the recently published continued storage rule discussed earlier, the NRC has sought public comments on ongoing or proposed regulatory activities and has issued other new final regulations through the use of *Federal Register* notices. These included proposed revisions to requirements for medical uses of radioactive materials, potential changes to radiation protection regulations, proposed generic procedures the agency would use to conduct hearings on whether a new reactor has been built according to its license, and a final rule that outlined the licensing, inspection, and annual fees the NRC will charge its applicants and licensees for FY 2014.

The agency conducted over 500 public meetings—in the Washington, DC, area and around the country—addressing a full range of NRC issues. The meetings included Commission, Advisory Committee, Licensing Board, and staff-sponsored events. Also during this time, the NRC received 335 Freedom of Information Act (FOIA) requests and closed 335 FOIA requests. Of particular note, the agency has completed processing FOIA requests regarding the Fukushima Dai-ichi accident in Japan, several of which requested any and all documents relating to the accident. Since March 11, 2011, the NRC has received 54 such FOIA requests and released 258,796 pages of records to the public, including more than 21,409 pages released during the period covered by this report.

Please contact me for any additional information you may need.

Sincerely,

/RA/

Allison M. Macfarlane

Enclosure:
As stated

cc: Senator Jeff Sessions

Identical letter sent to:

The Honorable Sheldon Whitehouse
Chairman, Subcommittee on Clean Air
and Nuclear Safety
Committee on Environment and Public Works
United States Senate
Washington, DC 20510
cc: Senator Jeff Sessions

The Honorable Barbara Boxer
Chairman, Committee on Environment
and Public Works
United States Senate
Washington, DC 20510
cc: Senator David Vitter

The Honorable Fred Upton
Chairman, Committee on Energy
and Commerce
United States House of Representatives
Washington, DC 20515
cc: Representative Henry A. Waxman

The Honorable Ed Whitfield
Chairman, Subcommittee on Energy and Power
Committee on Energy and Commerce
United States House of Representatives
Washington, DC 20515
cc: Representative Bobby L. Rush

The Honorable John Shimkus
Chairman, Subcommittee on Environment
and the Economy
Committee on Energy and Commerce
United States House of Representatives
Washington, DC 20515
cc: Representative Paul Tonko

The Honorable Mike Simpson
Chairman, Subcommittee on Energy
and Water Development
Committee on Appropriations
United States House of Representatives
Washington, DC 20515
cc: Representative Marcy Kaptur

The Honorable Dianne Feinstein
Chairman, Subcommittee on Energy
and Water Development
Committee on Appropriations
United States Senate
Washington, DC 20510
cc: Senator Lamar Alexander

Protecting People and the Environment

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

April–September 2014

Note: The period of performance covered by this report includes activities that occurred from the first day of April to the last day of September 2014. 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, 35 operating nuclear power reactors have committed to transition to the risk-informed, performance-based fire-protection licensing basis permitted under Title 10, "Energy," of the *Code of Federal Regulations* (10 CFR) paragraph 50.48(c). This licensing basis is also known as National Fire Protection Association (NFPA) Standard 805, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants." This number does not include the 11 reactor units 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), which allowed submittal of the remaining license amendment requests (LARs) on a staggered basis, in a way 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," 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). Eleven LARs (for 19 reactor units) were submitted in FY 2013. Two LARs (for three reactor units) were submitted in FY 2014. One additional LAR (for one reactor unit) is scheduled to be submitted in FY 2016, and another LAR (for two reactor units) is scheduled to be submitted in FY 2017. 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 46 reactor units transitioning to NFPA 805 (including the four pilot reactor units), which represents 46 percent of the current commercial power reactor units licensed to operate in the United States.

On November 5, 2012, the Commission directed the staff to develop an approach for allowing licensees to propose to the NRC a prioritization of the implementation of regulatory actions as an integrated set and in a way that reflects their risk significance on a plant-specific basis for Commission review and approval. The NRC staff refers to this initiative as the risk-prioritization initiative (RPI) and has continued to work with external stakeholders and to develop a draft process for implementing RPI, pending approval by the Commission. During the current reporting period, the NRC staff conducted two public meetings in May and September 2014. The NRC staff also participated in demonstration pilots exercising the draft process at six operating reactor sites from July through September 2014. In March 2015, the NRC staff will provide a Commission paper that will provide the Commission with options for implementing RPI.

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 Safety Evaluations are being completed by the NRC staff.

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 a project to enhance the effectiveness of the ROP using inputs from both self-assessments and independent evaluations.

The agency's most recent performance assessments show that all plants continue to operate safely. The NRC issued a press release on September 2, 2014, summarizing the 2014 mid-cycle performance assessments for all nuclear plants and associated mid-cycle assessment letters, which are publicly available on the NRC Web site.

III. Status of Issues Tracked in the Reactor Generic Issues Program

The Generic Issues Program is currently evaluating four open generic issues (GIs) and tracking their resolution. 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 (ECCS) sump screen may result in clogging and restrict water flow to the pumps.

As a result of this GI and the 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. In 2012, the industry performed and completed the additional testing and submitted a topical report to the NRC. In 2013, the NRC staff issued a safety evaluation of the topical report, finding it an acceptable model for assessing the effect of sump-strainer-bypassed fibrous, particulate, and chemical debris on core cooling in PWRs.

In December 2010, the Commission determined that 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.

Based on the interactions with stakeholders and the results of the industry testing, the NRC staff in 2012 developed three options for licensees to resolve GI-191. These options were documented and proposed to the Commission in SECY-12-0093, "Closure Options for Generic Safety Issue 191, 'Assessment of Debris Accumulation on Pressurized-Water Reactor Sump Performance,'" dated July 9, 2012. All options require licensees to demonstrate compliance with 10 CFR 50.46, "Acceptance Criteria for Emergency Core Cooling Systems for Light-Water Nuclear Power Reactors." The options allow industry alternative approaches for resolving

GI-191. The Commission issued a Staff Requirements Memorandum on December 14, 2012, approving the options for closure of GI-191. Licensees have since notified the NRC of the option that they have selected and are developing proposed technical resolutions based on the option selected. The staff is reviewing the proposed technical resolutions as they are submitted by licensees. To date, six sites have successfully resolved GI-191.

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

This GI is in the assessment stage and involves an evaluation of possible failure or degraded performance of the ECCS pumps caused by unknown quantities of noncondensable gas in the suction piping that could cause gas binding, vapor locking, or cavitation. The NRC staff is attempting to quantify the gas void fraction present at different locations in the suppression pool as a function of time following a LOCA. Ultimately, this might identify a 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 might be vulnerable and the suction strainer might be required to be moved.

Computational fluid dynamics (CFD) models have been developed and analyses have been completed using test results performed at the Purdue University Multidimensional Integral Test Assembly (PUMA) and Finnish test facilities. Data from the tests are being used to refine a method to scale the test results to full-scale geometry. Afterwards, the developed scaling method will be applied to full-scale suppression pool geometry and compared to the CFD analysis of full-scale suppression pool geometry. Once the technical assessment is complete, NRC staff will evaluate whether the issue will proceed to regulatory office implementation.

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 nuclear sites in the central and eastern United States that might 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 (EPRI) 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. After the March 2011 nuclear event in Japan, the agency incorporated GI-199 in the work being performed by the Japan Lessons-Learned Project Directorate. The NRC has requested that all nuclear power plants reevaluate seismic hazards using present-day guidance and methods. By March 31, 2014, licensees of nuclear plants in the Central and Eastern United States (CEUS) submitted reports on the reevaluated seismic hazard for their sites. NRC staff reviewed the CEUS reports in accordance with the NRC-endorsed guidance. By letter dated May 9, 2014,

the NRC issued a screening review and prioritization letter to the 61 CEUS sites for the need to complete future seismic risk evaluations. The letter placed 44 CEUS sites into 3 priority groups for completion of seismic risk evaluations. The remaining 17 sites either are required to respond only to limited-scope evaluations (i.e., high-frequency evaluation, low-frequency evaluation, or spent fuel pool evaluation) or have screened-out of all further evaluations. During the NRC screening and prioritization review, the NRC staff identified some sites for which a determination could not be made during the 30-day review period and interactions with licensees were needed to resolve technical issues. Those plants were conditionally screened in pending a final determination from the NRC staff. Since that time, most of the sites that were conditionally screened in have screened out. The NRC staff is preparing to review the Expedited Approach submittals required for those sites that screen-in for further seismic evaluations. The Expedited Approach submittals, due December 2014, serve as an engineering review of interim evaluations. The evaluations look at the systems and components that can be used to safely shut down a plant under certain accident conditions. The Expedited Approach will either confirm that a plant has sufficient margin to continue with a longer-term evaluation without any modifications or identify the need to enhance the seismic capacity of the plant.

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 between 2017 and 2020, depending on the priority assigned as determined by 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.

As of June 2014, approximately half of all sites have completed flood hazard reevaluations in response to the March 2012 request. Some licensees have requested and been granted extensions, where appropriate. For example, some licensees were granted extensions to allow time for the U.S. Army Corps of Engineers to provide input necessary to complete the analyses. The flood hazard reevaluations for the remaining sites are due by March 2015. The NRC has begun to issue assessments of the flood hazard reevaluation reports that were received in March 2013.

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 2014 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 2014 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 table below shows the actual FY 2011, FY 2012, and FY 2013 results, the FY 2014 goals, and the FY 2014 results for the NRC Performance Budget plan output measures for operating power reactor licensing actions and other licensing tasks. The Fukushima Tier 1 activities continue to be worked on under aggressive schedules that will require continued close monitoring to ensure that implementation of the activities is successful. Beginning in FY 2013, additional resources were directed to support these activities. In doing so, the inventory of operating reactor licensing actions has been increasing and some licensing actions are being completed after a longer duration. The staff has worked closely with other offices to identify resources and critical skills that could be transferred to the Office of Nuclear Reactor Regulation (NRR) to alleviate the licensing action backlog and, late in FY 2014, has applied additional resources to stabilize and reduce the backlog.

PERFORMANCE BUDGET PLAN					
Output Measure	**FY 2011 Actual**	**FY 2012 Actual**	**FY 2013 Actual**	**FY 2014 Goals**	**FY 2014 Actual**
Licensing actions completed per year	849	770	668	900	607
Age of inventory of licensing actions	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	87% ≤ 1 year and 99% ≤ 2 years
Other licensing tasks completed per year	465	674	529	500	402
Age of inventory of other licensing tasks	94.2% ≤ 1 year and 99.6% ≤ 2 years	94.6% ≤ 1 year and 100% ≤ 2 years	97.6% ≤ 1 year and 100% ≤ 2 years	97.6% ≤ 1 year and 100% ≤ 2 years	87% ≤ 1 year and 99% ≤ 2 years

V. Status of License Renewal Activities

The NRC has issued renewed licenses to 73 power reactor units licensed to operate. The NRC currently has 11 LRAs for 19 reactor units under review.

Continued Storage of Spent Fuel

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 onsite spent-fuel storage following the licensed period of operation. As a result of the 2012 vacatur and remand of the 2010 update to the Waste Confidence Rule, final issuances of renewed licenses were put on hold.

The NRC staff continued its review of LRAs and continued to issue draft and final supplemental environmental impact statements (SEISs) (license renewal environmental impact statements are supplements to NUREG-1437, Rev. 1, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants") in ways consistent with Commission direction. The staff developed explanatory text for use in SEISs that addressed Continued Storage activities and their relationship to license renewal environmental reviews. In addition, as part of the license renewal process, the NRC staff continued to perform its safety evaluation work on each application for license renewal and to issue safety evaluation reports (SERs).
On August 26, 2014, the Commission approved a revised rule in 10 CFR 51.23 ("Environmental Impacts of Continued Storage of Spent Fuel Beyond the Licensed Life of Operations of a Reactor") and the associated "Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel" (NUREG-2157). Subsequently, on September 19, 2014, the NRC published the revised rule in the *Federal Register* along with NUREG-2157. The revised rule adopts the generic impact determinations made in NUREG-2157 and codifies the NRC's generic determinations regarding the environmental impacts of continued storage of spent nuclear fuel beyond a reactor's operating license and until a permanent repository becomes available. With the new rule in place, the NRC can make final license renewal decisions, effective October 20, 2014.

Applications Currently under Review

The following is the status of each application currently under review. Previously issued semiannual reports describe activities that occurred before April 2014.

Indian Point Nuclear Generating Units 2 and 3

On April 30, 2007, Entergy Nuclear Operations, Inc. ("Entergy"), 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's 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. During Unit 2's period of extended operation, the licensee has voluntarily made regulatory commitments regarding the establishment and use of aging management programs, as described in the LRA, 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 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. The licensee expects to resume licensing activity in December 2014. In addition, an admitted contention remained 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 analysis and updates to comply 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 with Open Items. Additionally, activities related to the ASLB hearing process continued.

Davis-Besse Nuclear Power Station, Unit 1

On August 30, 2010, FirstEnergy Nuclear Operating Company (FENOC) 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. The staff issued the draft SEIS in February 2014. Additionally, activities related to the ASLB hearing process continued.

South Texas Project, Units 1 and 2

On October 28, 2010, South Texas Project (STP) Nuclear Operating Company submitted an LRA for STP Units 1 and 2, to extend the operating licenses for an additional 20 years beyond the current license periods. The staff issued the final SEIS in November 2013. The safety review for this application, which had been temporarily paused at the request of the applicant, resumed in January 2014.

Limerick Generating Station, Units 1 and 2

On June 22, 2011, Exelon Generation Co., LLC ("Exelon"), 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. In August 2014, the staff issued the final SEIS and the final supplemental SER. Additionally, activities related to the ASLB hearing process continued.

Grand Gulf Nuclear Station, Unit 1

On November 1, 2011, Entergy 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 with Open Items. The staff issued the draft SEIS in November 2013.

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. The staff issued the draft SEIS in February 2014. In August 2014, the staff issued the final SER.

Sequoyah Nuclear Plant, Units 1 and 2

On January 15, 2013, Tennessee Valley Authority (TVA) 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 continued work on the environmental and safety reviews and issued the draft SEIS in July 2014. Additionally, activity related to the ASLB hearing process continued.

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

On May 29, 2013, Exelon submitted LRAs 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 license periods. During the reporting period, the staff conducted onsite audits related to, and continued work on, the environmental and safety reviews of the application.

Fermi, Unit 2

On April 30, 2014, DTE Electric Company ("DTE Electric") submitted an LRA for Fermi, Unit 2 to extend the operating license for an additional 20 years beyond the current license period. During the reporting period, the staff conducted onsite audits related to the environmental and safety reviews of the application.

VI. Summary of Reactor Enforcement Actions

The reactor enforcement statistics in the tables below are arranged by region, half year, most recent half year, FY to date, and two previous FYs 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 14	4	2	2	0	8
	2nd Half FY 14	4	3	1	2	10
	FY 14 YTD Total	8	5	3	2	18
	FY 13 Total	6	8	1	4	19
	FY 12 Total	4	8	1	8	21
Non-Cited Severity Level IV or Green	1st Half FY 14	58	43	94	108	303
	2nd Half FY 14	66	104	129	149	448
	FY 14 YTD Total	124	147	223	257	751
	FY 13 Total	155	117	201	203	676
	FY 12 Total	143	151	227	296	817
TOTAL Cited and Non-Cited Severity Level IV or Green	1st Half FY 14	62	45	96	108	311
	2nd Half FY 14	70	107	130	151	458
	FY 14 YTD Total	132	152	226	259	769
	FY 13 Total	161	125	202	207	695
	FY 12 Total	147	159	228	304	838

NOTE: The non-escalated enforcement data above reflect the cited and non-cited violations either categorized at Severity Level IV, the lowest level, or associated with green findings during the indicated 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 14	0	0	0	0	0
	2nd Half FY 14	0	0	0	0	0
	FY 14 YTD Total	0	0	0	0	0
	FY 13 Total	0	0	0	0	0
	FY 12 Total	0	0	0	0	0
Severity Level II	1st Half FY 14	0	0	0	0	0
	2nd Half FY 14	0	0	0	0	0
	FY 14 YTD Total	0	0	0	0	0
	FY 13 Total	0	0	0	0	0
	FY 12 Total	0	0	0	0	0
Severity Level III	1st Half FY 14	0	0	0	0	0
	2nd Half FY 14	1	0	0	0	1
	FY 14 YTD Total	1	0	0	0	1
	FY 13 Total	1	6	1	2	10
	FY 12 Total	0	2	0	2	4
TOTAL Violations Cited at Severity Level I, II, or III	1st Half FY 14	0	0	0	0	0
	2nd Half FY 14	1	0	0	0	1
	FY 14 YTD Total	1	0	0	0	1
	FY 13 Total	1	6	1	2	10
	FY 12 Total	0	2	0	2	4

NOTE: The escalated enforcement data above reflect the Severity Level I, II, or III violations or problems cited during the indicated 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 14	0	0	0	0	0
	2nd Half FY 14	0	0	0	0	0
	FY 14 YTD Total	0	0	0	0	0
	FY 13 Total	0	0	0	0	0
	FY 12 Total	0	0	0	1	1
Violations Related to Yellow Findings	1st Half FY 14	0	0	0	0	0
	2nd Half FY 14	0	0	0	2	2
	FY 14 YTD Total	0	0	0	2	2
	FY 13 Total	0	1	1	0	2
	FY 12 Total	0	1	1	1	3
Violations Related to White Findings	1st Half FY 14	0	0	2	2	4
	2nd Half FY 14	1	2	1	2	6
	FY 14 YTD Total	1	2	3	4	10
	FY 13 Total	2	7	7	2	18
	FY 12 Total	4	5	3	0	12
TOTAL Related to Red, Yellow, or White Findings	1st Half FY 14	0	0	2	2	4
	2nd Half FY 14	1	2	1	4	8
	FY 14 YTD Total	1	2	3	6	12
	FY 13 Total	2	8	8	2	20
	FY 12 Total	4	6	4	2	16

NOTE: The escalated enforcement data above reflect the violations or problems cited during the indicated 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.

Duke Energy Carolinas, LLC (Oconee Nuclear Station), Enforcement Action (EA-)14-091

On August 12, 2014, the NRC issued a notice of violation associated with a White Significance Determination Process finding to Duke Energy Carolinas, LLC, for a violation of Criterion XVI, "Corrective Action," in Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50, "Domestic Licensing of Production and

Utilization Facilities," involving the failure to establish measures to promptly identify and correct a significant condition adverse to quality. Specifically, in 2004, the licensee implemented procedure NDE-995, "Ultrasonic Examination of Small Diameter Piping Butt Welds and Base Material for Thermal Fatigue Damage," to perform augmented inservice inspection program ultrasonic examinations, which did not provide measures to assure that high-pressure injection nozzle component cracking would be identified and corrected. Consequently, in 2012, the licensee performed procedure NDE-995 on weld 1-RC-201-105 and did not identify any reportable indications, even though a greater-than-50-percent through-wall circumferential crack was present in the weld. On November 11, 2013, the licensee identified the through-wall circumferential crack in weld 1-RC 201-105 after transitioning Unit 1 to Mode 3 to investigate non-isolable pressure-boundary leakage.

Southern (Vogtle Plant Units 1 and 2), EA-14-112

On August 6, 2014, the NRC issued a notice of violation associated with a White Significance Determination Process finding to Southern for a violation of 10 CFR 50.54(q)(2), "Emergency Plans," involving the failure to maintain the effectiveness of their emergency plan. Specifically, the licensee failed to maintain a standard emergency-classification scheme with facility effluent parameters; effluent parameter classification threshold values for RG1 (General Emergency) and RS1 (Site Area Emergency) were significantly non-conservative at Vogtle Units 1 and 2. These monitors were being relied on to continuously assess the impact of the release of radioactive materials, as well as provide criteria for determining the need for notification and participation of local and State agencies.

Entergy (Palisades Nuclear Plant), EA-14-013

On July 21, 2014, the NRC issued a confirmatory order to Entergy to formalize commitments made as a result of an alternative dispute resolution mediation session held on May 14, 2014. The commitments were made as part of a settlement agreement between Entergy and the NRC regarding the apparent violation of paragraph II.B., "Qualification Requirements," of Appendix B, "General Criteria for Security Personnel," to 10 CFR Part 73, "Physical Protection of Plants and Materials," and the apparent violation of Palisades Security Plan Section 3.1. The violation involved the willful actions of the licensee's security staff, which failed to follow the security plan's requirements when a security manager assigned a security operations supervisor to perform duties without confirming whether the supervisor had the appropriate qualifications. Entergy agreed that an individual inappropriately held a position for which he was not qualified, contrary to the requirements of paragraph II.B. of Appendix B to 10 CFR Part 73 and of the Palisades Security Plan, but disagreed that the violation was committed willfully. In response to the incident, Entergy completed a number of corrective actions and enhancements, and agreed to complete additional corrective actions and enhancements, as fully discussed in the confirmatory order. In consideration of the corrective actions and commitments outlined in the confirmatory order, the NRC agreed not to issue a civil penalty or a notice of violation.

Wolf Creek Nuclear Operating Corporation (Wolf Creek Generating Station), EA-14-024

On July 1, 2014, the NRC issued a notice of violation associated with a White Significance Determination Process finding to Wolf Creek Nuclear Operating Corporation ("Wolf Creek") for a violation involving the failure to comply with 10 CFR 50.47(b)(9), which required the licensee to maintain an emergency plan that uses adequate methods for assessing and monitoring the actual or potential offsite consequences of a radiological emergency condition. Specifically, a

calculational error in Wolf Creek's Electronic Dose Calculation Program (computer software) resulted in inaccurate offsite doses for the main vent stack pathway. The computer software failed to account for the filtered pathway for iodine and particulates and thereby overestimated the radiological release when the effluent radiation monitor was in the accident mode.

FENOC (Davis-Besse Nuclear Power Station EA-14-094)

On June 30, 2014, a confirmatory order was issued to FENOC confirming FENOC's commitment to submit a license amendment request to transition Davis-Besse Nuclear Power Station, Unit 1 to the National Fire Protection Association Standard 805. FENOC had originally planned to submit its application on July 1, 2014. The NRC reviewed FENOC's justification for the delay, and accepted the proposed new submittal date of December 31, 2015.

Entergy (Arkansas Nuclear One, Units 1 and 2), EA-14-008

On June 23, 2014, the NRC issued a notice of violation to Entergy for a violation of Criterion V, "Instructions, Procedures and Drawings," in Appendix B to 10 CFR Part 50 associated with a Yellow Significance Determination Process finding at Arkansas Nuclear One, Unit 1, and a Yellow Significance Determination Process finding at Arkansas Nuclear One, Unit 2, involving the March 31, 2013, Unit 1 stator drop that affected safety-related equipment on both units. Specifically, Entergy approved a design for the temporary hoisting assembly that was not supported by detailed drawings, specifications, evaluations, and/or certifications as required by Entergy Quality Procedure EN-MA-119, "Material Handling Program." As a result, on March 31, 2013, while lifting and transferring the main generator stator, the temporary overhead crane collapsed, causing the 525-ton Unit 1 stator to fall on and extensively damage portions of the plant, including safety-related equipment.

Entergy (Arkansas Nuclear One, Units 1 and 2), EA-14-033

On June 18, 2014, a notice of violation was issued to Entergy for a violation associated with a Greater-than-Green Significance Determination Process finding at Arkansas Nuclear One. The details of the finding are "official use only - security-related information."

DTE Electric (Fermi Power Plant Unit 2), EA-14-022

On May 29, 2014, a notice of violation was issued to DTE Electric for a violation associated with a Greater-than-Green Significance Determination Process finding at the Fermi Power Plant. The details of the finding are "official use only - security-related information."

TVA (Browns Ferry Nuclear Plant), EA-14-005

On April 30, 2014, the NRC issued a notice of violation to TVA as a result of the failure to maintain plant staffing levels in accordance with the radiological emergency plan at Browns Ferry Nuclear Plant. This White Significance Determination Process finding involved the failure of the licensee's process for maintaining minimum emergency-response shift staffing to adequately maintain staffing of the Shift Technical Advisor and Incident Commander positions in order to ensure initial accident response in all key functional areas.

Additionally, the NRC identified two examples of a violation of 10 CFR 50.9, "Completeness and Accuracy of Information," based on the licensee's failure to provide complete and accurate

information associated with emergency response on-shift staffing requirements and a violation of 10 CFR 50.90, “Application for Amendment of License, Construction Permit, or Early Site Permit,” for the failure to submit an application requesting an amendment to their operating license concerning on-shift staffing levels. On May 1, 2014, the NRC issued a confirmatory order to TVA to formalize commitments made as a result of an ADR mediation session. The commitments were made by TVA as part of a settlement agreement between TVA and the NRC regarding the violation(s) of 50.9 and 50.90. TVA agreed to a number of corrective actions, including correcting the Conduct of Operations procedure to reflect adequate staffing levels and comprehensive fleetwide and plant-specific corrective actions.

Entergy (Indian Point Energy Center), EA-13-076

On April 29, 2014, the NRC issued a Severity Level III notice of violation to Entergy for a violation identified as a result of an investigation by the NRC Office of Investigations. This violation involves the former Chemistry Manager at Indian Point Energy Center deliberately entering false data into a Chemistry database pertaining to an Emergency Diesel Generator fuel-oil storage tank and the reserve fuel-oil storage tank. The falsification of records caused Indian Point to operate Units 2 and 3 in violation of technical specifications (TS) and to avert a dual-unit shutdown required by TS 3.03. Additionally, a Severity Level III Notice of Violation and an order were issued banning the former Indian Point Chemistry Manager from participating in NRC activities for a period of one year for violating 10 CFR 50.5, “Deliberate Misconduct.”

Omaha Public Power District (Fort Calhoun Station), EA-13-222

On April 25, 2014, the NRC issued a notice of violation associated with a White Significance Determination Process finding to Omaha Public Power District for a violation of Criterion III, “Design Control,” in Appendix B to 10 CFR Part 50 involving the failure to ensure that applicable regulatory requirements and the design basis were correctly translated into specifications, drawings, procedures, and instructions. Specifically, the licensee failed to fully incorporate applicable tornado missile protection design requirements for components needed to ensure the capability to shut down the reactor and maintain it in a safe condition.

Constellation Energy Nuclear Group, LLC (R.E. Ginna Nuclear Power Plant) EA-13-247

On April 17, 2014, the NRC issued a notice of violation to Constellation Energy Nuclear Group, LLC (CENG) for a violation of Criterion XVI in Appendix B to 10 CFR Part 50 associated with a White Significance Determination Process finding involving CENG’s failure to assure prompt identification and correction of conditions adverse to quality. Specifically, CENG failed to promptly correct two improperly sealed cable penetrations at Ginna between manhole 1 and battery room “B.” As a result, certain flooding scenarios could have resulted in flooding the battery rooms and the eventual loss of all alternating current and direct current power with no capability for using installed plant equipment for decay-heat removal.

VII. Power Reactor Security and Emergency and Incident Response Activities

The NRC continues to maintain an appropriate regulatory infrastructure and perform its licensing and oversight functions in order to ensure protection of public health and safety, promote the common defense and security, and protect the environment. NRC 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. Each FOF inspection includes both tabletop drills and exercises that simulate combat between a mock adversary force and the licensee's security force. FOF inspections assess the ability of power reactor facilities to defend against the design basis threat (DBT) of radiological sabotage. They also provide valuable insights that enable the NRC to evaluate the effectiveness of licensee security programs. At Category I fuel cycle facilities, a similar process is used to assess the effectiveness of the licensees' protective strategy against two DBTs—one for radiological sabotage and another to prevent the theft or diversion of special nuclear material.

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 to the Commission under 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. In advance of the rulemaking, the NRC has designated, through orders, seven power-reactor licensees and one Category I fuel facility licensee as being eligible to apply for standalone preemption authority. The NRC has taken these actions in consultation with the U.S. Department of Justice staffs in the Federal Bureau of Investigation and the Bureau of Alcohol, Tobacco, Firearms, and Explosives.

The NRC is also developing a final rule that amends the drug testing requirements of 10 CFR Part 26, "Fitness-for-Duty Programs," to better align NRC drug testing requirements with those of the U.S. Department of Health and Human Services' "Mandatory Guidelines for Federal Workplace Drug Testing Programs." Specifically, the proposed changes will broaden the panel of drugs to be tested during required drug testing, enhance Medical Review Officer guidance, and improve the clarity of the organization and language of the rule.

The Integrated Response Program (IRP) is a partnership between the Federal government (the NRC, Federal Bureau of Investigation, and the Department of Homeland Security) and the nuclear industry that seeks to establish or leverage existing Federal, State, and local tactical law enforcement capabilities to effectively respond to beyond-DBT incidents. Guidance has been developed to help industry plan, conduct, manage, and assess tabletop and limited exercises as part of a durable, consistent, and measurable IRP. A schedule of IRP activities is currently under development.

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 cybersecurity 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 cybersecurity 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 cybersecurity that includes an inspection program, inspector training, and a process for evaluating the significance of inspection findings. 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 activities related to the interim milestones and will complete these inspections in calendar year (CY) 2015.

Among the additions to the amended 10 CFR Part 73 that the agency is developing are timely notification requirements for certain cyber security events in 10 CFR 73.77, “Cyber Security Event Notifications.” This final rule will codify certain voluntary reporting activities associated with cybersecurity events contained in security advisories as well as establish new cybersecurity event notifications that will contribute to the NRC’s analysis of the reliability and effectiveness of licensees’ cybersecurity programs and play an important role in the continuing effort to provide high assurance that digital computer and communication systems and networks are adequately protected against cyber attacks, up to and including the DBT. This rulemaking will increase the NRC’s ability to respond to emergencies, monitor ongoing events, assess trends and patterns, and identify precursors of more significant events. This rulemaking will also enhance NRC’s ability to inform other NRC licensees, the Department of Homeland Security, and Federal intelligence and law enforcement agencies of cyber security-related events and will enhance the agency’s safety and security efforts.

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

The NRC is implementing a path forward on EP communications and staffing issues identified in the NRC’s assessment of the accident at the Fukushima Dai-ichi nuclear power plant in Japan (Near-Term Task Force Recommendation 9.3). The NRC has received and reviewed 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, 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. The staff has also completed its review of staffing assessments submitted by licensees and determined that the minimum onsite staff, as described in their emergency plans, is sufficient to support required plant actions and emergency plan functions. Additionally, the staff has received and reviewed licensee submittals regarding current and planned multi-unit/multi-source dose assessment capabilities; all licensees plan to implement an automated multi-unit/multi-source dose assessment capability by the end of CY 2014. The NRC is continuing to conduct public meetings and to work to develop guidance regarding the implementation of facilities and equipment, training and exercises (drills), and multi-unit dose assessment.

The NRC revised EP regulations in 10 CFR Part 50 effective December 23, 2011. This was the first significant revision to the EP rules in over 30 years; implementation continued throughout FY 2014. 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 (HAB) exercises at all nuclear power reactor sites. Power reactor licensees are required to demonstrate response to an HAB event as part of a biennial exercise by December 31, 2015. To date, 30 HAB exercises have been completed in calendar year 2014. Licensees have demonstrated their ability to

respond to a HAB event; implement their emergency plans in response to the event; and coordinate onsite security, operations, and emergency response personnel with offsite response organizations.

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 for the State and local governments whose personnel would respond to the plant sites. This initiative continued in FY 2014. The joint NRC/FEMA working group completed initial drafts of the introductory information in Section I and emergency plan evaluation criteria in Section II. NRC and FEMA staff jointly conducted a series of public meetings on October 29–31, 2013, and June 25, 2014, to solicit feedback from stakeholders and members of the public on the initial drafts. The staff expects that a draft revision will be issued for public comment in the first quarter of FY 2015.

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 that 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 2 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 7 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 156 power uprates to date. Approximately 21,979 megawatts thermal (MWt) or 7,326 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 two power uprate applications under review, which would add an additional 1,674 MWt or 558 MWe to the Nation's electrical grid, if approved.

In December 2013, the NRC staff conducted its most recent survey of nuclear power plant licensees' plans to submit power uprate applications over the next 5 years. This latest information indicates that licensees plan to request power uprates for six nuclear power plants during the next 4 years.

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 is also 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

Although most new reactor applications have been or will be submitted and reviewed under the provisions of 10 CFR Part 52, the NRC is currently reviewing one large light-water reactor application for an operating license (OL) using 10 CFR Part 50, which is discussed below.

10 CFR Part 50 Operating License Reviews

Watts Bar Nuclear Plant Unit 2

Watts Bar Nuclear Plant Unit 2 (WB2) is the only nuclear plant currently being licensed using 10 CFR Part 50. TVA received a construction permit for Watts Bar Nuclear Plant Units 1 and 2 in 1973 and submitted operating license applications for both units in 1976. Because of the identification of a large number of deficiencies, WB2 construction was suspended in the mid-1980s, with major structures in place and equipment such as reactor coolant system piping installed. TVA resumed construction on Unit 2 in late 2007 and submitted an updated operating license application in 2009.

The NRC staff has issued six Supplemental Safety Evaluation Reports (SSERs) documenting its safety review and published a supplement to the Final Environmental Impact Statement. The NRC staff is nearing completion of its safety review, which will be documented in future SSERs. The remaining open items that the NRC staff is working to complete are hydrological, electrical, instrumentation and control, emergency preparedness, and confirmatory items that will be closed through inspections. The NRC expects to make a decision on whether to issue the operating license by June 2015.

Early Site Permit (ESP) Reviews

PSEG Power, LLC, and PSEG Nuclear, LLC

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. EPR (formerly the U.S. Evolutionary Power Reactor), the Advanced Boiling Water Reactor (ABWR), the U.S. Advanced Pressurized Water Reactor (US-APWR), and the AP1000®.

On March 5, 2014, the NRC staff issued a letter to PSEG that identified technical issues that need to be resolved in order for the staff to complete its review of the applicant's first-of-a-kind storm-surge analysis. On April 30, 2014, PSEG submitted a request for an exemption from completing the hydrology storm-surge analysis required by 10 CFR 52.17(a)(1)(vi). Subsequently, on June 17, 2014, the NRC staff issued a letter to PSEG denying the request for an exemption from the requirement to complete a storm-surge flooding hazard analysis as part of the ESP application. The NRC staff held a public meeting with PSEG on July 10, 2014, and PSEG submitted a letter to the NRC on July 17, 2014, outlining its revised approach for addressing the storm-surge analysis. The NRC staff has resumed its technical review of

PSEG's hydrology storm-surge analysis and is currently reviewing detailed information and calculation packages submitted by PSEG in August and September 2014.

The NRC staff issued the draft environmental impact statement (DEIS) for the PSEG ESP application in August 2014 and will conduct a public meeting in support of the DEIS on October 1, 2014. The public comment period on the DEIS closes on November 6, 2014. The NRC staff expects to issue the final environmental impact statement (FEIS) in September 2015.

The NRC staff anticipates the submittal of one ESP application (for Blue Castle) during 2016.

Design Certification (DC) Reviews

Economic Simplified Boiling Water Reactor

The NRC staff issued the final safety evaluation report (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 it had identified issues relevant to the conclusions in the staff's March 9, 2011, FSER. Those issues are now resolved and the NRC published a supplemental proposed rule in the *Federal Register* on May 6, 2014, and issued the final supplemental FSER in June 2014. The Commission affirmed the final rule on September 16, 2014, and the NRC published the final rule in October 2014.

U.S. EPR

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 (I&C), and Fukushima lessons learned. 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 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 it is reevaluating its U.S. EPR DC closure strategy. AREVA has organized all review areas into three groups (Groups A, B, and C) and prioritized each area based on short-, medium-, and long-term completion. AREVA submitted its closure plan for Group A chapters in December 2013 and the closure plans for Groups B and C in March 2014. In its March 20, 2014, letter to the NRC, AREVA stated that it plans to finalize all sections of its application by the end of September 2016. The NRC staff's schedule for completing the FSER is currently under review.

U.S. Advanced Pressurized Water Reactor

Mitsubishi Heavy Industries Ltd. (MHI) submitted its US-APWR DC application on December 31, 2007. On November 5, 2013, MHI issued a letter informing the NRC of its plans to implement a coordinated slowdown of licensing activities related to the US-APWR DC application review. MHI stated that the slowdown is necessary in order to focus its resources on supporting Japanese utilities in restarting Mitsubishi-designed pressurized water reactors (PWRs) in Japan. On March 24, 2014, the NRC staff began limiting its review of the US-APWR

design to individual review areas identified by MHI and within MHI's budgetary allowance for this review. The NRC staff will continue with its limited review, in a coordinated manner, until further notice from the applicant regarding a change to the review pace.

U.S. APR1400

Korea Hydro and Nuclear Power Company (KHNP) and Korea Electric Power Corporation (KEPCO) submitted an application for a standard DC of the Advanced Power Reactor 1400 (APR1400) on September 30, 2013. The NRC's 60-day acceptance review of the DC application took place between October 17, 2013 and December 17, 2013. By letter dated December 19, 2013, the NRC informed KHNP and KEPCO of the staff's decision not to accept the APR1400 DC application for docketing and regulatory review. In response, KHNP and KEPCO expressed interest in continuing interactions with the NRC to resolve the issues identified by the NRC. KHNP and KEPCO plan to resubmit the APR1400 application in December 2014.

DC Renewals

Advanced Boiling Water Reactor (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 the application. In response, Toshiba stated in a letter dated December 14, 2012, that it would carefully consider each of the desired amendments. In a letter to the NRC dated December 13, 2013, Toshiba stated that they plan to submit Revision 2 of the renewal application no sooner than mid-2016 and requested that the NRC postpone its review of the application until Toshiba 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 in its application and to provide a schedule for submitting a revised application. By letter dated March 17, 2014, GEH informed the NRC that it plans to submit a revised application no sooner than May 2015.

COL Application Activities

As of March 31, 2013, the NRC had received 18 COL applications for review. Six of the reviews have been suspended at the request of the applicants because of changes in the applicants' business strategies. The Victoria COL application was withdrawn following docketing of the Victoria ESP application. (The Victoria ESP application was subsequently withdrawn on August 28, 2012). On January 9, 2014, PPL Bell Bend, LLC (PPL), requested that NRC withhold further review of the safety portion of the Bell Bend COL application. The NRC is continuing with the environmental review for the Bell Bend application. UniStar Nuclear Operating Services, LLC ("UniStar") withdrew its application for the Nine Mile Point 3 Nuclear

Power Plant COL in its letter of November 26, 2013 (this review was previously suspended). COLs were issued for the Vogtle and V.C. Summer sites in 2012. The NRC is actively reviewing eight COL applications for a total of 12 units, as discussed below.

Levy County COL Application

On July 30, 2008, Progress Energy Florida, Inc. ("Progress"), 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 that the applicant 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 design modification to the containment condensate return system. This design change extended the schedule for completion of the FSER. The NRC staff has completed its review of the applicant's design change and issued its safety evaluation on this review topic in August 2014.

The NRC staff issued a revised schedule letter for the Levy COL application review on April 10, 2014. The revised schedule incorporated known risks and specified an FSER completion date of March 2015. Ongoing technical review areas relate to the safety/security interface during construction and physical protection for special nuclear material.

The NRC staff identified emerging issues as a result of a July 23, 2014, meeting at which the staff received preliminary information about AP1000 design issues that Westinghouse Electric Company LLC ("Westinghouse") is currently addressing for the Vogtle and Summer COL licensees. The staff believes that three of these issues could be applicable to the Levy COL and may need to be addressed before licensing. The NRC staff has requested additional information from the applicant to address these issues. Because these additional review areas are not within the scope considered in the current schedule, when Progress submits the information for staff review, the NRC will determine whether a change to the schedule is warranted.

William States Lee III COL 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, SC.

The NRC issued the FEIS on December 27, 2013.

Ongoing technical issues with the safety review 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 the applicant's decision to raise the base elevation by 1 meter (3 feet). The NRC staff expects to receive additional information

from the applicant related to the nuclear island relocation in October 2014. The NRC staff expects to issue the FSER for the Lee COL application in December 2015.

Turkey Point COL 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.

Technical issues remain with the geology, seismology, and geotechnical engineering reviews and with the applicant's proposed deep well injection of liquid radiological waste effluents.

On August 26, 2014, the NRC staff issued a letter to Florida Power and Light notifying the applicant that the staff has resumed its review activities in the areas of geology, seismology, and geotechnical engineering and has established a review schedule. The NRC staff currently expects to complete its safety review and issue a final safety evaluation report (FSER) in October 2016.

The NRC staff issued a revised environmental review schedule on April 17, 2014, which projects a target FEIS date of February 2016. The NRC staff is making progress toward issuance of the DEIS in February 2015.

South Texas Project (STP) COL Application

On September 20, 2007, 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.

The NRC staff expects to issue the FSER for the STP COL application in September 2015. A significant open issue remains regarding the financial qualification of the applicant to receive a license. The NRC staff determined that the applicant does not appear to meet the requirements of 10 CFR 50.33, "Contents of Applications; General Information," and has not provided reasonable assurance that they can obtain funding for construction and operation of the new units.

By letter dated May 31, 2012, Nuclear Innovation North America (NINA) informed the NRC that, as a merchant power plant, it would be difficult to secure funding before the issuance of a license. By the same letter, NINA requested that the Commission provide guidance to the NRC staff regarding financial qualification of merchant plants.

The NRC staff provided a policy paper to the Commission in November 2013 describing options for modifying the requirements for financial qualification reviews. In a staff requirements memorandum dated April 24, 2014, the Commission directed the staff to engage in rulemaking to amend 10 CFR Part 50 financial qualifications demonstration requirements and to conform reactor financial qualification requirements to the standards of 10 CFR Part 70, "Domestic Licensing of Special Nuclear Material." The rulemaking would allow a license to be issued with license conditions addressing financial qualifications.

On June 19, 2014, NINA submitted an exemption request to the NRC related to financial qualifications. The NRC staff is reviewing the applicant's exemption request and is developing a path forward and schedule for addressing the issue.

Calvert Cliffs COL Application

On July 13, 2007, and March 14, 2008, Calvert Cliffs Unit 3 Nuclear Project, LLC, and UniStar submitted a two-part COL application for a U.S. EPR to be located at the Calvert Cliffs site near Lusby in Calvert County, MD.

UniStar submitted a letter to the NRC on May 30, 2014, requesting that the NRC staff focus its reviews of the Calvert Cliffs COL application on the Group A Chapters identified by AREVA for the U.S. EPR DC application review. The NRC staff issued a letter to UniStar on August 27, 2014, that provided a revised review schedule for the Group A chapters. The NRC staff awaits direction from UniStar regarding its plans to proceed with the Group B and Group C chapter reviews.

Bell Bend COL 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.

On January 9, 2014, PPL Bell Bend, LLC (PPL), submitted a letter to the NRC requesting that the NRC withhold further review of the safety portion of the Bell Bend COL application until further notice. PPL also requested that NRC continue to support the necessary work leading to the issuance of the FEIS. The NRC staff has suspended its review of the safety portion of the COL application as requested by the applicant.

The NRC staff is making progress on the DEIS for the Bell Bend COL application and expects to issue a revised environmental review schedule in October 2014.

Fermi COL 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.
The NRC staff completed Phase 2 of its safety review in July 2014, five months ahead of the previously scheduled completion date. Subsequently, the NRC staff issued a revised review schedule letter on July 29, 2014, informing DTE that it plans to issue its FSER on the Fermi COL application in January 2015, six months ahead of the previous schedule. The NRC plans to complete the mandatory hearing and make a decision on issuance of the COL by mid-2015.

North Anna COL 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. The Final Supplemental Environmental Impact Statement (FSEIS) was issued in February 2010.

On June 28, 2010, Dominion submitted a revised application to cite 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 and submitted all remaining application sections to the NRC in December 2013.

The NRC staff issued a new review schedule on April 7, 2014. The NRC staff expects to issue the FSER in March 2016.

The NRC staff is consulting with the National Marine Fisheries Service and the U.S. Fish and Wildlife Service in order to update its Biological Assessments required under Section 7 of the Endangered Species Act.

Comanche Peak COL 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.

On November 7, 2013, Luminant submitted a letter to the NRC requesting that all review activities associated with the Comanche Peak Units 3 and 4 COL application be suspended by March 31, 2014.

Shearon Harris COL Application

On February 19, 2008, Progress Energy Carolina, Inc. (PEC), submitted a COL application for two AP1000 units to be located at its Shearon Harris Nuclear Power Plant site near New Hill in Wake County, NC.

On May 2, 2013, Duke Energy issued a letter to the NRC requesting that the NRC suspend review of the Shearon Harris, Units 1 and 2, COL application.

Bellefonte COL Application

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

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. By letter dated December 19, 2011, TVA reaffirmed that the Bellefonte Units 3 and 4 COL applications continue to be deferred indefinitely.

Callaway COL Application

On July 28, 2008, the AmerenUE subsidiary, now known as Ameren Missouri, of Ameren Corporation (“Ameren”) 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 (FOA) for design and licensing of small modular reactors. In November 2012, DOE announced their selection of Babcock and Wilcox (B&W) as the first FOA awardee for their mPower™ design and in December 2013, DOE announced the selection of NuScale Power, LLC ("NuScale"), as the second FOA awardee. In January 2014, Westinghouse and Ameren jointly stated that they continue to pursue SMR design development activities, including a DC application and a COL application for the Callaway site. However, Westinghouse and Ameren have not determined projected application submittal dates and will continue to update the NRC of their decisions.

Grand Gulf COL 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 COL 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 suspended.

Regulatory Infrastructure

The NRC continues to enhance its regulatory infrastructure to support planning, licensing, and oversight of new and advanced reactor applications by implementing timely and effective policy decisions and by enhancing and updating regulatory guidance for light water reactors. In addition to updating regulatory guidance, the NRC is also reviewing its internal processes to introduce more efficiency and effectiveness in its application review process. The NRC conducts these regulatory infrastructure enhancements in an open and transparent manner with several opportunities for external stakeholder input. In addition, the NRC rigorously assesses licensing and oversight performance and uses the results to inform these regulatory infrastructure activities.

Examples of infrastructure activities completed during the reporting period are described below.

New Reactor Lessons-Learned Activities

Then NRC continues to address lessons learned that have been documented in staff-performed self-assessments, "New Reactor Licensing Process Lessons Learned Review: 10 CFR Part 52," dated March 2013, and "Title 10 of the *Code of Federal Regulations* Part 52 Implementation Self-Assessment Review: 1 Year Post-Combined License Issuance," dated July 2013.

In March and May 2014, the staff developed and implemented action plans to address the recommendations identified in the self-assessment reports. The staff projects the completion of most of the actions by the end of 2014. An example of a longer-term activity is the update of guidance for COL applications found in Regulatory Guide 1.206, "Combined License Applications for Nuclear Power Plants," as described below.

In addition, the staff recently issued a report titled "Assessment of the Staff's Readiness to Transition Regulatory Oversight and Licensing as New Reactors Proceed from Construction to Operation," dated September 2014. The staff is currently developing plans for the implementation of the recommendations contained in the report.

Revision to the June 2007 Version of Regulatory Guide 1.206, "Combined License Applications for Nuclear Power Plants (LWR Edition)"

The NRC staff has initiated a broad-scope revision of Regulatory Guide 1.206. The revision expands the scope of the guidance for all licensing processes under 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants," including (for example) design certifications and ESPs. The revision will provide a significant update to the contents, capturing lessons learned from recent licensing actions as well as new and revised regulations. The revision is a long-term project being implemented in phases and includes interactions with stakeholders and the public. Later phases will likely address new reactor applications submitted under 10 CFR Part 50.

NUREG-0800 Standard Review Plan (SRP) Updates

The NRC staff continues its systematic update of NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition," to support reviews of COL, DC, ESP, and limited work authorization applications.

The staff published several notices in the *Federal Register* requesting public comment on proposed revisions to 40 SRP sections in 2013. These include sections on site characteristics and parameters; design of structures, components, equipment, and systems; radiation protection; quality assurance; and severe accidents. In 2014, the staff issued 34 updated SRP sections, many as final revisions to the proposed revisions issued in 2013. Additionally, the staff published notices in the *Federal Register* requesting public comment on several proposed new SRP sections which provide new staff guidance in technical areas such as the review of chilled water systems and coping with open phase electrical conditions.

The staff issued the final revision of "Introduction Part 2: Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: Light-Water Small Modular Reactor Edition." The scope of the introduction now covers all parts of 10 CFR Part 52 and the term "integral pressurized water reactor" (iPWR) has now been replaced with the more generic "small modular reactor" (SMR).

Construction Oversight

Construction under 10 CFR Part 50

Watts Bar Nuclear Plant Unit 2 (WB2) is the only nuclear power plant currently being constructed under 10 CFR Part 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-1980s, 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 WB2 were completed or partially completed before suspension of construction in the mid-1980s. When 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 and 430 of the 550 inspection items have been closed. The inspections were conducted by four construction resident inspectors and inspectors from the NRC regional office in Atlanta, GA. As TVA has completed construction on individual safety-related systems, NRC inspections of preoperational testing have started. Many of the preoperational testing inspections will be performed in 2014. The remaining preoperational testing inspections, along with startup testing inspections, are anticipated to take place in 2015.

Construction under 10 CFR Part 52

The NRC issued COLs to Southern Nuclear Operating Company and several co-owners 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 to ensure that the new plants are constructed in accordance with their combined licenses. The inspections are conducted by four permanently assigned construction resident inspectors at each site and by 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 walls, fabrication of steel containments, and the fabrication and placement 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 concrete placement, welding, module fabrication, and civil/structural engineering activities. NRC inspection activities will continue to increase as licensees broaden the scope of construction activities.

The NRC staff and industry have refined the processes and guidance developed for closure verification of inspections, tests, analyses, and acceptance criteria (ITAAC) based on lessons learned from the review of submitted ITAAC closure notifications (ICNs). The staff has facilitated several public workshops to solicit input, exchange views, and reach consensus on several construction inspection issues, including the development of additional ICN examples for inclusion in the Nuclear Energy Institute (NEI) guidance document on the ITAAC closure process. Members of the public, NEI and industry representatives, and other external stakeholders participated in these public workshops. The NRC staff reviewed the NEI guidance document for ITAAC closure and, on July 31, 2014, issued a letter stating that the document was acceptable for use by licensees during the formal NRC endorsement process. The staff is revising the associated regulatory guide, which is scheduled to be completed in March 2015.

A total of 22 ICNs have been submitted for Vogtle Units 3 and 4 and V.C. Summer Units 2 and 3. The staff reviews all 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). The staff has completed its review of 20 of the submitted ICNs and, as

required by 10 CFR 52.99(e)(1), has published notices in the *Federal Register* to document the NRC staff's verification that the associated ITAAC have been completed. The two remaining submitted ICNs are under review by the NRC staff.

The NRC fully implemented the Construction Reactor Oversight Process (cROP) at the four new reactor units on July 1, 2013. Using practices similar to those of the ROP, 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 because 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.

Vendor Inspections

The NRC staff continued to implement the Vendor Inspection Program for vendors supporting both new and existing reactor licensees. Inspection findings for new reactors include issues with the design and qualification of key AP1000 valves and with the development and verification of the AP1000 digital I&C system. Inspections related to existing reactors identified noteworthy issues such as inadequate qualification testing of station batteries, improperly calculated radiation doses used to age equipment for environmental qualification, and improper control of the manufacturing process for safety-related power cables. As part of efforts to share lessons learned from its Vendor Inspection Program, the NRC staff sponsored the 4th Vendor Oversight Workshop on June 12, 2014, attended by 415 domestic and international stakeholders. The NRC staff continues to participate in many other quality-assurance and inspection-outreach activities, including meetings related to the Nuclear Procurement Issues Committee, the EPRI Joint Utility Task Group, and Section III of the ASME Boiler and Pressure Vessel Code, as well as meetings with NEI. NRC staff involved in the vendor inspection program also participates internationally to leverage the work of international regulators through the Multinational Design Evaluation Program Vendor Inspection Cooperation Working Group.

The NRC staff continues its rulemaking efforts to clarify 10 CFR Part 21, "Reporting of Defects and Noncompliance," in ways 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." Revision 0 of 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. The staff plans to issue Revision 1 of the draft regulatory basis based on feedback from stakeholders in the near future.

Advanced Reactors

"Advanced reactors" refers to those designs of commercial reactors that employ either light-water or non-light-water technology and which incorporate the Commission's expectations set forth in the *Federal Register* as the Policy Statement on the Regulation of Advanced Reactors (at 73 FR 60612 on October 14, 2008). Although vendors and advocates have approached the NRC for a variety of reactor technologies, the NRC staff has focused its attention on light-water small modular reactors (SMRs) because of 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 2015. Below is a status update of the pre application activities that the NRC has engaged in with SMR vendors and other advanced reactor designers.

Light-Water Small Modular Reactors

NuScale

On March 10, 2014, NuScale provided a letter to the NRC entitled "NuScale Power Updated Response to Regulatory Information Summary (RIS) 2013-18 for Design Certification Application Submittal Date," which modified their DC application date previously provided in their response to RIS 2012-12, "Licensing Submittal Information and Design Development Activities for Small Modular Reactor Designs," dated December 28, 2012. NuScale announced a new DC application submittal date of the second half of CY 2016. In support of their application, NuScale was awarded up to $217 million from DOE to support their DC application and on May 28, 2014, NuScale and DOE completed their SMR Cooperative Agreement.

NRC and NuScale personnel continue to meet to discuss various aspects of the design, such as steam and power conversion systems, electrical systems, control room and plant staffing, source term, auxiliary systems, I&C, severe accident analysis, emergency planning zones, and containment design.

Generation mPower LLC and B&W

Since mid-2009, the NRC staff has been engaged in pre-application interactions with B&W, and subsequently Generation mPower LLC (GmP), in preparation for receiving an application for certification of the mPower SMR design. On April 14, 2014, B&W announced plans to restructure its mPower Small Modular Reactor Program with a substantial decrease in annual spending. It is currently not clear when a design certification application would be tendered for the mPower SMR design.

The NRC has had very limited pre-application interactions with B&W and GmP since the spring of 2014. However, one technical topic has remained under review during this time, the Topical Report "Validation of B&W mPower Core Design Methods." In anticipation of an application related to the mPower design, the NRC staff developed the first design-specific review standard (DSRS). The DSRS would function like the standard review plan and addresses safety and risk categorization for the systems, structures, and components of the mPower design. Issuance of the final version of the DSRS is on hold until it is clear that the mPower design application will be tendered and that the tendered design will be sufficiently similar to the assumptions used to develop the DSRS to ensure the adequacy of the new guidance.

TVA Clinch River Early Site Permit Application

TVA has stated that it currently plans to apply for a 10 CFR Part 52 ESP for the Clinch River site near Oak Ridge, TN, in the fall of 2015. This application will be based on a plant parameter envelope characterizing several light-water small modular reactor designs. The NRC staff will be conducting meetings with TVA to discuss site safety and environmental issues in preparation for this application. TVA has also stated that it anticipates submitting a 10 CFR Part 52 combined license application about 6 months after a vendor submits an application requesting certification of the design proposed to be deployed at Clinch River.

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 held pre-application activities with Westinghouse at NRC headquarters on several occasions in past years and discussed topics such as reactor design, security, and seismic issues; soil and structures; piping; and safety analysis. In addition, the NRC staff is finalizing a topical report regarding Westinghouse's identification and ranking of small-break loss-of-coolant accident phenomena. Westinghouse responded to RIS 2013-18, "Licensing Submittal Information and Design Development Activities for Small Modular Reactor Designs," and stated that it intends to submit a design certification for the WSMR at some point in the future but did not specify a date. Ameren Missouri had previously stated that it intended to submit a COL application for multiple WSMR units to be located at the existing Callaway site but is now evaluating other SMR options.

Holtec International ("Holtec")

Holtec is developing the Holtec SMR 160 design, which features a 160-MWe power output. On January 30, 2014, Holtec provided a response to RIS 2013-18. In the response, Holtec noted that current SMR 160 design project work is focused on those engineering and analysis activities necessary to complete the plant design specification and underpinning engineering records before preparing a design certification application. Holtec had previously communicated plans to submit a design certification application in the fourth quarter of CY 2016 in their RIS 2012-12 response; however, they are now reevaluating this date.

Next Generation Nuclear Plant

The staff has been working with the DOE on resolving policy issues identified within the Next Generation Nuclear Plant (NGNP) program. Resolution of these issues is intended to support licensing of advanced non-LWR reactor technologies.

In a letter dated October 17, 2011, former Secretary of Energy Steven 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 sharing, 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 licensing 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.

In a letter dated July 17, 2014, the NRC staff provided feedback on the four key licensing issues and provided an updated assessment of DOE's white paper submittals on NGNP fuel qualification and mechanistic source terms. Currently no further activities are planned.

Other Reactor Technologies

Several private industry reactor designers and vendors have held discussions with the NRC regarding different non-LWR designs. The NRC staff maintains awareness of DOE's research

programs for non-LWR technologies and the development of non-LWRs within the international community.

The NRC and DOE are working on an initiative to develop advanced reactor design criteria that could be used for the licensing of non-LWR designs. The DOE is planning to complete a draft set of design criteria for advanced reactors and submit it to the NRC by the end of October 2014. The intended outcome of this initiative is NRC-issued regulatory guidance for use by NRC staff and future non-LWR applicants.