November 27, 2012

The Honorable Thomas R. Carper
Chairman, Subcommittee on Clean Air
and Nuclear Safety
Committee on Environment and Public Works
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

On behalf of the Commission, I am pleased to submit the U.S. Nuclear Regulatory Commission's (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 of April through September 2012. I would like to begin with an update on the NRC's continuing response to the lessons learned from the Fukushima accident.

At the time of the last report, the agency had already taken significant actions to address "Tier 1" activities (i.e., actions to be taken without delay), and licensees were beginning to take action on the NRC Orders and "request for information" letters issued in March. Currently, NRC staff is closely monitoring licensee efforts to ensure that activities are being safely carried out and completed as efficiently as possible and is providing information on its public website regarding the progress licensees have made to address major milestones. In addition, the NRC staff is evaluating public comments received on an advanced notice of proposed rulemaking published in March for the rulemaking regarding station blackout and an advanced notice of proposed rulemaking published in April for the rulemaking regarding integration of emergency procedures at nuclear power plants.

During the period covered by this report, the agency has continued to discuss Fukushima lessons learned with members of the public and industry. In recent months, staff has held multiple public meetings to discuss implementation of the Orders for post-Fukushima improvements. The agency has also held public meetings to discuss guidance for implementing the Orders, responding to requests for information, and the status of the staff's evaluation of long-term Fukushima-related recommendations. In addition, the NRC is providing information on its public website regarding the progress licensees have made to address major milestones associated with each Tier 1 activity.

In May, the agency issued several preliminary (draft) interim staff guidance documents for public comment. These guidance documents, intended to aid implementation of the three Orders issued in March, were then revised to reflect stakeholder input and were subsequently issued in August in final form. These guidance documents represent acceptable approaches to meeting the Orders' requirements before their December 31, 2016 compliance deadline. Compliance with the approaches set forth in the guidance documents is not mandatory, but licensees that propose alternative approaches will need to demonstrate that these approaches

meet the intent of the Orders. In September, the NRC issued preliminary (draft) guidance documents that provide licensees an acceptable approach for conducting re-analyses of potential earthquake and flooding hazards at their sites using the latest available information. We expect to issue these guidance documents in final form later this year.

The NRC staff has begun work on the next set of recommendations, referred to as "Tier 2" activities (i.e., actions that can be initiated as soon as staff resources become available and pertinent information is gathered and analyzed). On July 13, 2012, the NRC staff provided the Commission with its plans for addressing the remaining, longer-term activities, designated as "Tier 3" activities (i.e., recommendations that require the staff to conduct further study or undertake shorter-term actions first) in SECY-12-0095. The plan for each Tier 3 item is unique, but many of the Tier 3 plans will use information gathered from Tier 1 activities to inform the need for any further action.

During the period of April through September 2012, two reactor license renewals were issued and nine license renewal applications covering 13 units were under active review. The staff is continuing active reviews for 10 new reactor combined license applications for an additional 16 new reactor units.

In a significant related matter, on August 7, 2012, the Commission issued an Order in response to a June 8 ruling by the U.S. Court of Appeals for the District of Columbia Circuit that struck down the agency's 2010 update to the Waste Confidence Rule. The Court found that the Commission did not fully satisfy the National Environmental Policy Act and that the Commission should have prepared either an Environmental Assessment or an Environmental Impact Statement that examined the effects of failing to establish a repository and should have more fully examined the consequences of spent fuel pool leaks and fires. "Waste confidence" is a generic environmental finding that addresses whether there is reasonable assurance that an off-site spent fuel storage solution will be available by the expiration of plants' operating licenses, and, if not, whether there is reasonable assurance that the fuel can be stored safely at the plants beyond those dates. It allows our environmental reviews for new reactors or reactor license renewals to proceed without considering the site-specific effects of spent fuel storage beyond the licensed life of the facility in each individual application's environmental analysis. The Commission's Order stated that we will not issue licenses dependent upon the Waste Confidence Rule until the court's remand is appropriately addressed. The Commission emphasized that this decision extends only to the issuance of final licenses and directed that licensing reviews, including ongoing adjudications, except for contentions associated with waste confidence issues, continue to move forward on existing schedules. Subsequently, to address the court's ruling and resolve the waste confidence issue, the Commission directed the staff to proceed directly with development of an environmental impact statement and a revised waste confidence rule within 24 months (by September 5, 2014) to satisfy the Appeals Court remand of the NRC's 2010 waste confidence update. Resolving this issue promptly and satisfactorily is a Commission priority.

Regarding other activities, the San Onofre Nuclear Generating Station (SONGS) Units 2 and 3 are currently shut down to investigate the causes of excessive steam generator tube wear on the replacement steam generators. On March 15, 2012, the NRC sent an augmented inspection team to the site in response to the January 31, 2012, steam generator tube leak in Unit 3 and the subsequent discovery of significant tube-to-tube wear on both of the Unit 3 steam generators and lesser tube-to-tube wear on one of the two Unit 2 steam generators. For

several months, this team of NRC inspectors, with assistance from other NRC experts, closely followed the licensee's actions to evaluate the causes of the excessive tube wear and to develop corrective actions to prevent further tube degradation. On June 18, 2012, NRC staff met with representatives of Southern California Edison, the licensee, in San Juan Capistrano, California, to present the NRC's issues and observations resulting from the inspection. As discussed in that meeting, the NRC understands the steam generator thermal hydraulic conditions that resulted in the tube degradation and that these conditions were not accurately predicted during design of the replacement steam generators. In addition, the licensee is evaluating actions to prevent additional tube-to-tube degradation due to excessive vibration.

On March 27, 2012, the NRC issued a Confirmatory Action Letter to Southern California Edison, identifying the specific actions the licensee has committed to take prior to returning the units to power operation. On October 3, 2012, Southern California Edison provided its response to the Confirmatory Action Letter for Unit 2, which included both an assessment of the causes of the steam generator tube degradation and a proposed plan for restart of Unit 2. The NRC has a public website dedicated to the oversight of the SONGS plant where both of these documents can be accessed, as well as a summary of the issues and many additional relevant documents. It can be found at http://www.nrc.gov/info-finder/reactor/songs/tube-degradation.html. The NRC will continue its independent, in-depth inspections and detailed reviews of the issues at SONGS.

During an inspection at the Honeywell Metropolis facility conducted in May, inspectors identified that the licensee had used non-conservative estimates of the amount of uranium hexafluoride and hydrogen fluoride that could be released as a result of an earthquake in its emergency response plan. The inspectors noted that the design of the process equipment lacked seismic restraints, supports, and bracing that would be needed to ensure the process equipment remained intact following a credible seismic event. The larger potential release raises concerns about the adequacy of the licensee's emergency response plan. On July 13, the NRC issued a Confirmatory Action Letter acknowledging that Honeywell committed to actions it will take to resolve safety concerns prior to restarting NRC-licensed operations at the facility. Honeywell submitted a letter to the NRC on September 11, 2012, detailing its proposed corrective actions. On October 15, 2012, the NRC issued a Confirmatory Order requiring Honeywell to take specific actions to evaluate and address the identified issues.

On June 12, the NRC released its annual report on abnormal occurrences for fiscal year 2011, citing 23 events involving radioactive materials and one event at a commercial nuclear power plant. An accident or event is considered to be an abnormal occurrence if it involves a major reduction in the degree of protection of public health and safety. The report details investigations of each incident by the NRC, Agreement States, and licensees, as well as measures taken to ensure such incidents do not recur. Based on the NRC staff's review of these abnormal occurrences and other events, no discernable performance trends were noted. While 23 abnormal occurrences involving radioactive materials are a small percentage of the large number of activities that take place in the U.S. annually (19 were related to medical procedures), these events are significant for those involved and the agency ensures appropriate follow-up is conducted.

During this reporting period, the NRC submitted two events to the International Atomic Energy Agency for inclusion into the International Nuclear and Radiological Event Scale. The International Nuclear and Radiological Event Scale 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 two events the NRC submitted during this period involved overexposure of radiation workers.

On June 12-13, the NRC held its seventh annual Fuel Cycle Information Exchange at the agency's headquarters in Rockville, Maryland, as a continuing effort to reach out to stakeholders. The conference brings together NRC staff, industry representatives, licensees, certificate holders, and the public to discuss regulatory issues related to the nuclear fuel cycle. This year's theme was "The Nuclear Fuel Cycle: Ensuring Safety and Security in a Dynamic Environment." Topics discussed included enhancements to the fuel cycle oversight process, improving safety culture, industry perspectives, and rulemakings that will affect fuel cycle facilities.

In July and August, the NRC staff conducted similar public meetings to obtain external input on identifying enhancements to the current licensing and inspection programs for storage and transportation of spent nuclear fuel. In September, the annual Spent Fuel Storage and Transportation Regulatory Conference was held to foster dialogue, obtain external stakeholder input and feedback on technical issues, and discuss programs for industry sharing of operating experience.

Also in June, the NRC staff completed a series of reports documenting a major research project to calculate best estimates of the offsite radiological health consequences of potential severe reactor accidents for two pilot plants, Peach Bottom (a boiling-water reactor) and Surry (a pressurized-water reactor). This study, titled State-of-the-Art Reactor Consequence Analyses (SOARCA), updates previous calculations of reactor accident consequences and combines up-to-date information about the plants' layout and operations with local population data and emergency preparedness plans. This information was then analyzed using state-of-the-art computer codes that incorporate decades of research into severe reactor accidents. SOARCA's main findings fall into three basic areas: how a reactor accident progresses; how existing systems and emergency measures can affect an accident's outcome; and how an accident would affect public health. The project's results include: (1) existing resources and procedures when effectively implemented can stop an accident, slow it down, or reduce its impact before it can affect public health; (2) even if accidents proceed without effective intervention, they take much longer to happen and release much less radioactive material than earlier analyses suggested; and (3) the analyzed accidents would cause essentially zero immediate deaths and only an extremely small increase in an individual's risk of a long-term cancer death relative to the average risk of cancer death for an individual in the U.S. from all causes.

Effective July 1, the NRC reintegrated security inspection results into the agency's Reactor Oversight Process assessment program. The NRC previously treated safety and security inputs to the Action Matrix separately. Reintegrating security information provides a holistic representation of licensee performance and will allow NRC staff to more fully leverage supplemental inspection procedures and resources when performance warrants. In addition, the integrated assessment process will provide the public increased transparency through a more comprehensive representation of licensees' performance.

On August 2, the NRC renewed the operating license of Nuclear Fuel Services, Inc. in Erwin, Tennessee, for an additional 25 years. Nuclear Fuel Services manufactures nuclear reactor fuel. The NRC staff performed a detailed safety and environmental review and determined that the application demonstrated the company's qualifications, training, and experience to use the licensed materials according to NRC regulations, and that the company's equipment, facilities, and procedures are adequate to protect health and minimize danger to life and property.

Also in August the NRC issued a report on the safety of U.S. nuclear power plants for consideration at the Extraordinary Meeting of the Convention on Nuclear Safety. This U.S. national report describes how the Nation addressed six topics in relation to the Fukushima accident: external events, design issues, severe accident management and recovery, national organizations, emergency preparedness and response and post-accident management, and international cooperation. The report also includes a section developed by the Institute of Nuclear Power Operations describing the U.S. nuclear industry's response to the Fukushima accident. The report will add to the knowledge base for parties to the Convention on lessons learned and actions taken following the events at Fukushima.

In late August, the agency made available to the public an unclassified version of the annual report to Congress outlining the previous year's security inspection program. The report is required under the Energy Policy Act of 2005, and includes discussion of force-on-force exercises for commercial nuclear power plants and Category I fuel cycle facilities for calendar year 2011.

On August 22, the NRC issued its final environmental impact statement (FEIS) for a proposed facility in Lea County, New Mexico, that would deconvert depleted uranium hexafluoride from uranium enrichment facilities into fluorine products for commercial use and depleted uranium oxides for long-term stable disposal. On October 2, NRC issued the license to International Isotopes Fluorine Production Inc., to construct and operate the facility in Lea County.

In early September, the agency issued mid-cycle assessment letters to the Nation's commercial nuclear power plants. As of the end of June, 96 plants were in the two highest performance categories with 62 fully meeting all safety and security performance objectives and 34 assessed as needing to resolve one or two items of lower safety significance. Six nuclear reactors were in the third performance category with a degraded level of performance. For this category, regulatory oversight includes additional NRC inspections, senior management attention, and oversight focused on the cause of the degraded performance. Browns Ferry Unit 1 in Alabama is in the fourth performance category and requires increased oversight due to a safety finding of high significance. This situation will result in additional inspections to confirm the plant's performance issues are being addressed. Fort Calhoun Station in Nebraska is in an

extended shutdown with significant performance issues, and is currently under a special NRC oversight program distinct from the normal performance levels. Therefore, the plant did not receive a mid-cycle assessment letter.

On September 25, the NRC issued a license to General Electric-Hitachi Global Laser Enrichment, LLC (GLE) to construct and operate a uranium enrichment plant using laser technology in Wilmington, North Carolina. This low-enriched uranium will be used in fuel for commercial nuclear power reactors. GLE plans to construct the plant at the site of the existing Global Nuclear Fuel-America's fuel fabrication plant. The NRC will conduct inspections during the construction and operation of the GLE facility.

Over the course of the past six months, the agency has sought public comment on a number of ongoing or proposed activities or issued new final regulations through the use of *Federal Register* notices. These notices included, among others, seeking public comment as the agency began considering changes to U.S. reactors' onsite emergency response requirements; issuing the final rule addressing the licensing, inspection, and annual fees that will be charged to applicants and licensees for fiscal year 2012; and seeking public comment on draft revisions to the guidance document for nuclear power plant licensees to determine their decommissioning funding requirements.

From April through September, the agency conducted about 600 public meetings addressing a full range of NRC issues that were held in the Washington, D.C. area and around the country. The meetings included Commission, Advisory Committee, Licensing Board, and staff-sponsored events. Also during this time, the NRC received 156 Freedom of Information Act (FOIA) requests and closed 146 FOIA requests. Of particular note, the agency has continued to process 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 44 such FOIA requests and released 96,996 pages of records to the public, including over 36,000 pages released during the period covered by this report.

In May, the NRC held its 35th Annual Awards Ceremony to acknowledge employee recipients of the Presidential Distinguished and Meritorious Executive Rank Awards and the NRC's Distinguished and Meritorious Service Awards. Separately, the U.S. Black Engineer and Information Technology magazine, in its 10th annual survey, recognized the NRC as a top supporter of historically black colleges and universities.

With the issuance of $3.7 million in grants the week of September 9, the agency completed its fiscal year 2012 awards of approximately $18.6 million to academic institutions through the Nuclear Education Program. Authorized by Congress to provide opportunities to qualified academic institutions to encourage careers and research in nuclear, mechanical, and electrical engineering; health physics; and related fields, the NRC awarded 75 grants to 55 higher education institutions located in 29 states and Puerto Rico. These grants are intended to help develop a future workforce capable of designing, constructing, operating, and regulating the next generation of nuclear facilities.

Finally, the agency relocated its offices in NRC Region I in King of Prussia, Pennsylvania, and in NRC Region IV in Arlington, Texas, into new office spaces, and I am pleased to report that steady progress continues to be made on the completion of the Three White Flint North building across the street from our current headquarters offices in Rockville, Maryland. We are on schedule to begin consolidating staff from dispersed, leased office spaces into the new facility later this year.

Please contact me for any additional information you may need.

Sincerely,

/RA/

Allison M. Macfarlane

Enclosure:
As stated

cc: Senator John Barrasso

Identical letter sent to:

The Honorable Thomas R. Carper
Chairman, Subcommittee on Clean Air
and Nuclear Safety
Committee on Environment and Public Works
United States Senate
Washington, D.C. 20510
cc: Senator John Barrasso

The Honorable Barbara Boxer
Chairman, Committee on Environment
and Public Works
United States Senate
Washington, D.C. 20510
cc: Senator James M. Inhofe

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

The Honorable Ed Whitfield
Chairman, Subcommittee on Energy and Power
Committee on Energy and Commerce
United States House of Representatives
Washington, D.C. 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, D.C. 20515
cc: Representative Gene Green

The Honorable Rodney Frelinghuysen
Chairman, Subcommittee on Energy
and Water Development
Committee on Appropriations
United States House of Representatives
Washington, D.C. 20515
cc: Representative Peter J. Visclosky

The Honorable Dianne Feinstein
Chairman, Subcommittee on Energy
and Water Development
Committee on Appropriations
United States Senate
Washington, D.C. 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 2012–September 2012

Note: The period of performance covered by this report includes activities that occurred from the first day of April 2012 to the last day of September 2012. 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.

CONTENTS

I Implementing Risk-Informed and Performance-Based Regulations

Forty-three operating nuclear power reactors currently are committed to transition to a risk-informed, performance-based fire protection licensing basis permitted under Title 10 of the *Code of Federal Regulations* (10 CFR) 50.48(c). This licensing basis also is known as National Fire Protection Association (NFPA) 805, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants." This number does not include the four reactor units represented by two pilot plants that have already made the transition or one plant that has not committed to transition yet, but will likely do so.

In April 2011, the Commission approved a policy paper (see SECY-11-0033, "Proposed NRC Staff Approach to Address Resource Challenges Associated with Review of a Large Number of NFPA 805 License Amendment Requests," dated March 4, 2011) that allows submittal of the remaining license amendment requests (LARs) on a staggered basis, similar to the approach used for license renewal applications (LRAs). 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. Licensees submitted five LARs (for six reactor units) in Fiscal Year (FY) 2011, eight LARs (for 11 reactor units) in FY 2012, and they are scheduled to submit 14 LARs (for 24 reactor units) in FY 2013. The remaining three LARs (for four reactor units) are scheduled to be submitted in FY 2014. One licensee has informed the NRC that it intends to start the transition to NFPA 805 at one of its plants after the agency approves its two other plants for transition. Licensees for three reactor plants that were actively making the transition have informed the staff of their intent to remain in their current licensing basis and not transition to NFPA 805. One licensee withdrew its application. The NRC did not accept for review one licensee's application, submitted in FY 2012. Therefore, the staff currently is planning on a total of 47 reactor units transitioning to NFPA 805 (including the four pilot reactor units), which represent 45 percent of the current commercial power reactor units licensed to operate in the United States.

Southern Nuclear Operating Company (Southern) submitted its proposal to implement 10 CFR 50.69, "Risk-Informed Categorization and Treatment of Structures, Systems and Components for Nuclear Power Reactors," for Vogtle Electric Generating Plant, Units 1 and 2 (VEGP) 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. Implementing these voluntary risk-informed initiatives is complex. The NRC sometimes waives its staff review fees because the agency uses lessons learned from the efforts to improve staff guidance and the efficiency and effectiveness of future reviews and submittals. The NRC has granted Southern's request to waive review fees for both the allowed outage time and the 10 CFR 50.69 submittal.

II Reactor Oversight Process

The NRC continues to implement the Reactor Oversight Process (ROP) at all nuclear power plants. The NRC also continues 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.

The agency's most recent performance assessments show that all plants continue to operate safely. The NRC's Office of Public Affairs issued a press release on September 6, 2012, that summarizes the 2012 mid-cycle performance assessments and associated mid-cycle

assessment letters for all operating nuclear power plants. The NRC makes this information publicly available on its Web site.

On July 1, 2012, the staff reintegrated the security cornerstone into the ROP assessment program. Regulatory Issue Summary 2012-03, "Reintegration of Security into the Reactor Oversight Process Assessment Program," dated March 14, 2012, outlines this change. In addition to direct notification of licensees, the staff issued a press release and updated the NRC Web site in early August 2012.

On April 8, 2012, the staff sent an ROP self-assessment to the Commission (see SECY-12-0055, "Reactor Oversight Process Self-Assessment for Calendar Year 2011," dated April 8, 2012). The self-assessment results for 2011 indicate that the ROP met program goals and achieved its intended outcomes and that the NRC appropriately monitored operating nuclear power plant activities and focused agency resources on performance issues. On April 9, 2012, the staff also sent a paper discussing the Industry Trends Program to the Commission (see SECY-12-0056, "Fiscal Year 2011 Results of the Industry Trends Program for Operating Power Reactors"). The NRC made these papers publicly available in April 2012, and they were discussed at the Agency Action Review Meeting (AARM) on April 25, 2012. The results of that AARM were discussed at a public Commission meeting on June 1, 2012.

The NRC hosted public meetings on the ROP on May 2, May 30, June 27, and August 29, 2012. The ROP Working Group and other interested stakeholders attended these meetings to provide a forum for external feedback on staff initiatives, such as the security reintegration into the ROP Assessment Program and enhancements to the Public Radiation Safety Cornerstone of the ROP. The ROP Working Group comprises representatives from industry and the NRC staff who work toward continuously improving the ROP and reactor safety.

III Status of Issues Tracked in the Reactor Generic Issues Program

The Generic Issues Management Control System is tracking five open generic issues (GIs). The status of each open issue is described below:

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

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

Assessments of the March 2011 nuclear accident in Japan continue and may touch on other issues associated with hydrogen combustion under Near-Term Task Force Recommendation 6. The NRC Japan Lessons-Learned Project Directorate will proceed independently to address

other hydrogen combustion issues, if required, and closure of GI-189 is projected for February 2013.

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

This GI concerns the possibility that, following a loss of coolant accident (LOCA) in a PWR, debris accumulating on the emergency core cooling system sump screen may result in clogging and restrict water flow to the pumps. As a result of this GI and a related Generic Letter, 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation during Design Basis Accidents at Pressurized-Water Reactors," dated September 13, 2004), all PWR licensees increased the size of their containment sump strainers, significantly reducing the risk of strainer clogging. An associated issue, which needs to be resolved to close GI-191, is the potential for debris to bypass the sump strainers and enter the reactor core. In 2008, the NRC staff determined that additional industry-sponsored testing was necessary to resolve this issue. Some testing was performed, but testing and NRC evaluation are continuing because of NRC staff concerns about the testing results and related assumptions. In December 2010, the Commission determined it was prudent to allow the nuclear industry to complete testing on in-vessel effects and zone of influence and to develop a path forward by mid-2012. The Commission directed the staff to evaluate alternative approaches, including risk-informed approaches, for resolving GSI-191 and to present them to the Commission by mid-2012. The Commission further agreed that modifications should be completed within two operating cycles for smaller LOCAs and three operating cycles for larger LOCAs after development of the path forward. Staff's proposed options for resolution are with the Commission for deliberation. Closure for this GI is projected for 2018.

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

This GI involves an evaluation of suppression pool designs, in particular the possibility of air, which is discharged into the pool following a LOCA, being ingested into ECCS piping and affecting the ECCS pumps. Based upon a staff request, the BWR owners group provided voluntary, proprietary data on the characteristics of LOCA phenomena at the earliest stages of the postulated accidents, along with their general assessment of the issue. The Purdue University Multi-Dimensional Integral Test Assembly (PUMA) test facility conducted experiments to try to confirm the potential for bubbles formed during a simulated LOCA blowdown to be transported widely in the pool. Initial review indicates that bubbles are readily transported in the pool, potentially to ECCS suction locations, but researchers could not make definitive findings because of the relatively small test scale. Review of the findings continues, and the NRC is evaluating the potential for use of sophisticated analytical tools, such as computational fluid dynamics.

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

The staff found that the estimated seismic hazard levels at some current central and eastern U.S. nuclear sites may be higher than the values used in designs and previous evaluations. The NRC evaluated the effects of new seismic hazard data and methods on U.S. nuclear plants, and collaborated with the Electric Power Research Institute to ensure a sound technical approach. The Safety/Risk Assessment Panel issued its report on September 2, 2010. The panel recommended that further actions be taken to address GI-199 outside the GI program.

The NRC issued Information Notice 2010-18, “Implications of Updated Probabilistic Seismic Hazard Estimates in Central and Eastern United States on Existing Plants,” on September 2, 2010, to inform stakeholders that the GI-199 Safety/Risk Assessment Report had been issued. The Information Notice also stated that the NRC will follow the appropriate regulatory process to request that operating plants and independent spent fuel storage installations provide specific information about their facilities to enable the staff to complete the regulatory assessment and identify and evaluate candidate backfits. The agency incorporated GI-199 into the work done by the Japan Lessons-Learned Project Directorate in response to the March 2011Japan nuclear event. The NRC has requested that all nuclear power plants reevaluate seismic hazards using present-day guidance and methods. For plants in the central and eastern United States, the seismic hazard reevaluations will be completed by September 2013. 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 response if the reevaluated hazard exceeds the plant’s design basis. If required, those risk assessments must be completed within 3 or 4 years of the submittal date of the seismic hazard reevaluations, depending on the amount of ground motion exceedance.

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

This GI relates to potential flooding effects from upstream dam failure(s) on nuclear power plant sites, spent fuel pools, and sites undergoing decommissioning with spent fuel stored in spent fuel pools. The Office of Nuclear Reactor Regulation proposed this GI in July 2010, and the GI Program accepted it for screening in August 2010. The NRC completed the screening analysis and, after coordination with the other Federal agencies, it publicly announced the GI on March 6, 2012.

This GI is being addressed as part of the agency’s efforts associated with responding to the lessons learned from the Fukushima nuclear accident in Japan. Licensees must submit their flood hazard reevaluations to the NRC by March 12, 2015.

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 surveillance requirements, topical reports submitted on a plant-specific basis, notices of enforcement discretion, or other actions requiring NRC review and approval before licensees can implement them. The FY 2012 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 GLs 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 requests not requiring NRC review and approval before licensees can implement them. The FY 2012 NRC performance budget plan incorporates two output measures related to other licensing tasks: the number of other licensing tasks completed per year and the age of the other licensing task inventory.

The table below shows the actual FY 2010, FY 2011, and FY 2012 results and the FY 2013 goals for the NRC performance budget plan output measures for operating power reactor licensing actions and other licensing tasks.

PERFORMANCE BUDGET PLAN				
Output Measure	**FY 2010 Actual**	**FY 2011 Actual**	**FY 2012 Actual**	**FY 2013 Goals**
Licensing actions completed per year	988	849	770	802
Age of licensing action inventory	93.% ≤ 1 year and 100% ≤ 2 years	90.3% ≤ 1 year and 99.9% ≤ 2 years	95.8% ≤ 1 year and 100% ≤ 2 years	95% ≤ 1 year and 100% ≤ 2 years
Other licensing tasks completed per year	625	465	674	577
Age of other licensing tasks inventory	94% ≤ 1 year and 100% ≤ 2 years	94.2% ≤ 1 year and 99.6% ≤ 2 years	94.6% ≤ 1 year and 100% ≤ 2 years	90% ≤ 1 year and 100% ≤ 2 years

V Status of License Renewal Activities

The NRC has issued renewed licenses to 73 of the 104 power reactor units licensed to operate.

Applications Currently under Review

The NRC has nine License Renewal Applications (LRAs) for 13 reactor units under review. The following is the status of applications currently under review.

Indian Point Nuclear Generating Units 2 and 3

On April 30, 2007, Entergy Nuclear submitted an LRA for Indian Point Nuclear Generating Units 2 and 3 to extend the operating licenses for an additional 20 years beyond the current license period. In June 2012, the staff issued a draft supplement to the December 2010 final Supplemental Environmental Impact Statement (SEIS) to address information about the plants' effect on aquatic organisms that was identified subsequent to the publication of the final SEIS. In addition, activities related to the Atomic Safety and Licensing Board (ASLB) hearing process continued.

Crystal River Nuclear Generating Plant, Unit 3

On December 16, 2008, the Florida Power Corporation submitted an LRA for Crystal River Nuclear Generating Plant, Unit 3, to extend the operating license for an additional 20 years beyond the current license period. During the reporting period, the staff continued the safety and environmental reviews of the application. A projected date for a license renewal decision is currently to be determined, pending Florida Power Corporation's final plans to repair the unit's containment and the submission of an acceptable containment aging management plan. The licensee is expected to make a decision on whether to repair the containment or decommission the plant in December 2012.

Diablo Canyon 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. The staff's review of the application is currently on hold, with the exception of ongoing consultations with the California State Office of Historic Preservation, the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service. PG&E requested the hold because of a delay in its ability to satisfy requirements of the Coastal Zone Management Act, for which PG&E needs to complete a seismic study. The anticipated completion date for the seismic study is November 2014. In addition, an admitted contention remained pending before the ASLB.

Seabrook Station

On June 1, 2010, NextEra Energy Seabrook, LLC, submitted an LRA for the Seabrook Station to extend the operating license for an additional 20 years beyond the current license period. In June 2012, the staff issued the safety evaluation report (SER) with open items and issued a notice of intent to prepare a supplement to the August 2011 draft SEIS. The draft supplement is scheduled to be issued in December 2012. In addition, activities related to the ASLB hearing process continued.

Davis-Besse Nuclear Power Station

On August 30, 2010, FirstEnergy Nuclear Operating Company submitted an LRA for the Davis-Besse Nuclear Power Station to extend the operating license for an additional 20 years beyond the current license period. The staff issued the SER with open items in July 2012, it and continued the safety and environmental reviews of the application. In addition, activities related to the ASLB hearing process continued.

South Texas Project, Units 1 and 2

On October 28, 2010, South Texas Project Nuclear Operating Company submitted an LRA for the South Texas Project, Units 1 and 2, to extend the operating license for an additional 20 years beyond the current license periods. During the reporting period, the staff continued the safety and environmental reviews of the application.

Limerick Generating Station, Units 1 and 2

On June 22, 2011, Exelon Generating Co., LLC, submitted an LRA for the Limerick Generating Station, Units 1 and 2, to extend the operating license for an additional 20 years beyond the current license periods. During the reporting period, the staff conducted onsite inspections related to the safety review of the application and continued the safety and environmental reviews of the application. In July 2012, the staff issued the SER with open items. In addition, activities relating to the ASLB hearing process continued.

Grand Gulf Nuclear Station, Unit 1

On November 1, 2011, Entergy Nuclear submitted an LRA for the Grand Gulf Nuclear Station, Unit 1, to extend the operating license for an additional 20 years beyond the current license period. During the reporting period, the staff conducted onsite inspections related to the safety review of the application and continued the safety and environmental reviews of the application.

Callaway Plant, Unit 1

On December 19, 2011, Union Electric Company submitted an LRA for Callaway Plant, Unit 1, to extend the operating license for an additional 20 years beyond the current license period. During the reporting period, the staff conducted onsite audits related to the safety and environmental reviews of the application.

Generic Environmental Impact Statement Update

The NRC continued the process of revising NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants," issued in May 1996, and the associated guidance documents in support of a rulemaking to amend and update the environmental protection regulations for renewing nuclear power plant operating licenses. The NRC plans to publish the revised generic environmental impact statement, final rule, and associated guidance documents in FY 2013.

VI Summary of Reactor Enforcement Actions

Reactor Enforcement by Region

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 that the power reactor licensees committed, the significance of a violation is assessed using the significance determination process (SDP) 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.

NONESCALATED REACTOR ENFORCEMENT ACTIONS						
		Region I	Region II	Region III	Region IV	TOTAL
Cited Severity Level IV or Green	1st Half FY 12	1	3	0	2	6
	2nd Half FY 12	3	5	1	6	15
	FY 12 YTD Total	4	8	1	8	21
	FY 11 Total	4	16	1	5	26
	FY 10 Total	3	1	2	9	15
Non-Cited Severity Level IV or Green	1st Half FY 12	58	59	121	149	387
	2nd Half FY 12	85	92	106	147	430
	FY 12 YTD Total	143	151	227	296	817
	FY 11 Total	165	113	228	260	766
	FY 10 Total	145	126	204	291	766
TOTAL Cited and Non-Cited Severity Level IV or Green	1st Half FY 12	59	62	121	151	393
	2nd Half FY 12	88	97	107	153	445
	FY 12 YTD Total	147	159	228	304	838
	FY 11 Total	169	129	229	265	792
	FY 10 Total	148	127	206	300	781

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

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

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

ESCALATED REACTOR ENFORCEMENT ACTIONS ASSOCIATED WITH THE REACTOR OVERSIGHT PROCESS						
		Region I	Region II	Region III	Region IV	TOTAL
Violations Related to Red Findings	1st Half FY 12	0	0	0	0	0
	2nd Half FY 12	0	0	0	1	1
	FY 12 YTD Total	0	0	0	1	1
	FY 11 Total	0	1	0	0	1
	FY 10 Total	0	0	0	0	0
Violations Related to Yellow Findings	1st Half FY 12	0	1	1	0	2
	2nd Half FY 12	0	0	0	1	1
	FY 12 YTD Total	0	1	1	1	3
	FY 11 Total	0	0	0	1	1
	FY 10 Total	0	3	0	0	3
Violations Related to White Findings	1st Half FY 12	3	2	2	0	7
	2nd Half FY 12	1	3	1	0	5
	FY 12 YTD Total	4	5	3	0	12
	FY 11 Total	2	4	5	2	13
	FY 10 Total	2	0	4	1	7
TOTAL Related to Red, Yellow, or White Findings	1st Half FY 12	3	3	3	0	9
	2nd Half FY 12	1	3	1	2	7
	FY 12 YTD Total	4	6	4	2	16
	FY 11 Total	2	5	5	3	15
	FY 10 Total	2	3	4	1	10

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

Reactor Escalated Enforcement Actions and Other Significant Actions Taken

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

Florida Power and Light Company (Turkey Point Nuclear Plant, Units 3 and 4) EA-12-001

On April 9, 2012, the NRC issued a Notice of Violation associated with a white SDP finding and a Severity Level III violation with a proposed imposition of civil penalty in the amount of $140,000 to Florida Power and Light Company (FPL). The NRC issued the white finding for the failure of Turkey Point to maintain the effectiveness of its emergency plan, as required by 10 CFR 50.54(q) and 10 CFR 50.47(b), and it issued the Severity Level III violation and civil penalty for FPL's failure to make an 8-hour report, as required by 10 CFR 50.72(b)(3)(xiii). Specifically, from December 4, 2010, to July 13, 2011, and October 10 to October 28, 2011, FPL failed to follow and maintain the effectiveness of its emergency plan when portions of the technical support center ventilation system were removed from service for maintenance, without compensatory measures. FPL failed to report this condition as required from December 4, 2010, to July 13, 2011.

Omaha Public Power District (Fort Calhoun Station)–EA-12-023

On April 10, 2012, the NRC issued a red SDP finding and a Notice of Violation for three violations to Omaha Public Power District as a result of inspections at the Fort Calhoun Station. It based the red finding on deficient modification and maintenance of the safety-related 480 Vac electrical distribution system that resulted in a catastrophic switchgear fire. Three violations were associated with the red finding: (1) 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," Criterion III, "Design Control," associated with modifications to safety-related breakers, (2) 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," associated with inadequate electrical maintenance, and (3) license condition 3.D, "Fire Protection Program," associated with train separation. At the time of the event, the plant was in cold shutdown for a planned refueling outage.

Southern Nuclear Operating Company, Inc. (Joseph M. Farley Nuclear Plant)–EA-11-225

On April 16, 2012, the NRC issued a Notice of Violation to Southern Nuclear Operating Company, Inc., for a violation associated with a greater-than-green SDP finding at the Joseph M. Farley Nuclear Plant. The details of the finding are official use only–security-related information.

Omaha Public Power District (Fort Calhoun Station)–EA-11-246

On April 16, 2012, the NRC issued a Notice of Violation to Omaha Public Power District for two violations associated with two greater-than-green SDP findings at the Fort Calhoun Station. The details of the findings are official use only–security-related information.

Pacific Gas and Electric Company (Diablo Canyon Power Plant)–EA-12-075

On May 4, 2012, the NRC issued a Notice of Violation to Pacific Gas and Electric Company (PG&E) for a violation of 10 CFR 50.9, "Completeness and Accuracy of Information," associated with a Severity Level III violation involving PG&E's failure to provide information to the

Commission that was complete and accurate in all material respects, related to its NRC GL 2003-01 response. Specifically, in a letter dated April 22, 2005, PG&E stated that: (1) test results confirmed that no unfiltered control room in-leakage existed, and (2) tracer gas in-leakage testing was performed in the alignment that results in the greatest consequence to the control room operator. This information was inaccurate because control room ventilation testing conducted before PG&E's response to GL 2003-01 indicated that the unfiltered in-leakage was greater than the value assumed in the design basis radiological analyses, and the system test was not performed in an alignment that resulted in the greatest consequence to the control room operator.

Arizona Public Service Company (Palo Verde Generating Station)–EA-11-256

On May 7, 2012, the NRC issued a Notice of Violation to Arizona Public Service Company for a violation associated with a greater-than-green SDP finding at the Palo Verde Generating Station. The details of the finding are official use only–security-related information.

Virginia Electric and Power Company (North Anna Power Station, Unit 1 and 2)–EA-12-033

On May 10, 2012, the NRC issued a Notice of Violation to Virginia Electric and Power Company for a violation of technical specification 5.4.1.a, "Procedures," associated with a white SDP finding involving Virginia Electric and Power Company's failure to establish and maintain maintenance procedures appropriate to the circumstances for the safety-related emergency diesel generators (EDGs). Specifically, maintenance procedure 0-MCM-0701-27 did not provide adequate guidance for installation of the jacket water cooling inlet jumper gasket, which resulted in a faulty gasket installation on the Unit 2 "H" (2H) EDG in May 2010. As a result, the 2H EDG failed to perform its safety function when called upon on August 23, 2011.

Tennessee Valley Authority (Browns Ferry Nuclear Plant)–EA-12-071

On May 18, 2012, an immediately effective Confirmatory Order was issued to the Tennessee Valley Authority (TVA), confirming TVA's commitment to submit a license amendment request to transition the three units at the Browns Ferry plant to the National Fire Protection Association Standard (NFPA) 805. TVA originally had planned to submit its application to transition Browns Ferry on March 4, 2012. However, TVA requested a delay to ensure it could submit a high-quality application. Based on TVA's commitment to maintain acceptable compensatory measures, and a review of TVA's status and planned key activities, including the intended NFPA 805 modifications, the NRC determined that TVA provided adequate justification for its commitment to submit a license application by March 29, 2013. The NRC has therefore extended TVA's enforcement discretion until March 29, 2013.

Tennessee Valley Authority (Watts Bar, Unit 2)–EA-12-021

On June 18, 2012, the NRC issued an immediately effective Confirmatory Order to TVA to formalize commitments made as a result of an alternative dispute resolution (ADR) mediation session. The commitments were made by TVA as part of a settlement agreement between TVA and the NRC regarding an apparent violation of NRC requirements by TVA. The agreement resolves the apparent violation involving two subcontractor employees at Watts Bar Unit 2 who deliberately falsified work order packages for primary containment penetrations, which caused TVA to be in apparent violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," and 10 CFR 50.9, "Completeness and Accuracy of Information,"

which was identified during an NRC Office of Investigations (OI) investigation. TVA agreed to a number of corrective actions as part of this Confirmatory Order, including but not limited to: (1) a prompt cessation of all containment electrical penetration work activities and the initiation of an internal review of the incident, (2) a root cause and extent-of-condition review, (3) procedural revisions and training related to the importance of 10 CFR 50.9 and procedural compliance, and (4) various site-specific (Watts Bar Unit 2) and fleet-wide communications that discuss expectations for assuring work activities are performed and documented in a complete and accurate manner. In consideration of these corrective actions and commitments, the NRC agreed to refrain from proposing a civil penalty and issuing a Notice of Violation or other enforcement action in this matter.

FirstEnergy Nuclear Operating Company (Perry Nuclear Power Plant)–EA-12-074

On June 25, 2012, the NRC issued a Notice of Violation to FirstEnergy Nuclear Operating Company for a violation associated with a greater-than-green SDP finding at the Perry Nuclear Power Plant. The details of the finding are official use only–security-related information.

Indiana Michigan Power Company (D.C. Cook Nuclear Power Plant)–EA-12-005

On June 28, 2012, an immediately effective Confirmatory Order was issued to the Indiana Michigan Power Company to confirm commitments made as a result of an ADR mediation session held on May 23, 2012. This action is based on a violation involving two D.C. Cook supervisory-level individuals who failed to ensure that an individual, who was off site when selected for fitness-for-duty testing, was tested at the earliest reasonable and practical opportunity when both the donor and collectors were available. This was contrary to the requirements of 10 CFR 26.4(b) and 10 CFR 31(d)(2)(v) of the fitness-for-duty program. Indiana Michigan Power Company has completed a number of corrective actions and agreed to implement additional corrective actions and enhancements. In consideration of the corrective actions and commitments outlined in the order, the NRC agreed to refrain from proposing a civil penalty and issuing a Notice of Violation for this matter.

NextEra Energy Point Beach, LLC (Point Beach Nuclear Plant, Units 1 and 2)–EA-12-106

On July 24, 2012, the NRC issued a Notice of Violation to NextEra Energy Point Beach, LLC, for a violation of 10 CFR 50.47(b)(10) associated with a white SDP finding involving the failure of Point Beach personnel to develop and have in place guidelines for the choice of protective actions during an emergency that were consistent with Federal guidance. Specifically, an apparent logic error in a Point Beach emergency planning implementing procedure required the emergency director to revisit the question of impediments to evacuation after a prior decision to evacuate affected downwind sectors had been implemented by local authorities, resulting in a contradictory recommendation for sheltering being given during an exercise.

NextEra Energy Seabrook, LLC (Seabrook Station, Unit 1)–EA-12-093

On August 7, 2012, the NRC issued a Notice of Violation to NextEra Energy Seabrook, LLC, (Seabrook) for a violation of 10 CFR 50.54(q)(2), associated with a white SDP finding involving Seabrook's failure to identify a performance weakness during the postexercise critique. Specifically, Seabrook did not identify an incorrect initial protective action recommendation (PAR), which had been developed and communicated to the state response organizations, as a weakness. The initial PAR was incorrect for the exercise actual condition (i.e., no release in progress).

Tennessee Valley Authority (Browns Ferry Nuclear Plant)–EA-12-133

On August 13, 2012, the NRC issued a Notice of Violation to TVA for a violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," associated with a white SDP finding involving TVA's failure to accomplish the requirements contained in procedure NPG-SPP-09.3, "Plant Modifications and Engineering Change Control," which required that an evaluation of training needs be completed to support implementation of procedures developed in response to design changes. Specifically, on September 13, 2011, TVA issued several safe shutdown instructions in support of Design Change Notice 69957, which installed a new 3-hour fire barrier in the intake tunnel structure, without performing an evaluation of training needs. As a result, plant operators and staff could not satisfactorily perform the safe shutdown instructions.

Southern California Edison Company (San Onofre Nuclear Generating Station)–EA-12-083

On August 14, 2012, the NRC issued a Notice of Violation to Southern California Edison Company for a violation associated with a greater-than-green SDP finding at the San Onofre Nuclear Generating Station. The details of the finding are official use only–security-related information.

Wolf Creek Nuclear Operating Corporation (Wolf Creek Generating Station)–EA-12-152

On September 21, 2012, the NRC issued a Notice of Violation to Wolf Creek Nuclear Operating Corporation (Wolf Creek) for a violation of technical specification 5.4.1(a) and Section 9.a to Appendix A, "Typical Procedures for Pressurized Water Reactors and Boiling Water Reactors," of Regulatory Guide 1.33, "Quality Assurance Program Requirements," associated with a yellow SDP finding. The finding involved Wolf Creek's failure to implement maintenance that affected safety-related equipment in accordance with written procedures. Specifically, although required by a work order, Wolf Creek failed to install insulating sleeves on two splices associated with a startup transformer protective relay circuit. The startup transformer subsequently experienced a trip and lockout during a plant trip because the two uninsulated wires touched and provided a false high phase differential signal to the protective relaying circuit. The protective lockout caused prolonged loss of offsite power to all train B equipment and all nonsafety-related buses.

VII Power Reactor Security and Emergency and Incident Response Activities

The NRC continues its security inspection and oversight activities, as well as its rulemaking activities to incorporate applicable security and emergency preparedness enhancements into the regulations. The NRC's emergency preparedness and incident response activities provide reasonable assurance that adequate measures can and will be taken to mitigate plant events, minimize possible radiation doses to members of the public, and ensure that the agency can respond effectively to events at licensee sites.

The NRC is continuing force-on-force inspections at each nuclear power reactor and Category I fuel cycle facility on a normal 3-year cycle. The force-on-force inspections assess the defensive strategies in place at licensed facilities and highlight areas that need improvement. The current 3-year force-on-force cycle began in January 2011. Since that time, the NRC has completed 40 force-on-force inspections at power reactor sites and one force-on-force inspection at a Category I fuel cycle facility. The NRC also has conducted three force-on-force reinspections at

power reactor sites as followups to previous inspections. The NRC remains committed to working with industry to improve the realism and effectiveness of the force-on-force inspection program.

The NRC is continuing the development of a final rule amending security requirements in 10 CFR Part 73, "Physical Protection of Plants and Materials," to implement the new statutory authority provided by Section 161A of the Atomic Energy Act of 1954, as amended. The revised regulation will enable certain NRC licensees to apply to the NRC for permission to use certain standard weapons, and/or enhanced weapons and large capacity ammunition feeding devices, notwithstanding local, state, and certain Federal firearms laws (referred to as preemption authority and enhanced weapons authority, respectively). Almost all NRC licensees were previously restricted from obtaining such weapons or devices. The NRC has received applications from three power reactor licensees, and one ISFSI for preemption authority under Section 161A. . The NRC received one application from a Category I fuel facility for both preemption and enhanced weapons authority. The NRC is continuing its review of the technical and policy issues these applications have raised and is coordinating its actions with the U.S. Department of Justice.

In accordance with 10 CFR 73.54, "Protection of Digital Computer and Communication Systems and Networks," nuclear power plant licensees and combined license (COL) applicants are required to implement a cyber security program to provide high assurance that safety, important to safety, security, and emergency preparedness functions are protected from cyber attacks. As a result of the amount of work and significant lead time required to fully implement all the provisions called for in licensees' NRC-approved cyber security plans, interim milestones were identified that emphasized completion of a set of prioritized activities by December 31, 2012.

The NRC is currently developing an oversight and inspection program for cyber security, including a temporary instruction and SDP. The agency conducted a pilot study of the inspection process at two power reactor facilities, and the staff is planning to begin inspections at power reactor facilities in 2013 to verify implementation of the interim milestones. NRC staff recently developed a publicly available information paper in the form of a cyber security roadmap (SECY-12-0088, "The Nuclear Regulatory Commission Cyber Security Roadmap," dated June 25, 2012), which provides an update to the Commission on the status of the implementation of cyber security requirements for power reactor licensees and COL applicants. Additionally, the paper outlines the approach for evaluating the need for cyber security requirements for the following four categories of NRC licensees and facilities: (1) fuel cycle facilities; (2) nonpower reactors; (3) ISFSI; and (4) byproduct materials licensees.

The NRC continues to work closely with Federal partners to identify state-of-the-art approaches for determining that each person granted unescorted access to a nuclear power plant in the United States is trustworthy and reliable. In addition, consistent with the President's 2011 National Drug Control Strategy, the NRC continues to coordinate with Federal partners and NRC licensees to enhance the deterrence and identification of substance abuse at NRC licensees and affected contractor/vendor organizations. This program helps provide reasonable assurance that the Nation's commercial nuclear power industry maintains drug-free work environments staffed with personnel fit for duty to safely and competently perform assigned duties.

In FY 2012, the NRC has focused emergency preparedness activities on the Fukushima Dai-ichi response, in particular addressing the NRC's Near Term Task Force (NTTF) Recommendation 9.3, concerning communication and staffing. The Commission created the

NTTF to evaluate lessons learned from the Fukushima accident. The NRC issued letters to all licensees to better understand the existing capabilities and plans for staffing during an event involving multiple reactor units and for being able to maintain communication during a prolonged station blackout. The staff will evaluate the responses to these letters in determining the need for further regulatory action. The staff engaged stakeholders in a series of public meetings to inform the development of the request-for-information letters.

The NRC was actively involved in several exercises in FY 2012. During the reporting period, the agency participated in three National Level Exercise 2012 events, an interagency materials exercise, Senior Officials Exercise 1-12, three joint National Nuclear Safety Administration and Federal Bureau of Investigation hostile action materials exercises, and one radiological emergency preparedness exercise with a nuclear power facility.

In April 2012, the NRC and the Federal Emergency Management Agency (FEMA) began a multi-year initiative to revise NUREG-0654/FEMA-REP-1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," one of the key guidance documents for developing and evaluating onsite and offsite emergency plans for nuclear power plants, and State and local governments. Extensive stakeholder involvement will be provided throughout the revision process, starting with two public meetings held in August and September 2012 to obtain stakeholder input on emergency planning guidance topics and issues that should be addressed in the revised document.

Consistent with its policy to provide States with potassium iodide as requested, the NRC worked 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.

The NRC completed its modernization of its Emergency Response Data System, which transmits real-time information from nuclear power plants to the NRC and State operations centers during declared emergencies. The modernization of this system enhances cyber security and reliability and includes improvements to the user interface.

All emergency preparedness and physical security program licensing reviews continue to be on schedule for new power reactor applications. The NRC continues to work with the U.S. Department of Homeland Security and FEMA to ensure that milestones are accomplished in accordance with the predetermined schedules.

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 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 146 power uprates to date. Approximately 20,470 megawatts thermal (MWt) or 6,823 megawatts electric (MWe) in electric generating capacity (the equivalent of about seven large nuclear power plant units) have been gained through the implementation of power uprates at existing plants. The

NRC currently has 14 power uprate applications under review, which would add an additional 2,592 MWt or 864 MWe to the Nation's electrical grid.

In June 2012, the NRC staff conducted its most recent survey of nuclear power plant licensees to obtain information on whether they planned to submit power uprate applications over the next 5 years. This latest information indicates that licensees plan to request power uprates for 16 nuclear power plants during the next 5 years.

IX New Reactor Licensing

The new reactor program consists of three subprograms: licensing, construction inspection, and advanced reactors. The NRC is focusing on the licensing and construction activities necessary to support near-term-build applications (i.e., plants expected to begin operation in 2016–2017) and on positioning itself for success in the advanced reactor program by also investing in activities to establish the necessary regulatory framework and infrastructure for advanced reactors. The NRC's new reactor program also is actively engaged in several international cooperative activities to promote enhanced safety in new reactor designs, strengthen reactor siting reviews, and improve the effectiveness and efficiency of inspections and the collection and sharing of construction experience.

Application Review

The NRC expects to review the applications for most new nuclear power plants using 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants," which governs the issuance of standard design certifications (DCs), early site permits (ESPs), and COLs for nuclear power plants.

As part of the agency's response to the Fukushima accident, the new reactor program is addressing the Fukushima Near-Term Task Force recommendations as approved by the Commission. Consistent with the Commission direction provided in Staff Requirements Memorandum SECY-12-0025, "Proposed Orders and Requests for Information in Response to Lessons Learned from Japan's March 11, 2011, Great Tohoku Earthquake and Tsunami," dated March 9, 2012, the staff ordered Vogtle Electric Generating Plant Units 3 and 4, and Summer Units 2 and 3, to address the portions of Tier 1 Recommendations 4.2 and 7.1 not already covered by the referenced certified design or COL review. The orders required the licensees, before fuel load, to address requirements for mitigation strategies to sustain core cooling, containment, and spent fuel pool cooling functions indefinitely. The applicable Commission-approved Fukushima actions not already addressed as part of the licensing process are being addressed for new reactors in the same manner as operating reactor licensees. For design certifications and COL applications submitted under 10 CFR Part 52 that are currently under active staff review, the staff plans to ensure that the Commission-approved Fukushima actions are addressed before certification or licensing. The staff has requested all COL and ESP applicants to provide the information required by orders and request-for-information letters through the review process.

Major accomplishments for the new reactor licensing program during this reporting period include the following:

- The staff issued the final environmental impact statement (FEIS) for the Levy COL.

- The Advisory Committee on Reactor Safeguards (ACRS) completed its review of the Safety Evaluation with Open Items for the U.S. EPR Design Certification.

The NRC is making good progress on the 10 CFR Part 52 applications currently under review as discussed below.

Early Site Permit Reviews

Victoria County Station

On March 25, 2010, Exelon Nuclear Texas Holdings, LLC (Exelon) submitted an ESP application for the Victoria County Station site located in Victoria County, Texas. By letter dated August 28, 2012, Exelon informed the NRC that it was withdrawing the ESP application for the Victoria County site. In its letter to the NRC, Exelon indicated that it based the decision to withdraw the Victoria County ESP application on a reassessment of the economic viability of new nuclear power plant construction in the merchant generation market, as well as other factors contributing to an unfavorable economic outlook. Exelon's August 28, 2012, press release also cited low natural gas prices and competitive energy markets as a basis for its decision.

PSEG Power, LLC, and PSEG Nuclear, LCC

PSEG Power, LLC, and PSEG Nuclear, LLC, submitted an ESP application on May 25, 2010. This application uses the plant parameter envelope approach, which includes in its scope design parameter information from four reactor designs, namely, U.S. Evolutionary Power Reactor (U.S. EPR), Advanced Boiling Water Reactor (ABWR), U.S. Advanced Pressurized-Water Reactor (US-APWR), and Advanced Passive 1000 (AP1000). The staff's review continues and the staff plans to issue the final safety evaluation report (FSER) in July 2014 and the FEIS in June 2014. However, the staff is reassessing the schedule after receiving the applicant's revised Fukushima-related seismic request for additional information (RAI) response schedule, submitted on August 21, 2012.

Design Certification Reviews

Economic Simplified Boiling-Water Reactor

The NRC staff issued the FSER and final design approval on March 9, 2011. The NRC published the proposed rule in the *Federal Register* on March 25, 2011. The NRC received 10 public comment submissions, and all 10 public comment submissions will be addressed in the final rule. On January 19, 2012, the staff informed GE Hitachi Nuclear Energy (GEH) that issues have been identified that are relevant to the conclusions in the staff's March 9, 2011 FSER. Specifically, errors were identified in the benchmarking that GEH used as a basis for determining fluctuating pressure loading on the steam dryer, and errors have been identified in a number of GEH's modeling parameters. The NRC staff informed GEH that these errors may affect the conclusions in the staff's FSER and need to be addressed before the staff completes the ESBWR DC. The staff audited the steam dryer analysis at the GEH offices in March 2012 and issued RAIs to GEH in May 2012. GEH plans to submit RAI responses to the NRC by the middle of October 2012. The NRC staff will reestablish a rulemaking schedule after GEH provides its RAI responses.

AP1000 Design Certification Amendment

The Commission affirmed the AP1000 DC amendment rule on December 22, 2011, and published it in the *Federal Register* on December 30, 2011. The rule became effective on December 30, 2011.

U.S. Evolutionary Power Reactor Design Certification

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

In May 2012, the NRC staff completed the Phase 3, ACRS review of the safety evaluation with open items. Significant open items under review include fuel assembly mechanical design, seismic and structural issues, and Fukushima lessons learned. On May 10, 2012, AREVA submitted a new schedule that delayed its response to certain open items until August 2013. The NRC staff evaluated the impact of the delay and issued a revised review schedule on May 21, 2012. The NRC staff now expects to issue the FSER in July 2014 and complete the EPR Rulemaking by December 2014.

On December 7, 2011, the staff held a public meeting with AREVA at which AREVA presented a proposal for a path forward to address Fukushima-related concerns. The NRC staff issued RAIs requesting that AREVA provide additional information that describes how AREVA has addressed (or plans to address) the approved actions in SECY-12-0025, "Proposed Orders and Requests for Information in Response to Lessons Learned from Japan's March 11, 2011, Great Tohoku Earthquake and Tsunami." On September 19, 2012, the staff held a public meeting with AREVA at which AREVA presented its closure plan to address the NTTF recommendations.

U.S. Advanced Pressurized-Water Reactor Design Certification

Mitsubishi Heavy Industries Ltd. (MHI) submitted its US-APWR DC application on December 31, 2007. MHI has been implementing plans to address seismic and structural design changes and completion of the sump design and Generic Safety Issue (GSI) -191, "Assessment of Debris Accumulation on PWR Sump Performance," requirements.

In 2011, MHI changed its design basis seismic model and analysis methodology for the reactor building complex, which requires additional staff review. The NRC staff issued a schedule change letter to MHI on June 4, 2012, extending the US-APWR DC review schedule approximately 10 months because of analysis changes, as reflected in MHI's March 31, 2012, closure plan for seismic and structural analyses. The closure plan outlined MHI's commitment to submit five new and revised technical reports between May and August 2012, and to make available for audit supporting calculations and design reports by February 2013.

Subsequently, in a letter to the NRC dated July 25, 2012, MHI identified that it will not meet its July and August 2012, seismic closure plan deliverables (seismic reports) because of its decision to incorporate the essential service water pipe tunnel into the standard design. In an August 29, 2012, letter, MHI informed the NRC of additional design changes and submitted an updated seismic closure plan. The design changes include relocation of the essential service water pipe tunnel and turbine building and a modification of time histories for seismic analysis in response to staff questions. The key report is delayed 5 months from July to December 2012. Other reports are delayed 4 to 9 months.

On September 13, 2012, the NRC issued a letter to MHI identifying the staff's concern about ongoing design changes, staff expectations, and the use of acceptance reviews for future submittals. As a result, MHI is reevaluating the submission schedule included in the August 29, 2012, closure plan. MHI and staff are planning a public meeting on October 10, 2012, when MHI plans to share the results of its schedule reevaluation and will discuss how it is managing its seismic review.

MHI has begun design enhancements to provide assurance that "Fukushima-like" event mitigation capabilities and enhanced safety margins are incorporated into the US-APWR standard design. The NRC staff has issued RAIs concerning implementation of some of the Fukushima Near-Term Task Force recommendations. On July 16, 2012, in a public meeting with the NRC staff, MHI summarized how it plans to address all Near-Term Task Force recommendations.

Advanced Boiling-Water Reactor Design Certification Rule Amendment for Aircraft Impact

On June 30, 2009, the South Texas Project Nuclear Operating Company (STPNOC), submitted an application to amend the ABWR DC rule to address the requirements of the aircraft impact rule. The Commission affirmed the amendment on November 1, 2011. The final rule became effective on January 17, 2012.

Design Certification Renewals

On May 12, 1997, the NRC issued the ABWR DC rule in Appendix A, "Design Certification Rule for the U.S. Advanced Boiling Water Reactor," to 10 CFR Part 52, which is effective for 15 years.

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. The NRC staff started its review of Revision 1. The staff plans to issue a letter to Toshiba during the fourth quarter of calendar year 2012 in which it will outline a list of additional technical matters to consider for amendments in its application.

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

Combined License Application Activities

As of September 30, 2012, the NRC had received 18 COL applications for review. Five of the reviews have been suspended because of changes in the applicants' business strategies, as described below. The Victoria COL application was withdrawn following docketing of the Victoria ESP application. (The Victoria ESP application was withdrawn on August 28, 2012.) COLs were issued for the Vogtle and Summer sites. The NRC is actively reviewing 10 COL applications.

Levy County Combined License Application

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

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. ACRS subcommittee meetings were completed October 18–19, 2011. The ACRS full committee meeting was held December 1, 2011.

The staff issued the FEIS on April 27, 2012.

On March 15, 2012, the staff requested the applicant to provide additional information related to Fukushima recommendations. On July 31, 2012, the applicant submitted Revision 5 to its COL application, which contained additional information to address the Fukushima recommendations and seismic reevaluation, and also included a revision to the State of Florida Radiological Emergency Preparedness Annex. The NRC staff is reviewing the information related to the applicant's revised seismic results. FEMA's review of the revised Radiological Emergency Preparedness Annex is scheduled to be completed by November 30, 2012.

The NRC staff is currently reviewing the applicant's RAI response related to Bulletin 2012-01, "Design Vulnerability in Electric Power System" dated July 27, 2012, to 10 CFR Part 50 and 52 licensees. To comply with the new Emergency Preparedness (EP) Enhancements Rule, the applicant plans to submit additional information for NRC review in October 2012. This submission addresses the December 31, 2013, deadline cited in the EP Enhancements Rule.

The staff is reassessing the project completion schedule to account for resolution of the emergency preparedness enhancements rule, Bulletin 2012-01, and the Florida Radiological Emergency Preparedness Annex.

William States Lee III Combined License Application

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

The NRC issued the draft environmental impact statement (DEIS) on December 13, 2011, and the DEIS comment period ended on March 6, 2012. The NRC staff anticipates publishing the FEIS in early 2013.

On April 25, 2012, The NRC staff issued Fukushima-related RAIs to the applicant. In a letter dated June 11, 2012, the applicant committed to provide responses by December 14, 2012.

Turkey Point Combined License Application

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

Significant issues include the regional geology and seismology review that involves a first-time review of various seismology parameters and models for the Caribbean region, and the site selection process. The NRC staff informed the applicant, through a public teleconference call

on March 6, 2012, that the responses received for geology and seismology and geotechnical engineering areas are not acceptable because they are either incomplete or unclear and, in many cases, conclusions are not supported. In a letter dated May 4, 2012, the NRC staff informed the applicant that the NRC staff's review of the geology, seismology, and geotechnical engineering sections of the Turkey Point COL application would not continue until the applicant provides the needed detailed technical information. Upon receipt and review of the RAI responses, the NRC staff will determine updates to the schedule accordingly.

NRC staff has issued most of its RAIs on the alternative site selection process and is continuing to prepare the nonrelated resource areas of the preliminary DEIS. Upon receipt and review of the responses to the RAIs on the alternative sites, the NRC staff will revise the environmental review schedule, as necessary.

Shearon Harris Combined License 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, North Carolina.

The NRC staff was informed by a PEC letter, dated May 1, 2012, that the need for power would not be resolved before the merger with Duke Energy scheduled for July 2012. The Duke Energy/Progress Energy Carolina merger was completed on July 1, 2012. The new combined company plans to address the need for power and to update the information in its environmental report by the end of 2012.

The NRC staff issued RAIs to PEC related to the Fukushima Near-Term Task Force Recommendations. By letter dated May 24, 2012, Duke Energy stated that its response to Recommendation 2.1 RAI concerning flooding and seismic hazard reevaluation will not be submitted until the first quarter of 2013. The NRC staff is waiting on revised submittals from the applicant.

Bellefonte Combined License Application

On October 30, 2007, the Tennessee Valley Authority (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, Alabama.

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

South Texas Project Combined License Application

On September 20, 2007, STPNOC submitted a COL application for two ABWR units to be located at its site near Bay City, in Matagorda County, Texas. As of January 24, 2011, Nuclear Innovation North America LLC (NINA) became the lead applicant for South Texas Project

(STP), Units 3 and 4. As such, NINA assumed responsibility for design, construction, and licensing of STP, Units 3 and 4. STPNOC will retain responsibility for operation of the units. As lead applicant, NINA will act on behalf of all applicants for STP, Units 3 and 4.

The NRC published the FEIS on February 24, 2011. The Atomic Safety Licensing Board (ASLB) heard testimony on two admitted environmental contentions in August and October 2011 and has ruled in favor of the NRC staff on both.

In spring 2012, the NRC met publicly with NINA to discuss NINA's proposed response to the Commission-approved Fukushima actions. The staff subsequently requested additional information on this subject from NINA. On September 17, 2012, NINA submitted Revision 8 to its COL application, which contains NINA's initial response to the Commission-approved Fukushima actions.

Regarding the remainder of the application, significant open items remain in the areas of foreign ownership, control, or domination; financial qualification; seismic analysis; flow-inducted vibration; and spent fuel pool structural and seismic stability.

Calvert Cliffs Combined License Application

On July 13, 2007, Calvert Cliffs Unit 3 Nuclear Project, LLC, and UniStar Nuclear Operating Services, LLC (UniStar), submitted a partial COL application for a U.S. EPR to be located at the Calvert Cliffs site near Lusby, in Calvert County, Maryland. The COL application was submitted in two parts and several supplements between July 13, 2007, and May 15, 2008.

On November 3, 2010, the counsel for Calvert Cliffs Unit 3 Nuclear Project, on behalf of the applicants, filed a letter indicating that Électricité de France, a foreign business entity, had acquired Constellation's 50-percent interest in UniStar. The NRC staff concluded that the proposed ownership structure did not comply with the requirements of 10 CFR 50.38. UniStar has not yet provided a schedule for submittal of the updated ownership information.

Separately, in August 2012, the NRC's ASLB issued a decision finding UniStar ineligible to obtain a license for Calvert Cliffs because they are owned by a U.S. corporation that is 100 percent owned by a foreign corporation and, therefore, fail to meet the requirements of the Atomic Energy Act (AEA) and 10 CFR 50.38, "Ineligibility of Certain Applicants." The ASLB also issued a decision stating that the contested adjudicatory proceeding will be terminated if UniStar fails to find a domestic partner within 60 days. The ASLB stated that UniStar may move to reopen the record if the foreign ownership situation changes. The NRC will continue the review of the Calvert Cliffs COL application, but will not issue a license until the requirements of the AEA and 10 CFR 50.38 are met. On September 24, 2012, UniStar filed a petition to the Commission for review of the ASLB's decision on foreign ownership.

The schedule for the FSER will be re-evaluated based on (1) the pending submittal of information on seismic analyses, (2) delayed response dates for RAIs, and (3) not meeting the foreign ownership, control, or domination requirements contained in 10 CFR 50.38. In addition, the COL schedule must remain sequenced with the EPR DC review schedule. On February 21, 2012, the applicant submitted its schedule for responding to the outstanding RAIs, delaying the critical path RAI responses to July 2013.

Bell Bend Combined License Application

On October 10, 2008, PPL Bell Bend, LLC (PPL), 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, Pennsylvania.

The applicant proposed site layout changes to reduce impacts to "exceptional value" wetlands to satisfy the U.S. Army Corps of Engineers (USACE) need for a Section 404 permit under the Clean Water Act. The applicant submitted a complete revised environmental report on December 19, 2011. The NRC staff received an application revision on March 23, 2012, and received the applicant's schedule for the associated RAI responses on March 14, 2012. RAI responses are expected by September 2013. The NRC staff will need to revisit large portions of the geology, seismic design, and hydrology reviews based on the revised submittals.

The Susquehanna River Basin Commission (SRBC) has informed the applicant that it does not intend to approve water withdrawal during low-flow periods unless there is low-flow augmentation (water storage). In a June 2012 letter, the SRBC informed PPL that it could not recommend approval of the currently proposed consumptive water use mitigation plan. In a September 2012, letter, the NRC informed PPL that it will need information related to consumptive water use to complete sections of the DEIS and will be issuing RAIs regarding consumptive water use.

USACE and the U.S. Environmental Protection Agency (EPA) have concerns about PPL's alternative sites analysis. USACE is requesting a detailed description of environmental impacts at all candidate sites to inform its least environmentally damaging practicable alternative decision. The applicant performed a sensitivity analysis on several criteria in the alternative site analysis to satisfy USACE concerns, which was submitted in May 2011. USACE and EPA reviewed the analysis. During the supplemental environmental audit in May 2012, the NRC, USACE, and EPA discussed some concerns about the viability of one of the alternative sites. The agencies are working with the New Jersey Highlands Water Protection and Planning Council to resolve the concerns. The NRC staff completed the sufficiency review for the revised environmental report and conducted a scoping period that ended in July 2012.

Nine Mile Point Combined License Application

On September 30, 2008, Nine Mile Point Nuclear Project, LLC, and UniStar Nuclear Energy submitted a COL application for a U.S. EPR (Unit 3) to be located at its Nine Mile Point Nuclear Station site in Oswego, New York. On December 1, 2009, UniStar Nuclear Energy submitted a letter asking the NRC to suspend the COL application review, including any supporting reviews by external agencies, until further notice. The review remains suspended. On December 9, 2010, the Nine Mile Point COL applicants requested an exemption from annual submission requirements contained in 10 CFR 50.71(e)(3)(iii), and proposed delaying the submittal of updates to the FSAR until December 31, 2012. The NRC granted the applicant's request for exemption.

Callaway Combined License Application

On July 28, 2008, Ameren UE submitted a COL application for a U.S. EPR to be located at its Callaway plant site in Callaway County, Missouri.

The NRC suspended the Callaway review at the request of the applicant in June 2009, and it remains suspended. On October 26, 2010, Union Electric Company, doing business as Ameren UE, requested an exemption from the annual submission requirements in 10 CFR 50.71(e)(3)(iii) and proposed delaying the submittal of updates to the FSAR until December 31, 2012. The NRC granted that request for exemption. 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 Department of Energy (DOE) in response to DOE's funding opportunity announcement for design and licensing of small modular reactors. Following the DOE announcement, Ameren Missouri will provide the NRC with its updated plan for the Callaway site.

Comanche Peak Combined License Application

On September 19, 2008, Luminant submitted a COL application for two US-APWR units to be located at its Comanche Peak site near Glen Rose, in Somervell County, Texas. Luminant submitted Revision 1 to the COL application on November 20, 2009.

The NRC staff determined that Luminant did not provide sufficient information in its application on negation of foreign ownership. In its December 7, 2011, revised schedule letter, the NRC approved Luminant's request that foreign ownership and control be considered a phase two open item because of the possibility of future changes in foreign ownership for the Comanche Peak Nuclear Power Plant. Luminant plans to submit the information the NRC staff requested by mid-2013.

The NRC staff determined that the applicant provided inadequate responses to the staff's RAIs on watershed analysis, onsite flooding, ground water, and the postulated release of radiological effluent. The applicant intends to provide a revised ground water analysis that includes a site-specific groundwater model.

MHI's updated seismic closure plan for the US-APWR design (discussed earlier in this section), provided to the NRC in March 2012, affected Luminant's seismic closure plan for the Comanche Peak COL application. Subsequently, on April 16, 2012, Luminant provided a revised seismic closure plan for the Comanche Peak COL application that addressed site-specific seismic margin analyses, seismic sliding assessment, changes to ground water analysis, site grading plan, surface water flooding, security, and impacts to other COL chapters. On June 21, 2012, the NRC staff extended the review schedule by 11 months to account for the revised seismic closure plan impacts. On September 21, 2012, Luminant provided another revision to its seismic closure plan update to account for additional MHI updates (August 2012 and September 2012). The NRC staff is currently evaluating the impacts to the review schedule.

On June 25, 2012, the NRC staff issued RAIs pertaining to Fukushima Near-Term Task Force Recommendations 2.1 (flooding and seismic hazard reevaluation), 7.1 (enhanced spent fuel pool instrumentation), and 9.3 (emergency preparedness). By letter dated July 24, 2012, Luminant informed the staff that it plans to submit its responses to these RAIs by the end of May 2013.

North Anna Combined License Application

On November 27, 2007, Dominion Virginia Power (Dominion) submitted a COL application for an ESBWR to be located at its North Anna Power Station site near Richmond, in Louisa County, Virginia. On June 28, 2010, Dominion submitted a revised application to reference the US-APWR design. The NRC will supplement its EIS that was completed in February 2010, which was originally based on the ESBWR design.

In November 2011, Dominion notified the NRC staff, under 10 CFR Part 21, "Reporting of Defects and Noncompliance," that the August 23, 2011, earthquake near the North Anna site exceeded at low frequencies the safe-shutdown earthquake response spectra established in the North Anna ESP. Dominion stated that the data also exceeded the site 250-foot elevation ground motion response spectra and the hard rock safe-shutdown earthquake developed for the North Anna Unit 3 COL application based on the early site permit safe-shutdown earthquake spectra. Dominion is assessing whether any changes should be made to the North Anna Unit 3 COL application. Dominion completed its preliminary assessment in July 2012.

Dominion is evaluating all of the MHI seismic closure plan updates for the US-APWR (as discussed above) and plans on submitting its seismic closure plan update for the North Anna COL application by the end of October 2012.

On June 25, 2012, the NRC staff issued RAIs pertaining to Fukushima Near-Term Task Force Recommendations 2.1 (flooding and seismic hazard reevaluation), 7.1 (enhanced spent fuel pool instrumentation), and 9.3 (emergency preparedness). Dominion provided a response to these RAIs on July 30, 2012, and the staff is reviewing the responses.

Fermi Combined License Application

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

The staff published the DEIS in October 2011, and the public comment period ended on January 11, 2012. All public comments have been addressed, all technical issues have been resolved, and the NRC staff is in the process of preparing the FEIS for publication by the EPA in November 2012.

The Fermi safety schedule is currently under review because of applicant delays in responding to requests for additional information related to the review of the soil-structure interaction analyses and providing a complete response to the staff's RAI related to Fukushima Near-Term Task Force Recommendation 2.1. The applicant has indicated that it will submit responses to these RAIs by September 2013.

Grand Gulf Combined License Application

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

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

for the COL application. The NRC responded to the request and suspended the review; the review remains suspended.

River Bend Station Combined License Application

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

Expected Application Submittals to the NRC

The staff anticipates the submittal of one ESP application (Blue Castle) and one DC application (for the APR-1400 design) during FY 2013.

Regulatory Infrastructure

The NRC continues to enhance the effectiveness and the efficiency of the review processes for new reactor applications and prepare for future reviews of advanced reactor designs. This includes the identification and resolution of policy issues, pursuing changes to regulations, updating key guidance documents for NRC activities and application preparation, developing strategies and work products for optimizing the review of applications, and creating an inspection program for new construction activities.

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

Rulemaking for Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) Maintenance

On August 25, 2012, the final ITAAC Maintenance Rule and the related revised Regulatory Guide 1.215, "Guidance for ITAAC Closure under 10 CFR Part 52," were published in the *Federal Register* (77 FR 51880). The amended rule requires a licensee to report new information materially altering the basis for determining that ITAAC were performed as required or that acceptance criteria were met, and to notify the NRC of completion of all ITAAC activities. These licensee notifications support the finding that the Commission must make under 10 CFR 52.103(g), that all ITAAC acceptance criteria in the COL are met, before it allows fuel load and operation. These notifications also ensure that interested persons have access to information on ITAAC at a level of detail sufficient to address the Atomic Energy Act threshold for requesting a hearing on ITAAC closure.

Interim Staff Guidance (ISG) for Changes during Construction under 10 CFR Part 52

On January 11, 2012, Interim Staff Guidance COL/ISG-025, "Changes during Construction under 10 CFR Part 52," was published in the *Federal Register* (77 FR 1749) for use and comment. The ISG discusses the preliminary amendment request (PAR) review process, which is established via a license condition in the initial COL licenses. The PAR process enables a COL licensee to request to proceed with the installation and testing of certain proposed plant changes that require a license amendment, while the NRC is reviewing that license amendment request. The NRC staff has evaluated the comments received and is preparing the ISG for final concurrence and issuance.

Report to Congress on Advanced Reactor Licensing
(Agencywide Documents and Management System [ADAMS] ML12153A014)

In August 2012, the Chairman transmitted the NRC staff's report to Congress regarding advanced reactor licensing, as required by the House Committee Report on the Energy and Water Development Appropriations Act, 2012, of the Consolidated Appropriations Act, 2012 (P.L. 112-74). The report addresses the NRC's overall strategy for, and approach to, preparing for the licensing of advanced reactors and addresses licensing applications anticipated over the next two decades, as well as potential licensing activity beyond that time. It focuses on the licensing of nuclear reactor facilities for commercial use and illustrates regulatory challenges that may occur if various advanced reactor initiatives evolve into licensing applications. The content of the report, however, is not intended to reflect any correlation with the NRC's planning and budgeting for 2014 and beyond.

Environmental Issue Identification and Ranking Project

In June 2012, the NRC staff completed an issue identification and ranking project for environmental issues associated with the licensing of small modular reactors. The agency identified and ranked 11 issues, and the staff has identified the potential for several information papers to be developed.

Construction Inspection

The agency has the infrastructure in place to support the inspection activities necessary for verification of quality construction and the completion of ITAAC. The process for oversight of new reactor construction has been documented in Inspection Manual Chapters and inspection procedures. The staff has issued all necessary inspection procedures required for the initial phase of construction inspection, developed inspection plans and established a baseline inspection schedule for both licensees, and the agency has also developed information technology systems to capture inspection results and track ITAAC closure. The NRC continues to make significant progress in the development of programs and procedures to support inspection of activities occurring later in construction, including licensee operational readiness.

The NRC continued to conduct inspections of nuclear power plant construction activities to verify compliance with the agency's regulations and ensure that the new plants are constructed to protect public health and safety and the environment. Following the issuance of COLs to Southern Nuclear Operating Company on February 10, 2012, for two AP1000 units at the Vogtle site near Augusta, Georgia, and to South Carolina Electric & Gas Company on March 30, 2012, for two AP1000 units at the V.C. Summer site, the pace of construction inspection significantly increased. The NRC increased the staff at both Vogtle and Summer construction resident inspector offices. Each office now has a construction senior resident inspector and two construction resident inspectors.

Vogtle Units 3 and 4 and V.C. Summer Unit 2 construction activities have focused on the construction of the nuclear island and fabrication of primary containment and structural modules. The NRC inspection activity has focused on activities related to ITAAC, including inspection of the licensees' quality assurance programs, welding, security, and civil engineering activities. NRC inspection activities will increase as licensees broaden the scope of construction activities.

During an inspection in March 2012, at the Vogtle construction site, Region II inspectors identified a design change that had been made to the Unit 3 nuclear island basemat reinforcement without NRC approval. The design change was a departure from the COL. The licensee has submitted a license amendment to formally document the design changes and restarted construction of the Unit 3 nuclear island basemat.

The NRC staff continues to refine its approach to ITAAC closure and maintenance of closed ITAAC. The staff held several public workshops to solicit input and exchange views related to ITAAC completion, closure documentation, and ITAAC maintenance. The Nuclear Energy Institute (NEI), industry representatives, and other external stakeholders participate in these public workshops. Supported by the discussions in these workshops, the NRC staff has developed and issued Regulatory Guide 1.215, which endorses industry guidance for ITAAC closure as documented in NEI 08-01, "Industry Guideline for the ITAAC Closure Process under 10 CFR Part 52."

The staff expects to begin receiving ITAAC Closure Notifications beginning in the 4th Quarter of 2012. Throughout 2013, the staff expects to continue interacting with stakeholders to resolve and refine ITAAC process elements. Through these public meetings, the staff plans to complete the ITAAC demonstration project action items, such as additional ITAAC Closure Notification examples to be added to NEI 08-01, expectations for Report and Reference ITAAC, and to continue discussions on ITAAC quality, clarity, and objectiveness.

In Staff Requirements Memorandum SECY-10-0140, "Options for Revising the Construction Reactor Oversight Process Assessment Program," dated March 21, 2011, the Commission directed the staff to develop a construction assessment program that includes a regulatory framework, the use of a construction Significance Determination Process to determine the significance of findings identified during the construction inspection program, and the adoption of a construction action matrix to determine the appropriate NRC response to degrading licensee performance. The staff completed development of the new assessment process and began a 12-month pilot of the new program on January 1, 2012, at the Vogtle construction site, and on March 30, 2012, at the Summer construction site.

Vendor Inspections

In 2011, the NRC offices were asked to look for methods to maximize interdependency while continuing to fully support agency missions. In April 2012, all vendor inspections, related activities, and staff were co-located in the Division of Construction Inspection and Operational Programs (DCIP) in the Office of New Reactors. Executive responsibility for management and oversight of the vendor inspection program is held by the DCIP Director with the establishment of the vendor inspection Center of Expertise. The inspection staff will be optimized to function more effectively and efficiently while ensuring both new and operating reactor plant safety is maintained in the near-term and also will be positioned to require fewer additional resources in the out-years with anticipated increased vendor inspection workloads.

The NRC staff continued its participation in several quality assurance and inspection outreach activities, including meetings related to the Nuclear Procurement Issues Committee; American Society of Mechanical Engineers, Section III and Nuclear Quality Assurance; as well as NEI. The NRC staff continues to make progress on actions in response to the Office of the Inspector General audit of the vendor inspection program. In addition, the NRC staff progressed with the implementation of the vendor inspection program plan, including use of the vendor selection prioritization strategy, initiation of knowledge management and training activities, and planning

and coordination for the Third Biennial Vendor Oversight Workshop, which was held in June 2012. The NRC staff also initiated actions to create and manage an internal database of vendor information to use in preparing for and facilitating inspection activities. The staff continued with its plans for improving 10 CFR Part 21 through development of several regulatory bases to support proposed rulemaking activities (SECY-11-0135, "Staff Plans to Develop the Regulatory Basis for Clarifying the Requirements in Title 10 of the *Code of Federal Regulations* Part 21, 'Reporting of Defects and Noncompliance,'" dated September 29, 2011).

Advanced Reactors

The NRC staff has undertaken a variety of activities to prepare for applications for small modular reactors (SMRs) that may arrive as early as calendar year 2013. The NRC staff has evaluated past advanced reactor experience and interacted with stakeholders to identify issues that should be addressed to support design and licensing reviews of SMR designs and deployment. Although vendors and advocates have approached the NRC for a variety of reactor technologies, the NRC staff has focused its attention on small light-water reactors. In addition, to a limited extent, the staff has been working with DOE on resolving policy issues identified within the Next Generation Nuclear Plant Program (NGNP). Resolution of these issues is intended to support licensing of other advanced reactor technologies.

DOE issued a funding opportunity announcement on March 22, 2012, "Cost-Shared Industry Partnership Program for Small Modular Reactors." This announcement describes plans "…to promote the accelerated commercialization of SMR technologies that offer affordable, safe, secure, and robust sources of nuclear energy that can help meet the nation's economic, energy security and climate change objectives." The proposed program provides up to $452 million for 50 percent cost-sharing with industry to support first-of-a-kind engineering costs for design certification and licensing efforts over 5 years, subject to appropriations. Applications for this program were submitted in May 2012. A DOE decision on support for up to two projects is expected shortly.

Below is a status update of the pre-application activities that the NRC has engaged in with advanced reactor designers.

Next Generation Nuclear Plant

In letters dated October 17, 2011, U.S. Secretary of Energy Chu informed Congress that, given current fiscal constraints, competing priorities, projected cost of the prototype, and inability to reach agreement with industry on cost share, DOE would not proceed with the phase II 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. Secretary Chu also notified Congress that the initial design parameters for the NGNP were not selected during phase I; instead, initial design parameters will be selected by the public-private partnership once it is formed.

On February 15, 2012, the staff issued a letter to DOE outlining the scope of NGNP activities for the staff to complete during CY 2012 to support Secretary Chu's interest in making progress with the NRC on a licensing framework. These continuing pre-application interactions focus on policy and technical issues associated with source term, containment functional performance, licensing basis event selection, and emergency planning. Supporting discussions are being conducted in a series of public working meetings and conference calls informed in large part by

the preliminary NRC assessment reports completed last year on several related NGNP white paper submittals.

The staff will summarize the results from these NGNP pre-application interactions, along with supporting technical observations and discussions of potential policy issues for the Commission's future consideration, in updated white paper assessments. The updated assessments will be issued following ACRS review in early 2013.

Integral Pressurized Water Reactors (iPWRs)

NuScale Power, LLC

In response to Regulatory Issue Summary (RIS) 2011-02, Revision 1, "Licensing Submittal Information and Design Development Activities for Small Modular Reactor Designs," dated December 27, 2011, NuScale Power, LLC, announced a new DC application submittal date with the objective of obtaining design certification from the NRC under 10 CFR Part 52, Subpart B, "Standard Design Certifications." The new date is being withheld as proprietary information.

Interaction with NuScale has been ongoing since the last report. NRC and NuScale personnel met several times to discuss the current status of:

- instrumentation and controls protection system
- safety analysis codes and methods to be used for analyzing transients and accidents, core neutronics, core thermal hydraulics, system thermal hydraulics, and control rod ejection accident analysis methodology
- the NuScale Phenomena Identification and Ranking Table Process to be used in conjunction with NuScale's loss of coolant accident analysis
- NuScale's regulatory gap analysis and how the NRC will use that information in conjunction with preparation of the NuScale plant-specific design standard review plans
- fuel design, fuel analyses, and fuel testing methods
- seismic analyses
- containment design functional requirements and capabilities
- NuScale's ITAAC program

Additionally, NRC staff traveled to the NuScale offices in Corvallis, Oregon, to tour the recently completed full scale control room mock-up and simulator and to tour the one-third scale NuScale Integrated Test Facility located on the Oregon State University campus, also in Corvallis. NuScale presented testing schedules and an overview of upcoming tests, which include tests at their Integrated Test Facility and control room simulator testing, as well as tests of their helical coil steam generator in Italy and critical heat flux tests in Canada. Testing at the Oregon State University facility is scheduled to begin in fiscal year 2013 to provide scaled prototypic integral test data for codes and methods development. The test facility will be available for NRC directed tests.

Babcock and Wilcox (B&W) mPower™

In response to RIS 2011-02, Revision 1, B&W mPower, Inc., announced a new DC application submittal date of the fourth quarter of calendar year 2013 in support of the TVA Clinch River construction permit application.

The NRC staff has been engaged in pre-application activities with B&W mPower, Inc., since mid-2009. To date, the NRC has received technical reports on the following topics: quality plan for the DC, plant design overview, critical heat-flux test and correlation development plan, core nuclear design codes and methods qualification, integrated system test (facility description and test plan), instrument setpoint methodology, control rod drive mechanism design and development, the physical security design and program considerations, reactor fuel system mechanical design criteria, and five human factors program reports. In addition, B&W mPower, Inc., presented position papers on radiological source-term methodology and the approach to satisfy GSI-191 for the mPower™ reactor design.

The NRC staff is developing a design-specific review standard (DSRS) for the mPower™ design. The DSRS will function like the standard review plan and will consider safety and risk categorization for the systems, structures, and components associated with the mPower™ design. The staff expects to issue the draft version of the mPower™ DSRS in late 2012 for interim use and comment through the *Federal Register*. The staff also will engage public stakeholders through meetings to discuss selected sections before issuing the final mPower™ DSRS.

Tennessee Valley Authority

On February 10, 2012, TVA responded to RIS 2011-02, Revision 1, stating that it currently plans to apply for a construction permit for mPower reactors at the Clinch River site in Tennessee between the fourth quarter of 2013, and the fourth quarter of 2014. The NRC staff is conducting a series of meetings with TVA to discuss the regulatory framework and expectations for this submittal.

Other Small Light-Water Reactor Vendors

Since 2011, Westinghouse and Holtec periodically have engaged in pre-application activities with the NRC and, in the near future, both intend to submit DC applications for their light-water SMR designs for NRC review. Holtec is developing the Holtec Inherently Safe Modular Underground Reactor SMR-160 design that has a 160 MWe electrical power output. On July 26, 2012, Holtec representatives briefed the NRC on the associated design systems and engineered safety features of the SMR-160. The NRC staff will continue meeting with Holtec, as resources allow, to gain a better understanding of its SMR-160 design.

Westinghouse is developing a 225 MWe power output SMR design and has stated that the smaller scale features of the SMR are analogous to those of the AP1000 design certified under 10 CFR Part 52. The NRC staff met with Westinghouse at NRC's headquarters on June 5, 2012, and provided initial feedback on its SMR Small Break Loss of Coolant Accident (LOCA) Phenomena Identification and Ranking Table Topical Report. Subsequently on July 10, 2012, NRC staff met again with Westinghouse representatives and discussed security requirements related to its SMR plant security design and site layout. The NRC staff will continue with limited meetings with Westinghouse, as resources allow.

Other Reactor Technologies

Several private industry reactor designers and vendors have held discussions with the NRC regarding different fast-spectrum-neutron, liquid-metal reactor designs. The NRC staff is currently engaged in preliminary pre-application discussions with three firms.

GEH continues development of the Power Reactor Innovative Small Module (PRISM) design, a small, modular, pool-type, sodium-cooled reactor with metallic fuel producing 840 MWt power. In 2010, GEH provided the NRC with a draft licensing strategy for the PRISM design for informal NRC consideration. In communications with the NRC, GEH has expressed an interest in submitting a licensing application at an unspecified future date.

The Toshiba Corporation (Toshiba) is developing the Super-Safe, Small and Simple (4S) design, a small, pool-type sodium-cooled reactor with metallic fuel. The reactor is designed for use as a power source in remote locations and is intended to operate for 30 years without refueling. The 4S has a power output of 10 MWe (30 MWt). The NRC and Toshiba began pre-application discussions in late 2007 and discussions have continued periodically. The company has informed the NRC that it plans to submit a licensing application at an unspecified future date.

Gen4 Energy, Inc., previously Hyperion Power Generation, Inc., has under development a small, lead-bismuth eutectic coolant reactor with uranium nitride fuel designed to produce 25 MWe (70 MWt) power. The firm is conducting preliminary discussions with the NRC and has expressed its intent to submit a licensing application at an unspecified future date.

International Activities

The NRC leverages the resources and knowledge of the international community both in bilateral and multilateral settings on information related to the design, siting, and construction of new reactors.

Multilaterally, the NRC staff engages counterparts under the Multinational Design Evaluation Program (MDEP), the International Atomic Energy Agency (IAEA), and the Nuclear Energy Agency (NEA) Committee on Nuclear Regulatory Activities (CNRA). The NRC actively participates in MDEP by chairing the MDEP Steering Technical Committee; chairing the AP1000 Working Group; chairing the Digital I&C Working Group; and participating in the EPR, Vendor Inspection Cooperation, and Codes and Standards Working Groups. Under the MDEP Vendor Inspection Cooperation Working Group, the NRC successfully participated in numerous vendor inspections that included participation or observation by foreign counterparts from China, Korea, France, and Japan. The NRC also chairs the NEA's Working Group on Regulation of New Reactors.

Bilaterally, NRO continues to meet individually with nuclear safety regulatory authorities for the new reactor programs in Canada, China, the Czech Republic, Finland, France, India, Japan, Korea, the United Arab Emirates, and the United Kingdom, as well as provide assistance to countries such as Indonesia, Lithuania, Poland, Vietnam, and various countries in Africa, all of whom are on a path to develop or expand their nuclear programs.

The NRC also gains information through international staff exchanges. In 2012, NRC staff members were placed on assignment to China, France, and Korea, and the agency made

arrangements to place staff in the Czech Republic. These staff exchanges have furthered the NRC cooperative relationship with these regulatory authorities.

During the past year, NRO participated in the development of two new trilateral initiatives. The first was the trilateral initiative among the NRC, Korea, and the United Arab Emirates on the review of the Korea Hydro and Nuclear Power APR 1400 reactor design. The second trilateral initiative is among the NRC, Japan, and Lithuania on the review of the General Electric Advanced Boiling-Water Design.