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