Response to Remaining Questions
Senator Edward J. Markey
Letter Dated June 30, 2016

Question 1: The NAS report recommended that the NRC "should perform a spent fuel storage risk assessment to elucidate the risks and potential benefits of expedited transfer of spent fuel from pools to dry casks."
a. Do you agree with this recommendation? If not, why not?
b. If you agree with this recommendation, when will the Commission initiate its assessment? When do you expect the assessment to be completed?

Answer:

The U.S. Nuclear Regulatory Commission (NRC) staff has previously evaluated expediting the transfer of spent fuel from pools to dry casks. Based on the staff's assessment, the Commission decided that, due to the low risk to public health and safety from spent fuel pool storage, additional regulatory action is not needed. The agency's evaluation was supported by several studies of spent fuel storage, for both pools and dry cask storage, performed or sponsored by the NRC. The NRC also evaluates operational experience and risk assessments performed by the scientific and international community, industry, and members of the public to ensure the risks posed by spent fuel pools and dry cask storage are understood and are adequately addressed by regulatory requirements. In addition, the NRC staff participates in international activities associated with assessing and addressing potential issues related to the storage of spent fuel. As discussed in more detail in its paper to the Commission (Enclosure 2), the NRC staff reassessed the NAS recommendation and found that existing studies and ongoing activities noted above are sufficient to support regulatory decisions on the safety and security of spent fuel pools.

Question 2: The NAS report recommended that the NRC "strengthen their capabilities for identifying, evaluating, and managing the risks from terrorist attacks," and that the NRC's spent fuel storage risk assessment "should address accident and sabotage risks." These recommendations substantiate concerns I raised in my September 2013 letter. As I explained, the NRC limited its analysis to studying the risk of spent-fuel fires resulting primarily from a severe earthquake, and failed to consider the risk posed by terrorist attacks. Accounting for the risk of terrorism is vital in light of reports that ISIS terrorists responsible for the recent Paris and Brussels attacks conducted video surveillance of a high-ranking Belgian nuclear official. Without incorporating the risk of terrorism into its analysis, the NRC cannot adequately consider the full range of scenarios that could lead to a catastrophic spent-fuel fire, and cannot fully assess the benefits to public safety of taking steps to mitigate the risk of this eventuality.
a. Do you agree with the NAS recommendation that the NRC must fully account for the risk of terrorism and sabotage in its re-assessment of spent-fuel risks? If not, why not?

b. What steps, if any, is the NRC taking to strengthen its capabilities to identify, evaluate and manage the risk of terrorist attacks on nuclear facilities, including spent fuel storage sites?

Answer:

Plant security is one of many topics within the NRC's risk-informed, performance-based framework that are assessed in combination with, but not fully integrated into, probabilistic risk assessment models. The NRC has used and will continue to use risk insights in the security area to ensure an appropriate level of security is maintained at NRC-regulated facilities. Security issues were extensively assessed in various studies and regulatory analyses following the terrorist attacks of September 11, 2001. As a result, enhanced security requirements were established to reduce the risks of radiological sabotage at nuclear power plants, including consideration of spent fuel pools. The NRC works in close cooperation with other Federal agencies to continually assess the possible nature and likelihood of security threats, and determine if changes to plant security programs are needed. In addition, the NRC and industry response to the September 11, 2001, terrorist attacks included plant changes as part of mitigating strategies to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities under the circumstances associated with loss of large areas of the plant to explosions or fire. The NRC staff assessed the NAS recommendation (see Enclosure 2) and did not identify a need to initiate new activities or to otherwise redirect resources to revise existing programs or to accelerate initiatives to enhance the use of risk assessment techniques in the security area.

Question 3: As the Fukushima disaster demonstrated, a major release of radioactivity at a nuclear plant could have significant societal effects. These include psycho-social distress and more than 1,600 deaths resulting from large-scale disruptions and population relocations; the loss of economic activity caused by the shut-down of all nuclear power plants in the country and the long-term evacuation of large geographic areas; and the loss of revenue from declining food exports and from tourism in contaminated regions. The Fukushima disaster also led to health problems, injuries, and casualties among clean-up workers, and there have been reports linking the radioactive release to elevated rates of thyroid cancer among children living in Fukushima prefecture. As such, to fully capture spent-fuel storage risks, the NAS report recommended that the NRC's analysis "[c]onsider societal, economic, and health consequences" of spent-fuel fire, as well the direct risks of a radioactive release. Do you agree with this recommendation? If so, how and when does NRC plan to adopt this recommendation? If not, why not?

Answer:

As noted in our letter of August 23, 2016, the NRC staff evaluated changing its approach to analyzing severe accident scenarios and related costs and benefits of new regulatory requirements after the accident at the Fukushima Dai-ichi nuclear power plant in Japan. The staff's 2012 assessment was provided to the Commission in the publicly available report, "Consideration of Economic Consequences within the U.S. Nuclear Regulatory Commission's Regulatory Framework,"(SECY-12-0110). At that time, the Commission determined that major changes such as

those cited in the NAS recommendation were not needed to support its regulatory decisions on whether new requirements were needed for operating nuclear power plants. Further, as noted in Enclosure 2, in performing economic analyses, the NRC does consider public health, occupational health, environmental considerations, and property impacts. The staff is currently enhancing the NRC's guidance documents used for performing regulatory analyses in response to direction from the Commission.

Question 4: According to the NAS report, the NRC "has not carried out an independent examination of surveillance and security measures for protecting stored spent fuel," as recommended by the NAS's 2006 report. As such, the 2016 NAS report recommended that the NRC fulfill this recommendation, and that the NRC's analysis "should include an examination of the effectiveness of [the NRC's] programs for mitigating insider threats."
b. Does the NRC intend to carry out an independent examination, as recommended by both NAS studies? If not, why not?
c. Will this examination address insider threats, as the NAS recommends? If not, why not?

Answer:

b. The NRC establishes strategic goals and measures and issues routine reports regarding its performance related to its safety and security goals. As discussed in more detail in Enclosure 2, in the security arena, the NRC also works closely with other Federal agencies to identify and address possible threats. In addition to the NAS studies, the NRC has obtained independent assessments in the security area from the NRC's Office of the Inspector General (OIG), U.S. Government Accountability Office (GAO), and other oversight bodies. Further, the staff routinely assesses information gained from operating experience, the inspection program, insights from drills and exercises, and the agency's participation in various international activities. Therefore, after evaluating the NAS recommendation, the NRC staff concluded that another independent assessment is not necessary, given that the NRC's requirements to ensure security of nuclear power plants and spent fuel storage will continue to be the subject of independent reviews by the OIG, GAO, and other organizations. The staff will also continue to benefit from independent insights gained from interactions with other Federal agencies, international bodies, licensees, and other stakeholders.

c. All commercial nuclear power plants are required to have an insider threat mitigation program, in accordance with 10 CFR Part 73, "Physical Protection of Plants and Materials." The approach for complying with this requirement is incorporated into each plant's security plan. The monitoring of individuals includes a criminal history check with the FBI, pre-access alcohol and drug testing, random and for-cause drug and alcohol testing, psychological testing and evaluation, documented annual reviews by immediate supervisors, and periodic reinvestigation of individuals in selected positions. Instrumentation, inspections, and other aspects of plant operation that provide confidence in the readiness of plant equipment to maintain or restore safety functions also complement the security requirements.