UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001

November 17, 2015

Mr. Victor M. McCree
Executive Director for Operations
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: THE REVISED FUEL CYCLE OVERSIGHT PROCESS CORNERSTONES

Dear Mr. McCree:

During the 629th meeting of the Advisory Committee on Reactor Safeguards, November 4-7 , 2015, we reviewed the staff's current status of the revised Fuel Cycle Oversight Process cornerstones. Our Radiation Protection and Nuclear Materials Subcommittee met on September 25, 2015, to review and discuss this issue. During these meetings, we had the benefit of discussions with the NRC staff and public comments on the cornerstones document. We also had the benefit of the referenced documents.

CONCLUSION

The staff has proposed an adequate set of candidate safety cornerstones for the further development of a revised fuel cycle oversight process.

BACKGROUND

The NRC uses the Reactor Oversight Process to marshal its resources for the inspection and monitoring of nuclear power licensees in a transparent manner that uses both performance data and risk information. The NRC is now looking to develop an analog of the Reactor Oversight Process for nuclear fuel cycle facilities. A first step in this development is the identification and definition of safety "cornerstones" that formulate the mission and safety objectives the NRC has for fuel cycle facilities.

DISCUSSION

The NRC staff has identified seven candidate cornerstones for fuel cycle safety in two strategic performance areas.

Within the Fuel Facility Safety strategic performance area, the cornerstones are:

1. **Criticality Safety**: The objective of this cornerstone is to protect against the consequences of a nuclear criticality accident, preferably by prevention of a criticality event. This objective can be met by verifying that the licensee evaluates the normal and credible abnormal conditions of processes involving special nuclear material and establishes and maintains robust controls to provide an appropriate margin of safety while the material remains subcritical. This objective can be further met by verifying licensee programs to monitor for a criticality accident in preparation to protect worker and public health and safety, should an inadvertent criticality occur.

2. **Chemical Operational Safety**: The objective of this cornerstone is to verify the availability and reliability of the Items Relied On For Safety (IROFS) and other safety controls, such as chemical safety and fire safety controls, to protect workers as well as public health and safety. Meeting this objective includes assessing the identification, operation, and maintenance of IROFS and other safety controls that prevent, limit the frequency of, or mitigate conditions that could lead to accidents involving fires or the subset of facility chemicals under NRC jurisdiction.

3. **Occupational Radiation Safety**: The objective of this cornerstone is to verify adequate protection of workers' health and safety from exposure to radioactive materials used in nuclear fuel processing. Licensees can maintain worker protection by meeting the applicable regulatory limits, including “as low as is reasonably achievable” (ALARA).

4. **Public Radiation Safety**: The objective of this cornerstone is to verify adequate protection of public health and safety from exposure to radioactive material used in nuclear fuel processing. Activities that could involve inadvertent exposure to the public include routine gaseous and liquid radioactive effluent discharges, treatment and storage of solid contaminated materials, and transport of radioactive materials and wastes. Licensees can maintain public protection by meeting the applicable regulatory limits, including ALARA.

5. **Emergency Preparedness**: The objective of this cornerstone is to verify that licensees adequately implement, maintain, and perform actions required by an approved emergency plan developed to protect the public health and safety during a radiological or chemical emergency.

Within the Safeguards strategic performance area, there are two cornerstones:

1. **Security**: The objectives of this cornerstone are: (1) to verify that the licensee’s safeguards systems and programs for both fixed site and transportation shipments promote the common defense and security by protecting against: (a) acts of radiological sabotage; (b) loss, theft, and diversion of special nuclear material (SNM); and (c) unauthorized disclosure of classified and sensitive unclassified information; and (2) to verify that the licensee’s physical protection systems minimize the possibility for unauthorized removal of SNM and facilitate the location and recovery of missing SNM.

2. **Material Control and Accounting (MC&A)**: The objectives of this cornerstone are: (1) to verify that the licensee's MC&A program promotes the common defense and security by detecting and protecting against loss, theft, diversion, or misuse of SNM, and facilitating the location and recovery of missing SNM; and (2) to verify that the licensee adequately detects unauthorized production and unauthorized levels of enrichment of SNM at enrichment facilities.

We find these candidate cornerstones to be an adequate basis for the development of the revised Fuel Cycle Oversight Process.

We are aware that there is a proposed fuel cycle facility cyber security rulemaking. This rulemaking is at an early stage of development and may take some time to finalize. Cornerstones for fuel cycle facilities should be sufficiently flexible to incorporate cyber security if rulemaking establishes requirements.

The staff has begun the identification of so-called "cross-cutting" issues that are applicable to several, or perhaps all, cornerstones. The cross-cutting issues they have proposed are:

- Human Performance
- Problem Identification and Resolution
- Safety-Conscious Work Environment

These are, of course, important issues. The staff may want to consider an additional cross-cutting issue generally identified as Process Safety or Process Engineering that would include procedure development, procedure quality, procedure compliance, operational safety margins, and safety margin maintenance.

Sincerely,

/RA/

John Stetkar
Chairman

REFERENCES:

1. U.S. Nuclear Regulatory Commission, Draft Technical Document, "Cornerstone Development," June 4, 2015 (ML15140A644).

2. Nuclear Energy Institute, "Industry Comments on the Draft Fuel Cycle Oversight Process Cornerstone Technical Document (80 Fed. Reg. 33303); Docket ID NRC-2015-0149," July 13, 2015 (ML15195A422).

3. U.S. Nuclear Regulatory Commission, "Response to Public Comments on Draft NRC Document, 'Cornerstone Development'," August 26, 2015 (ML15236A200**).**

4. U.S. Nuclear Regulatory Commission, SECY-10-0031, "Revising the Fuel Cycle Oversight Process," March 19, 2010 (ML100570250).

5. U.S. Nuclear Regulatory Commission, SRM-SECY-10-0031, “Revising the Fuel Cycle Oversight Process,” August 4, 2010 (ML102170054).

6. U.S. Nuclear Regulatory Commission, SRM-M100429, “Briefing on the Fuel Cycle Oversight Process Revisions,” May 12, 2010 (ML101320075).

7. U.S. Nuclear Regulatory Commission, “Paper Comparing Integrated Safety Analysis for Fuel Cycle Facilities and Probabilistic Risk Assessments for Reactors,” December 15, 2010 (ML103330474).

8. U.S. Nuclear Regulatory Commission, “A Comparison of Integrated Safety Analysis and Probabilistic Risk Assessment,” Revision 1, February 2011 (ML110610195).

9. Advisory Committee on Reactor Safeguards, “Comparison of Integrated Safety Analysis (ISA) and Probabilistic Risk Assessment (PRA) for Fuel Cycle Facilities,” February 17, 2011 (ML110460328).

10. U.S. Nuclear Regulatory Commission, Draft SECY-11-0140, “Enhancements to the Fuel Cycle Oversight Process,” October 3, 2011 (ML111180705).

11. Advisory Committee on Reactor Safeguards, “Enhancing the Fuel Cycle Oversight Process” October 17, 2011 (ML11284A143).

12. U.S. Nuclear Regulatory Commission, SRM-SECY-11-0140, “Enhancements to the Fuel Cycle Oversight Process," January 5, 2012 (ML120050322).

13. U.S. Nuclear Regulatory Commission, Draft NUREG-2154, “Acceptability of Corrective Action Programs for Fuel Cycle Facilities,” January 2013 (ML12326A856).

5. U.S. Nuclear Regulatory Commission, SRM-SECY-10-0031, “Revising the Fuel Cycle Oversight Process,” August 4, 2010 (ML102170054).

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13. U.S. Nuclear Regulatory Commission, Draft NUREG-2154, “Acceptability of Corrective Action Programs for Fuel Cycle Facilities,” January 2013 (ML12326A856).

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