

Reactor Oversight Process Enhancement Project

Baseline Inspection Program

Inspection Area – Radiation Safety

Background

In December of 2009, Inspection Procedure (IP) 71124, "Radiation Safety – Public and Occupational," with eight attachments was issued to provide the baseline inspections required to determine whether licensee performance meets the objectives of the Occupational Radiation Safety and Public Radiation Safety Cornerstones. This new procedure, implemented in 2010, superseded procedures IP 71121, "Occupational Radiation Safety," and 71122, "Public Radiation Safety," previously used for the Occupational and Public Radiation Safety Cornerstones, respectively, and was restructured to align with the functional areas of occupational and public radiation protection programs, remove areas of overlap, and clarify the scope and depth of the inspection review in each of the areas of the Radiation Safety Program.

Regional radiation protection inspectors/subject matter experts and headquarters radiation protection staff participated in the Reactor Oversight Process (ROP) Enhancement Project for the ROP Strategic Area of Radiation Safety. This strategic area contains two of the seven ROP cornerstones (i.e., the Occupational Safety Cornerstone and the Public Safety Cornerstone).

The team reviewed the ROP historical references, including SECY 99-007, "Recommendations for Reactor Oversight Process Improvements," and its Risk Information Matrices (Appendix III) to refresh the team on the original bases for inspection frequency, hours, and level of effort. The team also reviewed the Office of Inspector General (OIG) Audit on the Baseline Inspection Program from 2004 and staff responses from 2005. This review provided staff with the foundation for making recommendations for changes to the inspection areas and procedures while remaining within the intent of the guidance from SECY 99-007.

Analysis

Operating Experience - There were no adverse trends identified through the Operating Experience process, severe program/actual events, inspection findings, and special inspection team report results over the past three years, other than frequent Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50.72 reports of radioactive leaks into ground water.

Inspection Results - For each of the Radiation Safety inspection procedures in IP 71124, the number of hours expended and the number of findings by each region in each of the last three years (2010-2012) were evaluated. The data can be summarized as follows:

- Over the three year period, there were 106 findings identified with 27,942 inspection hours expended, or approximately 264 inspection hours per finding. In 2010, there were 26 findings, in 2011 there were 45 findings, and in 2012 there were 35 findings.

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- Approximately 75% of the findings were identified in the Occupational Radiation Safety Cornerstone and 25% of the findings were identified in the Public Radiation Cornerstone.

Prescriptive Inspection Procedures - The new IP 71124 Radiation Safety inspection procedures are more prescriptive than previous procedures. This has the advantage that new inspectors can follow the new procedure more readily and consistently. However, more prescriptive procedures also allow less flexibility for experienced inspectors to focus on inspection of activities with more risk significance.

Quantity of Inspection Items - Some of the IP 71124 procedures have too many inspection items to be completed in the allotted hours.

Reduction of Inspectable Items - Some of the inspection procedures require inspectors to look at issues with minor risk significance, and should be reevaluated to remove the inspection item or at least reduce the depth of inspection (e.g., leak testing of sealed sources or detailed review of a licensee's respiratory protection program). These inspection items should be moved from a required inspection to an optional inspection item, depending on the inspector's judgment of the licensee's overall program implementation (e.g., source term reduction efforts).

Redistribution - Some of the IP 71124 inspection procedures have inspection items that need to be redistributed to other less intensive inspection modules (e.g., the inspection of the groundwater issues in IP 71124.06 (effluents inspection procedure) should be moved to IP 71124.07 (environmental monitoring inspection procedure).

Hours - In accordance with SECY-99-007 and its Risk Information Matrices in Appendix III, the number of inspection hours should be reevaluated, and made more flexible to accommodate plant specific inspection needs. The amount of time needed to perform an inspection procedure varies according to the performance of the licensee; for example, a plant with low collective dose does not require as much time to complete the as low as reasonably achievable (ALARA) IP as a plant with a high collective dose.

Consolidation - Some consolidation is needed of program elements by functional areas (e.g., calibration of effluent instruments in IP 71124.05 should be moved to the effluent IP 71124.06).

Targeted Areas - Targeted focus areas should be identified from inspector operating experience and inspection procedures revised to allow focus areas to be inspected in more depth.

Recommendations

1. The changes to IP 71124 in 2009 have been a significant improvement. However, open feedback forms need to be addressed.
2. Revise some IPs to move some inspection items from the procedure requirements section to the guidance section, particularly for items with low radiation risk significance, thereby allowing inspectors to focus more time on more risk significant issues.
3. While maintaining the total number of inspection hours in the Radiation Safety Strategic Area, the eight IP attachments in IP 71124 should be revised to allow inspector flexibility in the number of hours for each individual inspection procedure such as to recognize

good performance, and focus on other areas with greater challenges. For example, plants with low collective dose would receive fewer inspection hours, and plants with higher collective dose and greater ALARA challenges to receive the normal inspection hours.

4. Build more flexibility into IPs to allow inspectors to select samples and areas within the functional area based on inspector judgment gleaned from site specific information obtained during the inspection, or from previous inspections, rather than requiring inspection of each of the inspection items.