

Reactor Oversight Process Enhancement Project

Baseline Inspection Program

Special Topic – Flexibility

Background

During the Reactor Oversight Process (ROP) Enhancement Project – Baseline Inspection Program, the Office of Nuclear Security and Incident Response (NSIR) presented an idea on how to increase sample flexibility. NSIR inspectors are required to complete all security inspection requirements, currently defined in NSIR security inspection procedures as samples. NSIR security inspection procedures limit inspectors' use of security risk insights or expert judgment in developing a licensee specific security inspection plan.

The proposal was to split samples into three tiers. Tier 1 being the most significant, tier 2 less significant and tier 3 least significant. The samples would be completed as follows:

Triennial inspection

- Complete 100% of Tier 1 samples on a three-year cycle.
- Complete 75% of Tier 2 samples in the first three-year cycle, the remaining 25% plus an additional 50% that overlap in the second three-year cycle.
- Complete 50% of Tier 3 samples in the first three-year cycle, the remaining 50% in the second three-year cycle.

The proposed method increases inspector's flexibility in choosing which samples to perform during each yearly inspection cycle. This approach would also require a change to the Reactor Program System (RPS) in order to track which samples were completed in each yearly inspection cycle.

A small working group formed to evaluate flexibility within the baseline inspection program. The Office of Nuclear Reactor Regulation (NRR) made an additional proposal, which consisted of the following steps:

1. Calculate the average time it takes to complete a sample for each procedure.
2. Multiply the average time, calculated in Step 1, by the minimum number of samples required by each procedure. This represents the minimum amount of hours required to complete the baseline inspection program.
3. Subtract the minimum number of hours required to complete the baseline inspection program from the budgeted hours.

The result is a "resource pool" of hours that can be used where it is deemed necessary within each cornerstone area to gain more flexibility.

Additionally, the topic of flexibility was discussed during the public meeting held on July 17, 2013. Industry representatives suggested allowing resident inspectors to reduce or request additional inspections based on their observations.

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Analysis

During the internal meetings, it was identified that “sample” was defined at a different level between the two offices. In NRR procedures, a sample is specified and then guidance is given on what inspection requirements to evaluate during the inspection of that sample. NSIR considered each security inspection requirement to be a sample, resulting in a high number of samples for each security inspection procedure. As an example, an NRR procedure may specify to inspect one heat exchanger out of four; this is one sample. The procedure then will provide guidance on what to inspect such as the maintenance records, heat transfer capabilities, and fouling (each one being optional). If NRR employed the NSIR definition of sample, then evaluating the maintenance records, heat transfer capabilities, and fouling would be three samples, none of which would be optional.

It was also identified that NSIR and NRR employed different strategies to allow flexibility. NRR specified a range of samples; NSIR required all samples (i.e., inspection requirements) to be completed. NRR’s use of a range affords inspectors the ability to use their risk insights and engineering judgment during an inspection. The feedback form process and the ROP re-alignment allow for making changes to the specified sample range.

NRR reviewed the bases documents and manual chapters to determine the current amount of flexibility afforded. The following excerpts related to flexibility from Inspection Manual Chapter (IMC) 2515, “Light-Water Reactor Inspection Program – Operations Phase” were examined:

Planning significant alterations to the baseline inspection program for a plant’s annual inspection plan to accommodate the plant’s particular situation needs the concurrence of the Chief, Inspection Program Branch. Significant alterations include treating a multi-unit site as separate single unit sites, or increasing or decreasing the frequency of inspections or sample sizes from those stated in the baseline inspection procedures. (Page 13)

Planning for the baseline inspection program will be based on the estimated level of effort for each procedure attachment. Resource planning will be based on the cornerstones and not the individual procedure attachments in that, as site activities warrant, adjustments of the level of effort between procedure attachments within a cornerstone may be made. (Page A-9)

At the mid-cycle and end-of-cycle plant performance reviews and with regional management agreement, resources may be shifted among procedure attachments within a cornerstone to focus on an area where licensee performance could be declining. However, all of the cornerstone procedure attachments must be completed within their planning cycles. (Page A-13)

Industry’s suggestion of allowing inspectors to increase or decrease inspection based on their observations is contrary to the basis for the baseline inspection program. IMC 0308 Attachment 2, “Technical Basis for Inspection Program”, states on page 3, “the baseline program is the minimum level of inspection conducted at all power reactor facilities, regardless of their performance.”

Recommendations

The working group concluded that redefining a sample was not necessary. For example, there are inspection procedures (Refueling Inspection and Problem Identification and Resolution Biennial) where it would be difficult to define the number of samples required. Specifically, we cannot know how many refueling activities or problems the licensee identified and corrected within each inspection cycle. Although there are many inspection activities within each procedure, it counts as one sample. The current definition of sample allows this flexibility.

NSIR recognized the need to increase the flexibility in their security inspection procedures. Instead of using their proposed method, they have chosen to model NRR's program. Each inspection procedure will specify a range of samples to complete or will count as one sample. The procedures will then provide separate inspection requirements for inspecting each sample. RPS will not require any significant changes to implement this method.

The working group also concluded enough flexibility already exists in NRR procedures. NRR recognized that supervisors use discretion and exercise flexibility based on their judgment.