The information contained herein provides notes for the November 15, 2019 public meeting. It does not represent any U.S. Nuclear Regulatory Commission (NRC) staff or agency position.

Building a Smarter Inspection Program Notes

On November 15, 2019, a Category 3 public meeting was held between NRC staff, representatives of the Nuclear Energy Institute (NEI), and the public to continue the dialogue and idea sharing from previous meetings. The purpose of the meeting was to allow the NRC staff and interested stakeholders to develop a common understanding of the process the NRC staff used to consider stakeholder feedback and the basis used for the development of the staff's draft recommendations. The NRC staff provided a presentation of the draft recommendations to revise the inspection program, followed by a presentation from NEI and a presentation from NRC on the Interim Storage Facilities Installation inspection enhancement initiatives. The NRC staff emphasized that the primary factor in any potential changes to the fuel cycle inspection program is to ensure that the program remains risk informed, and performance based. The NRC staff also emphasized that the goal of the staff initiative is to right-size the inspection program consistent with the concepts of risk-informed transformative change and that a specific target or percentage reduction in inspection effort was not established at the outset of this initiative.

The following is a summary of the main topics of discussion during the meeting.

Resident Inspector Program

- Industry representatives asked questions regarding the staff recommendation associated with the Resident Inspector Program (RIP). Industry representatives re-affirmed that their recommendations included shifting more hours into the RIP.
- The NRC staff indicated that the working group (WG) completed an assessment of the current hours included in the RIP. The staff noted that the total direct hours of inspection, hours for preparation and documentation of inspection activities, and hours for indirect inspection activities such as enforcement and site-specific training adds to one full time equivalent.
- The staff also indicated that a recommendation of the WG is to perform an assessment of the scope and inspection guidance as part of the next phase of the initiative. The second phase of the initiative includes incorporating changes to inspection guidance as a result of the WG's recommendations.

Flexibility or range of hours for inspection procedures

- Industry representatives provided feedback on the staff recommendation and expressed significant interest on the concept of flexible hours (i.e., range of hours) for all inspection procedures to allow for a reduction of inspection effort as a result of changes to the risk profile of a facility.
- The NRC staff indicated that the WG assessed and identified for each of the inspection procedures, the minimum level of effort for the inspection program to achieve its mission. Therefore, the hours proposed are those needed to allow inspectors to complete

performance-based inspections based on the scope, ranking, and complexity of the inspection area.

- The staff also indicated that it incorporated a range of hours for inspection areas with a Tier 3 ranking (Slide 11 of the NRC Smarter Inspection presentation). Inspection areas with a Tier 3 ranking have a frequency of inspection of 3 years and 30-60 hours. The staff noted that consistent with its approach described above, 30 hours would be the expected level of effort for planning purposes. If during the planning stage of the inspection, the staff determines that the hours allocated are not sufficient to fully implement the scope of the inspection, the inspection procedure allows for 30 more hours to be allocated.
- Industry representatives stated that Tier 3 inspection areas are those that they considered to be more stable and that all the areas should have consideration for a range with flexibility of hours due to a reduction to the risk profile.

Credit for safety margin in the level of effort per inspection procedure

- Industry representatives re-affirmed their recommendation that the inspection program should provide credit to facilities with a robust Integrated Safety Analysis (ISA). More specifically, facilities should get credit (reduced inspections) for inclusion of additional Items Relied on for Safety (IROFS) that drive down risk beyond the regulatory requirements (e.g., from the licensee's definition of highly unlikely definition of -4 to a voluntary -6).
- The NRC staff indicated that it had considered the recommendation, but that such a concept was not included in the staff proposal. The following challenges were discussed:
    - The concept relies on the inclusion of safety margin or IROFS beyond regulatory requirements which creates conflicts with the goal of the inspection program of verifying compliance (among others) with the regulations.
    - Inclusion of additional safety margin is outside of the licensing basis of the facility and varies by site and inspection area.
    - The staff considers (i.e., provides credit) additional IROFS per accident sequence when issues are identified are evaluated for potential non-compliances in its enforcement process.
    - The concept identifies a methodology that assesses margin for each accident sequence rather than assessing overall facility risk profile. The NRC questioned if the concept can be applied as basis for decreasing hours for the whole program or per inspection area. In addition, the staff mentioned it will take a significant burden to develop a tool that will allow the staff to assess changes of risk at the facility due to the level of information required and available to the staff.

Public feedback and other topics

- A member of the public from the Lower Richland community expressed concerns with the NRC staff Smarter Inspection initiative and the changing of its inspection protocol. He stated that the NRC is looking to reduce the amount of time that is spent inspecting nuclear plants, and that the plants are aging. He continued by stating partially: "…in my community, we're kind of simple, and we think, if we've got an older car, we don't inspect it less. We inspect it more. If we've got an aging nuclear plant, we don't expect that we're going to spend less time engaging in the inspection of those plants.

We should spend more time, as those plants deteriorate, as there are challenges in those or in the structural integrity of those plants. We would hope that the Nuclear Regulatory Commission would really not change its inspection protocol, particularly as it relates to the plants like the Westinghouse plant on Bluff Road. So, we would ask that as you are considering this licensing change and giving an extended period of licensing from 20 years to 40 years that you would take into consideration the fact that you are also reducing the amount of time that you are intending to inspect those plants. If you're going to extend the time that Westinghouse has its license, do us the consideration of also extending the amount of inspections that you have for those plants. And I know those two considerations are happening at the same time, and we'd ask that you take that into consideration."

- Industry representatives questioned whether the NRC staff considered trends in the operating experience data (Slide 10 of the NRC Smarter Inspection presentation). Specifically, whether the NRC staff considered a negative linear trend in the database. The staff indicated that a detailed trend analysis was performed, and that it was concluded not to represent the trend using a negative linear relationship. A follow-up response with more details is included at the end of this enclosure.
- Industry representatives asked if there was a plan to look at the Security inspection procedures included in Appendix B of IMC 2600 in an open and transparent environment like efforts the staff are currently taking under this initiative.

Building a Smarter Licensing Program

In the afternoon of November 15, 2019, the Category 3 public meeting continued with dialogue between NRC staff, representatives of NEI, and the public with a focus on the Smarter Licensing Program initiative. The NRC staff provided a brief presentation on the status of the initiative.

The presentation noted that 32 specific suggestions have been collected from a number of stakeholders, both internal and external to the NRC, and presented a few examples of these suggestions in 5 different themes: communication/openness, knowledge/awareness, good practices, process/metrics, and review efficiency/effectiveness. The presentation materials are available in ADAMS at Accession Number ML19318F609.

During the presentation a number of stakeholders asked for an update of the "comment resolution table" that had previously been shared at the August 8, 2019 public meeting. At that time there were only about 20 suggestions, and there were areas that were still designated as "to be determined." To support open communication on this activity, the NRC staff agreed to share the latest version of the table with the issuance of this meeting summary. The current comment resolution table is available at Accession Number ML19325D290.

The NRC staff also discussed the merger of the fuel cycle and spent fuel areas into a single division, the Division of Fuel Management, and noted that one of the suggestions added recently is intended to capture the need to integrate, as appropriate, the similar guidance and procedures for these two business lines. It was further noted that an integration team was recently formed to address and prioritize areas for integration and ensure good practices are incorporated. This integration team will also address and prioritize the specific actions recommended by the smarter licensing program working group.

Follow up response on topic of trends

- Question: Did the NRC staff identify a negative linear trend in the occurrence of events?

  Response: The staff performed linear regression analysis, hypothesis testing, and time-series analysis to explore potential trends in event data between 2007 and 2018 (Source: Fuel Cycle Annual Operating Experience Report 2018 (ADAMS No. ML19004A407). The staff normalized the data to account for facilities that entered decommissioning or idle states during that time period.

  The results of linear regression analysis showed that the staff could not statistically conclude either a positive or negative trend in the number of events. Specifically, although the slope of the linear regression model was slightly negative, r-squared was less than 0.50, meaning that linear regression explains less than 50 percent of the variance in the data. The traditional lowest limit in r-squared for statistically concluding the presence of a trend is 0.60, i.e. a linear regression model that can explain at least 60 percent of the variance in the data.

  The staff also performed hypothesis testing with the following null hypotheses at a significance level of 0.95 :

  1. The average number of events between 2007 and 2012 is more than the average number of events between 2013 and 2018.

  2. The slope of a linear regression model of the number of events between 2007 and 2012 is equivalent to the slope of the regression model between 2013 and 2018.

  The results of hypothesis testing showed that the staff could reject both null hypotheses with p-values of 0.01 and 0.001, respectively. In other words, the staff could not accept the null hypotheses indicating a negative trend.

  Finally, the staff performed an autoregressive integrated moving average (ARIMA) analysis to determine if temporal effects may influence the data. A high statistical fit of this type of analysis would suggest that the number of events are influenced by time. The ARIMA analysis showed that 70 percent of the data could fit a time-series model with a periodicity of 3 to 7 years. Although the staff's analysis could not statistically conclude there was a negative trend in the number of events, the staff could statistically conclude that the number of events may be influenced by time.