GREGORY R. CAMERON
Senior Project Manager, Regulatory Affairs

1201 F Street, NW, Suite 1100
Washington, DC 20004
P: 202.739.8105
grc@nei.org
nei.org

NUCLEAR ENERGY INSTITUTE

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Mr. Anthony T. Gody
Director, Division of Reactor Safety
U.S. Nuclear Regulatory Commission, Region II
245 Peachtree Center Avenue N.E., Suite 1200
Atlanta, GA 30303

Subject: Collaborative Effort to Identify Efficiencies in Engineering Inspections

Project Number: 689

Dear Mr. Gody:

On behalf of the nuclear energy industry and the Nuclear Energy Institute (NEI)[1], I would like to thank you for the continued dialogue on identifying efficiencies in the various engineering inspections contained within the Reactor Oversight Process. Diverse NRC and industry teams have identified multiple options in keeping with the Principles of Good Regulation and focused on ensuring safety. We appreciate NRC's openness to new ideas and sense of urgency to more fully explore concepts of mutual agreement.

At the most recent public meeting on this topic (held on October 11, 2017 at the Region II office), NRC provided a list of six areas[2] where the agency's internal working group had reached alignment, including: changing the heat sink, in-service, 10 CFR 50.59 and boric acid inspections from standalone inspections to samples in a reconstituted inspection program; reviewing the fire protection inspection for potential streamlining, and improving the agility of the engineering inspection program overall. The industry agrees that each of these initiatives should be included in the eventual recommendation from this effort.

At the same meeting, the industry provided an overview of how an NRC-endorsed Licensee Performance Verification (LPV) process could be used to allow licensees to identify and correct their own performance

[1] The Nuclear Energy Institute (NEI) is the organization responsible for establishing unified industry policy on matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include all entities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel cycle facilities, nuclear materials licensees, and other organizations and entities involved in the nuclear energy industry.
[2] "Engineering Inspection Review Revision 1 ." *NRC*, 11 Oct. 2017, www.nrc.gov/reactors/operating/oversight/engineering-inspection-review-10112017-public-presentation.pdf.

issues through a rigorous self-assessment process subject to NRC oversight[3]. Successful completion of an LPV would result in a commensurate reduction of inspection hours.

While the October 10th public meeting was productive in increasing our understanding of common goals and differing perspectives, our conversations also identified six key areas warranting further exchange of ideas. These topics, listed below along with associated industry positions, should provide the basis for ongoing dialogue at the next public meeting, tentatively scheduled for December 12th.

1. **Length of inspection cycles**

   Most engineering inspections currently occur on a three-year frequency. While no technical justification for this frequency is readily identifiable in ROP documentation, it is commonly understood that the triennial frequency is based on the typical 18-month nuclear plant refueling cycle, such that engineering areas are inspected at least every other operating cycle.

   As we have discussed in previous public meetings, the industry and NRC share a goal of increasing the agility of engineering inspections through the use of varied samples during scheduled inspections (focused or comprehensive), reactive inspections and LPVs rather than repeated, themed inspections. Therefore, repetition of a particular inspection procedure on a defined cycle becomes less necessary.

   The industry proposes a cycle of inspections and LPVs occurring nominally every five years. Such a cycle takes into consideration the operational rhythm of plants on either 18-month or 24-month refueling cycles, and allows NRC to spread their finite resources with specialized expertise over a longer planning horizon. Greater flexibility in scheduling these resources should also reduce the need for the use of contract resources on inspection teams. Additionally, a five-year cycle provides for more data improving the efficacy of the performance trends and findings on engineering performance. Providing sufficient inspection "touch-points" by engineering-related inspectors over this cycle is considered important and the industry will provide its view of how this will ensure a five-year cycle is not only sufficient but could provide improved NRC oversight.

   The industry intends to present in greater detail the various elements of a five-year cycle during the next public meeting.

[3] "Industry Perspective Use of Self Assessments in ROP Baseline Inspection Program." NRC, NEI, 11 Oct. 2017, www.nrc.gov/docs/ML1730/ML17306B016.pdf.

2. Inclusion of fire protection as a theme or sample

Since the 1975 fire at Browns Ferry, regulatory instability has plagued fire protection programs in the nuclear industry. In an effort to improve predictability in fire protection regulatory activities, regular inspections were conducted as part of NRC's oversight processes. These provided licensees and the NRC with regular opportunities to monitor the progress on long-standing fire protection issues. However, as these long-standing issues have achieved resolution, the amount of useful information coming out of these inspections has decreased substantially relative to the number of NRC and licensee hours devoted to them.

The industry recommends that fire protection inspections as standalone theme be discontinued. Fire protection features should continue to be inspected on a quarterly and annual basis by resident inspectors. Selected fire-related issues, such as physical changes to the plant or concerns born out of operating experience, should be included as samples in a more agile engineering inspection suite.

NEI's Fire Protection Working Group has prepared a paper documenting the intended purpose of the fire protection inspection and the resolution of many longstanding issues via adoption of NFPA 805 or the inspection of multiple spurious operations analyses. This paper will be provided to NRC staff in advance of the next public meeting.

3. Components of a comprehensive engineering inspection

The industry believes it is reasonable and prudent for NRC to continue performance of a comprehensive inspection focused on maintenance of the plant license and design bases and consideration of latent issues during the engineering process. This inspection should be similar in scope and focus to today's Design Basis Assurance Inspection, adjusted to occur once during each five-year cycle. As noted above, comprehensive inspections occurring less frequently over a longer time horizon will allow NRC inspectors additional time for training and greater flexibility to participate on inspection teams, negating the need for contractors.

4. Increased understanding of Licensee Performance Verifications, including a pilot

We appreciate NRC's openness to including a review of licensee self-assessments, in lieu of direct inspection, as part of a revised engineering inspection suite. The industry believes this concept to be in keeping with the ROP foundation of encouraging licensees to identify and correct their own issues while verifying the effectiveness of corrective action programs.

We understand that providing credit for performance of an LPV requires not only a process which demands rigor, transparency, and communication of sufficient detail to provide a basis for an inspection report, but also a demonstration of such a process in action. To that end, the industry intends to begin work on a guidance document early in the first quarter of 2018, with the intent to share that document with NRC in the second quarter. We propose to pilot the process at one plant in the third or fourth quarter with NRC engagement in the planning and execution of the LPV.

5. Measuring effectiveness of changes to the engineering inspection program

As with any major change in process, the industry believes it is necessary to assess the change for a period of time to ensure there are no unintended consequences. Revising the approach to the engineering inspections is a change that should be monitored both by the industry and the NRC to ensure the changes meet initial assumptions and expectations. There are high level indicators of safety and plant performance used today to attest to the historical improvement in performance of the nuclear fleet.

The industry believes that continuing to monitor these indicators, in addition to alignment with the NRC on the certain other attributes, would be both reasonable and beneficial in assessing the effectiveness of a revised engineering inspection program (see number 6 below). Additionally, the industry believes that changes to the engineering inspection program should result in a reduction in overall burden to the licensee's operating staff integrated over a period of time. This burden reduction will be seen in the form of reduced direct baseline inspection hours and a leveling out of the large licensee resource demands during the present Design Basis Assurance Inspection and associated engineering program inspections.

Finally, the industry recommends that public meetings be conducted 6 months and 18 months following implementation to discuss the effectiveness of inspection program changes and to check and adjust as necessary.

6. Description and details of industry performance indicators

The industry has long relied upon detailed indicators and roll-up indices as management tools to measure performance and to identify early trends. Many of these performance indicators are standard across the industry, including the engineering-focused equipment reliability index and others which measure system health, introduction of engineering errors, etc. Utilities provide inputs to these indicators through the Institute of Nuclear Power Operations (INPO) on a regular basis.

We believe that many of these indices and indicators provide information which will be useful for both NRC and industry to gauge the effectiveness of a revised engineering inspection program by monitoring real-time equipment performance and reviewing trends before and after any changes are introduced.

We intend to provide more details about these performance indicators during our next public meeting.

In conclusion, the industry understands that there remain outstanding issues which must be fully explored and resolved prior to NRC staff making any recommendations on increased efficiencies in engineering inspections to the Commission. However, we believe our positive collaboration thus far and early alignment on common goals provide the basis for further productive dialogue and an eventual outcome resulting in the most effective use of industry and NRC resources and a continued, mutual focus on safe operations. We look forward to sharing our perspectives, and hearing yours, during our planned public meeting on December 12th.

Sincerely,

Gregory R. Cameron

c: Mr. Chris Miller, Division of Inspection and Regional Support, NRR
Mr. James Isom, Division of Inspection and Regional Support, NRR