



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

January 16, 2019

MEMORANDUM TO: Kevin Hsueh, Chief  
Radiation Protection and Consequence Branch  
Division of Risk Assessment  
Office of Nuclear Reactor Regulation

FROM: David Garmon, Health Physicist **/RA/**  
Radiation Protection and Consequence Branch  
Division of Risk Assessment  
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF NUCLEAR REGULATORY COMMISSION  
PUBLIC MEETING ON DECEMBER 14, 2018 TO DISCUSS  
RADIATION PROTECTION ASPECTS OF THE ROP  
ENHANCEMENT – INDUSTRY PERSPECTIVES

On December 14, 2018, NRC staff conducted a category 2 public meeting (ADAMS Accession No. ML18345A396) to discuss radiation protection aspects of the Reactor Oversight Process (ROP) Enhancement with external stakeholders.

Enclosure 1 contains the meeting attendance list

**Purpose**

NRC staff and industry representatives discussed radiation protection aspects of the ROP Enhancement effort. Specifically, industry led discussions in four topics that will be considered by NRC staff during the ROP Enhancement effort: (1) as low as is reasonably achievable (ALARA), (2) Radiation Protection Instrumentation, (3) Effluents, and (4) Self-Assessments.

**Background**

The ROP remains a sound and effective framework for regulation of commercial nuclear facilities; however, NRC staff can make improvements to the program, in line with the Principles of Good Regulation, to achieve a more risk-informed and performance-based program. By letter dated September 19, 2018 (ADAMS Accession No. ML18262A322), the staff received two major recommendations from industry that apply to the Radiation Safety Cornerstones of the ROP:

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- 1) "Review radiation protection inspections to apply lessons learned from the Engineering Inspections Working Group to streamline them (following the stakeholder engagement process employed with engineering inspections); include credit for self-assessments."
- 2) "The philosophy setting the policy for the EP SDP above should be applied to all deterministic SDPs as much as practical."

NRC staff seeks external participation to inform its analysis of the recommendations. The December 14, 2018 public meeting was the first public opportunity for industry to provide prepared remarks and information pertaining to industry performance in the focus-areas of this analysis. During a public meeting on November 15, 2018 (ADAMS Accession No. ML18348B256), the staff and industry agreed to focus on four areas during the ROP Enhancement effort: (1) Oversight in the area of As Low as is Reasonably Achievable (ALARA) performance; (2) Oversight of Radiological Instrumentation; (3) Oversight of Radioactive Effluents; and (4) An increased reliance on licensee self-assessments as a means of assessing plant performance in certain radiation safety areas.

### **Meeting Summary**

NRC staff began the meeting with introductions and background on the ROP Enhancement effort. NRC staff then turned over the meeting to industry representatives for a presentation entitled, "Radiation Protection Reactor Oversight Process Enhancements: Industry Perspectives," (ADAMS Accession No. ML18352A984).

Industry presenters included

- Ellen Anderson, Nuclear Energy Institute
- Willie Harris, Exelon
- Roy Miller, PSEG
- Craig Sutton, Diablo Canyon
- Dave Wood, D.C. Cook

Anderson (NEI) started the presentation with preliminary remarks and a review of the discussion of "Adequate Protection" that is located in Inspection Procedure (IP) 71124 Section 03.01.a. Anderson (NEI) made the point that the regulatory requirements ensure that licensees provide adequate protection of occupational workers and members of the public and that, in general, adequate protection from routine exposures is demonstrated by maintaining doses ALARA and within applicable limits. Anderson (NEI) also made the point that performance-based inspections should focus on the outcomes of licensee programs.

Harris (Exelon) presented on the topic of risk informing ALARA inspections. Harris (Exelon) reviewed the ALARA definition that is found in the NRC Glossary on the NRC public website (<https://www.nrc.gov/reading-rm/basic-ref/glossary/alara.html>); the overall declining trend in collective dose across the industry and the inspection hours currently assigned to the ALARA area by IP 71124.02 and those hours expended by the industry in support of NRC inspection activities. Harris (Exelon) stated that hours vary per site, but that, in general, sites report they expend 160 to 200 person-hours between preparation and inspection support. Harris (Exelon)

made the point that many of the ALARA inspection objectives can be accomplished through a periodic self-assessment. Harris (Exelon) stated that drivers for change include individual doses continuing to be reduced, collective doses continuing to be reduced and a reduction in the total number of high risk jobs trending downward. Harris (Exelon) provided recommendations that include:

- Licensee provides documentation for jobs that exceed 5 person-rem and exceed 50% of the intended dose
  - Outage reports or ALARA post jobs analyses
  - Documentation of results versus estimate
  - Lessons Learned
- Licensee provides self-assessment
  - Programmatic elements as primary focus
- Observation of in-field work as part of 71124 Attachment 1
- Inspection hours based on performance
  - Full INPO Points: 2 to 4 hours per year – consideration for remote inspection
  - Plants not meeting full INPO points: 8 to 16 hours

NRC staff inquired about what is driving industry collective radiation exposure (CRE) efforts. Industry representatives responded that throughout industry senior management levels there is interest and financial incentive to reduce CRE. Staff expressed concerns that although industry performance is adequate in this area, that there are still individual cases of personnel receiving relatively high annual doses (greater than 2 rem). The industry stated that there are some efforts in effect to address those isolated cases.

Miller (PSEG) presented on the topic of radiation instrumentation inspections. After reviewing the regulatory bases and objectives of Inspection Procedure (IP) 71124.05, Miller (PSEG) commented that the industry spends about 160 to 200 person-hours on preparation and support for inspections in this area.

Industry representatives stated they would like to see a reduction in inspection effort in the area of instrumentation. Miller (PSEG) stated that new instrument designs have improved reliability of the instruments by minimizing moving parts and addressing error prone components in instruments. Miller (PSEG) stated that new instruments employ self-diagnostics and can remove themselves from service if necessary. Finally, Miller (PSEG) stated that industry practices have resulted very low instrument failure rates, 0.27%, as evidenced by the Electric Power Research Institute Report No. 0421207.

Miller (PSEG) provided recommendations where the NRC would reduce the frequency of on-site inspection in exchange for a licensee self-assessment. Certain aspects of the IP—walkdowns and observations, post-accident monitoring instrumentation and certain instruments—would be kept as part of the inspection. The licensee's self-assessment would focus on the following areas:

- Portal monitors, personnel contamination monitors
- Certain aspects of post-accident monitoring not covered by inspection
- Instrument calibrators
- Electronic alarming dosimeters
- Portable survey instruments
- Whole body counters
- Laboratory instrumentation
- Calibration and check sources
- Walkdowns and observations not covered by inspection

Sutton (Diablo Canyon) presented on the topic of radioactive effluent inspections. Sutton (Diablo Canyon) cited data from NUREG/CR-2907, Vol 20 to highlight the fact that radiological effluents (gaseous and liquid) represent a small fraction of the sources of public and occupational exposure and that the amount of activity in radioactive effluents has steadily decreased over time (since 1975). Sutton (Diablo Canyon) reviewed certain potential drivers for change in this inspections area.

- Well-established Offsite Dose Calculation Manuals
- Adoption at all sites of NEI 07-07 and NEI 09-14
- Technical improvements in sampling and measurement equipment
- Better dosimetry data reporting using guidance

Sutton (Diablo Canyon) recommended that the NRC reduce the frequency of on-site inspections in the effluents area and that the licensee perform self-assessments of programmatic elements.

Wood (D.C. Cook) presented on industry self-assessments. Wood (D.C. Cook) stated that the goals of self-assessments include reducing burden on regulator and the licensee, reducing inspection frequency and scope based on performance, to maintain a rigorous and formal process and to not reduce assurance to the public and workers. Wood (D.C. Cook) proposed that NEI 18-07 be revised to provide a framework for industry led self-assessments (beyond engineering). Wood (D.C. Cook) stated that the self-assessments would incorporate information from NRC inspection procedures. Wood (D.C. Cook) stated that the self-assessments would be conducted every 3 years and that a pilot program should include ALARA Planning and Controls inspections. NRC staff commented that the effort to implement a self-assessment process that would provide inspection credit may exceed the amount of effort the licensee expends on the current inspection program. Industry acknowledged this observation.

### **Topics for Next Public Meeting**

NRC staff inquired about industry perspectives on adjusting out Performance Indicators (PIs) in the areas of ALARA and effluents and industry responded that new PIs were a possibility depending on their purpose and details. An NEI representative observed that PIs should be used to communicate information of importance to safety and that changes should not be made to compel industry performance above what is required by regulations. NRC staff and industry representatives agreed that new PIs would be a topic of during the next public meeting.

NRC staff asked several questions in regard to the person-hour per inspection procedure estimates that were provided during the industry's presentation and industry agreed to provide further detail for discussion during the next public meeting.

NRC staff asked about industry efforts toward knowledge transfer and retention efforts and industry agreed to provide further detail for discussion during the next public meeting.

**Public Comments**

There were no public comments.

**Meeting Close**

All parties agreed to have another public meeting tentatively in February 2019.

Enclosure:  
Attendance List

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**DISTRIBUTION:**

- MAnderson
- BBonser
- JCassidy
- BDickson
- MEvans
- RFelts
- MFranovich
- HGepford
- RGibbs
- BMcDermott
- CMiller
- HNieh
- ANielsen
- SOrth
- RPowell
- EThomas

**ADAMS Accession Nos: ML18355A510 (\*email concurrence)**

<b>OFFICE</b>	NRR/DRA/ARCB	<u>NRR/DRA/ARCB</u>
<b>NAME</b>	DGarmon	<u>KHsueh</u> *
<b>DATE</b>	1//14/19	1/16/19*

**OFFICIAL RECORD COPY**

Meeting Attendance List:

Ami Agrawal	NRC	Ellen Anderson	NEI
Douglas Bollock	NRC	Willie Harris	Exelon
John Cassidy	NRC	Roy Miller	PSEG
Billy Dickson	NRC	Jim Peschel	Certrec
Carmen Dykes	NRC	Gregory Richardson	EPM
David Garmon	NRC	James Slider	NEI
Heather Gepford	NRC	Craig Sutton	Diablo Canyon
Russell Gibbs	NRC	Dave Wood	D.C. Cook
Kevin Hsueh	NRC		
Steve Orth	NRC		
Bill Pursley	NRC		
Micheal Smith	NRC		
Eric Thomas	NRC		

ENCLOSURE