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

April 14, 2020

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SUBJECT: SUMMARY OF CHANGES TO INSPECTION MANUAL DOCUMENTS THAT IMPACT THE RADIATION SAFETY CORNERSTONES OF THE REACTOR OVERSIGHT PROCESS

Enclosure 1 to this memorandum summarizes changes to Inspection Manual documents that impact the Radiation Safety Cornerstones of the Reactor Oversight Process (ROP) that were implemented in 2020. Specifically, Inspection Procedures (IP) attachments within the IP 71124, “Radiation Safety – Public and Occupational,” were updated as part of the ROP Enhancement effort and Inspection Manual Chapter (IMC) 0612, “Issue Screening,” Appendices B and E were revised, as well. Enclosure 2 to this memo discusses program implementation information that is relevant to reactor health physics (HP) inspectors.

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SUBJECT: SUMMARY OF CHANGES TO INSPECTION MANUAL DOCUMENTS THAT IMPACT THE RADIATION SAFETY CORNERSTONES OF THE REACTOR OVERSIGHT PROCESS DATED: 4/14/2020

Enclosures:
1. Summary of Changes
2. Implementation Guidance

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ADAMS Accession No.: ML20069D723 NRR-106

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DATE	4/14/2020	3/12/2020	3/31/2020

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SUMMARY OF CHANGES

Format of Baseline IPs

In 2018, the U.S. Nuclear Regulatory Commission (NRC) revised the prescribed format of baseline Inspection Procedures (IP) as presented in Inspection Manual Chapter (IMC) 0040, "Preparing, Revising, and Issuing Documents for the NRC Inspection Manual[1]." This new format requires concise inspection requirement statements with associated specific guidance. In developing the requirement statements and specific guidance in the 2020 revision of the IPs, the staff consolidated individual sample line items from the previous revision of the IPs to form statements that describe what is ultimately required of inspectors when conducting these inspections. In order to take credit for completion of an inspection requirement, an inspector must have completed what is reflected in the inspection requirement language (i.e., the bolded statement located in each inspection section).

"Specific Guidance" associated with each requirement provides information that is useful for the inspector to consider when completing an inspection requirement; however, completion of each specific guidance item is not required in order to complete the inspection requirement. The specific guidance can be thought of items to consider when developing a risk-informed and performance-based inspection approach. Some level of inspector-judgement is expected and encouraged in making these determinations; however, inspectors should be careful to remain within the bounds of individual inspection requirements when developing their individual inspection approaches.

The new baseline IP format facilitates the use of the inspection completion tracking module that is included as part of the Reactor Program System (RPS) application. This contributes to inspector and agency efficiency in that inspection results are collected in a computer application that is used to develop a consistently formatted inspection report at the completion of the inspection period and inspection completion is more easily tracked throughout the cycle. Additionally, information included within an inspection report strictly applies to the inspection covered by the report and does not include general program information that is better communicated through IPs or IMCs. This change is expected to improve communications with external stakeholders in that inconsistencies in inspection report content between regions will be minimized and the content of reports will be in a more user-friendly format (see section on "RPS Guidance" in Enclosure 2 of this document for further discussion).

Retirement of Dedicated As Low As Is Reasonably Achievable Baseline Inspection

As part of the ROP Enhancement effort, the staff recommended that IP 71124.02, "Occupational ALARA Planning and Controls[2]," be retired. Currently, the Commission is still considering the recommendations contained in SECY-19-0067, "Recommendations for Enhancing the Reactor Oversight Process[3]." The staff's recommendations regarding As Low As Is Reasonably Achievable (ALARA) can be found in the main body of the SECY itself with further discussion in Enclosure 6 to the SECY.

[1] ML18003A122
[2] ML17286A285
[3] ML19070A036

To accommodate the fact that the decision to retire IP 71124.02 has not been finalized within inspection cycle planning, the office of Nuclear Reactor Regulation (NRR) requests regional reactor health physics (HP) inspection staff to delay completion of IP 71124.02 (a biennial procedure) until later in the inspection cycle that commenced in January of 2020. Ultimately, the decision on when to complete this inspection is within the purview of the Regions. However, delaying the completion of IP 71124.02 may minimize inconsistencies in the application of the inspection program that could result from a mid-cycle retirement of an IP that has been completed at several licensees and not at others.

Once IP 71124.02 has been retired, inspection of ALARA performance will transition to specific guidance items within existing inspections that are completed under IP 71124.01. These guidance items will request inspectors to consider:

- Reviewing licensee evaluations of inconsistent or incongruent results from the licensee's intended radiological outcomes for radiologically significant work activities;
- If the licensee has integrated radiological work controls and ALARA requirements into work packages, work procedures and/or radiation work permit RWP documents;
- If radiation workers and radiation protection technicians are implementing prescribed ALARA practices during work activities; and focusing on work activities that present the greatest radiological risk to workers.

Modify Frequency of Radiological Effluent Program and Radiological Environmental Monitoring Program Inspections

The staff evaluated each inspection procedure and determined that, based on industry performance and regulatory experience (e.g., inspections), a reduction in frequency of inspections in the areas of radiological effluents programs and Radiological Environmental Monitoring Program (REMP) to three-year cycles from the current two-year cycle is supported. Nuclear power plant effluents contribute negligibly to overall public dose. The effluent levels across the entire industry are consistently below ALARA guidelines and REMP results show minimal radiological impact of nuclear power plant operations on surrounding environs.

For example, in 2017[4], the average liquid effluent total body dose was approximately 0.02-mrem (with a max of 0.29-mrem) and the average organ dose from gaseous effluents was 0.69-mrem (with a max of 4.66-mrem). Although not yet published, the effluent performance for 2018 reflects similar values as 2017. These doses are comparably smaller than those received by Americans from natural sources of radiation such as cosmic, terrestrial and natural potassium in the human body. The staff noted that radioactive effluents have either decreased or remained steady, at low levels, across the industry since implementation of the ROP. With these observations, the staff concluded that changing from biennial to triennial inspection of radioactive effluent and REMP activities will have very low impact on public health and safety.

In its reviews, the staff made a distinction between licensee performance regarding the amount of radioactive material a site releases in its effluents and licensee performance in monitoring such releases. Even when considering the very low levels of radioactive effluents, as described above, the staff determined that the ability to adequately monitor radioactive effluents is a very important element of licensee performance within the Public Radiation Safety Cornerstone. Specifically, the NRC uses data from effluent monitoring equipment to make regulatory decisions (e.g., scope of baseline inspection program), in event response and in communicating

[4] ML19371E480

external stakeholders. This equipment is currently inspected as part of radioactive effluent inspections. In order to maintain consistency with oversight in other areas of radiological monitoring (e.g., occupational dose monitoring), the staff will maintain inspection of effluent monitoring equipment, including testing and calibration, at a biennial inspection frequency. To reflect this new approach, the staff transitioned the inspection task of effluent monitoring from IP 71124.06 to IP 71124.05 under requirement 03.03.

Oversight Framework for Physical Protection of Category 1 and Category 2 Quantities of Radioactive Material per Title 10 of the Code of Federal Regulations Part 37

Following the implementation of Title 10 of the *Code of Federal Regulations* (CFR) Part 37, the NRC completed onsite inspections through an Inspection Manual Temporary Instruction (TI)[5]. By letter dated April 16, 2019[6], staff reported completion of the TI. In reviewing the results of these inspections, staff concluded that nuclear power reactor licensees are adequately securing radioactive material. The staff reviewed responses to inspector surveys for 34 site inspections. Out of the 34 sites, half of the licensees stored Part 37 material exclusively within the Part 73 security protected area (PA), the other half stored some material outside of the PA but controlled it within another defined area that met the requirements of Part 37.

All power reactor licensees implemented a Part 37 security plan in lieu of updating their Part 73 plans to reflect protection of Part 37 material. However, most licensees have taken credit for features within their Part 73 plans in order to meet Part 37 requirements. Inspectors confirmed that licensees have accountability of radioactive material at their sites, that they have established relationships with local law enforcement agencies and that their personnel are trained per Part 37 requirements. The average time to complete these comprehensive inspections was about 10 hours.

To establish a long-term framework that is consistent with other areas of oversight that apply to power reactor performance, the staff will implement focused, risk-informed and performance-based inspections of licensee performance as it pertains to Part 37 requirements under the Public Radiation Safety Cornerstone within IP 71124.08.

This change and selection of the Public Radiation Safety Cornerstone is based on the similarity in the scope of already existing inspections under this cornerstone and the intent of Part 37. Specifically, the current scope of the Public Radiation Safety Cornerstone baseline inspection program includes verifying appropriate administrative and physical controls are implemented by licensees for the storage, processing and transportation of radioactive material and radioactive waste. In this context, the staff noted that the Part 37 requirements are an extension of the long-standing material security and control requirements of 20.1801 and 20.1802 of which performance has been inspected under the Public Radiation Safety Cornerstone. The staff considered including Part 37 oversight within the Physical Security Cornerstone but determined that the Public Radiation Safety Cornerstone was a better fit because current agency practice limits the scope of the Physical Security Cornerstone to issues involving special nuclear material, which would exclude the material subject to the requirements.

Guidance for inspection of Part 37-related performance is divided into two requirements: (1) radioactive material storage and control, and (2) shipping records. Under the radioactive material storage and control requirement inspectors are directed to, “Verify radioactive materials

[5] ML15090A562
[6] ML19106A157

are controlled, labelled and secured against unauthorized removal." As part of this inspection, inspectors should consider if a licensee adequately evaluates radioactive material to determine the applicability of Part 37 requirements and if the licensee provides adequate training to personnel regarding Part 37. Additionally, inspectors should review licensee's annual access authorization program and security program reviews for certain deficiencies described in the IP. Under the shipping records requirement, inspectors are directed to, "Verify the adequacy of a non-excepted package shipment through record review." When conducting this task, inspectors should evaluate if the licensee satisfied requirements associated with license verification, notification, preplanning and coordination of shipments of radioactive material subject to Part 37 requirements.

In all cases, inspections of licensee performance regarding Part 37 are to be risk-informed and performance-based. As discussed in RIS 2015-15, the security requirements of Part 73 that apply to protected areas are sufficient to ensure that radioactive material subject to Part 37 is adequately protected within these areas. Therefore, inspectors should avoid conducting Part 37-related inspection samples for material that is located within the protected area. For material that is located outside of the protected area, IP 71124.08 provides a risk-informed, performance-based inspection approach.

Section 03.01 of IP 71124.08 provides guidance for dispositioning Part 37-related issues that reveal potential performance deficiencies in Part 73 programs and for documenting violations that fall within the scope of Enforcement Guidance Memorandum (EGM) 2014-001[7]. If a reactor HP inspector discovers an issue of concern that reveals a potential violation of 10 CFR Part 73 requirements, they should collaborate with regional reactor security inspection staff to determine how to disposition the issue (e.g., turn the issue over for later inspection under the Physical Security Cornerstone).

Performance deficiencies within the scope of EGM 2014-001 (i.e., involving category 1 or category 2 radioactive material in large components or robust structures, as defined in the EGM, where the underlying violation qualifies for enforcement discretion) are to be dispositioned as minor violations. However, these minor violations must be documented in inspection reports in accordance with IMC 0611, section 0611-12, and—for tracking purposes—issued a new enforcement action number each time enforcement discretion is granted.

NRR is developing training to prepare reactor HP inspectors to conduct Part 37 inspections. The training will be available after the spring of 2020 and the intended audience is reactor HP inspectors. Part 37 inspections described in IP 71124.08 should not be assigned to an inspector unless that inspector has completed the NRR-provided training or is knowledgeable of Part 37 requirements as determined by their branch chief. Additionally, NRR is developing a revision to IMC 0609 Appendix D to provide a significance determination process (SDP) that would apply to Part 37 violations. Part 37 violations will continue to be dispositioned through the traditional enforcement process until an SDP that applies to Part 37 is published.

Inspection of Implementation of Voluntary Groundwater Protection Initiative (GPI)

The revised IP 71124.07 clarifies the scope of inspections of licensee implementation of voluntary groundwater protection initiatives. In SRM-SECY-11-019, the Commission directed the staff to monitor GPI efforts not to regulate them. If staff finds that the voluntary initiatives are not conducted in a committed and enduring fashion, the staff should provide such information to

[7] ML14056A151

the Commission, with recommendations for further action. In order to collect such information and remain within the bounds of the Commission's direction, inspection guidance in the area of groundwater protection initiatives has been revised to clearly state the intended outcome.

Inspectors are directed to, "Document incomplete or discontinued elements of the licensee's Groundwater Protection Initiative program." NRR staff will track such items through periodic inspection report reviews and interactions with regional inspectors and use this information to recommend further action to the Commission, as necessary. In general, inspections of effluent programs under IP 71124.06, specifically guidance to consider unmonitored release points during walkdowns, is sufficient to provide oversight of NRC regulatory requirements in this area in a risk-informed, performance-based manner.

Inspection Issue Screening

In December 2019, NRC published updated IMC 0612, Appendix B and E to provide better issue screening guidance for inspectors. Some key highlights are listed below.

IMC 0612, Appendix B Highlights

- Use of Enforcement Problem approach for multiple related performance deficiencies
- Inspectors are required to use the Examples of Minor Issues found in IMC 0612, App E to inform answers to the screening questions
- One screening question associated with Performance Indicator thresholds has been deleted
- Guidelines for use of the Very Low Safety Significance Issue Resolution process have been added

IMC 0612, Appendix E Highlights

- Introductory text to Section 6 provides clarification of situations that apply within each of the screening questions
- Example questions were re-written to correlate to specific screening questions
- Addition of examples in the Health Physics section and addition of a separate section to address Part 37-related performance deficiencies

IMPLEMENTATION GUIDANCE

General Guidance

The 2020 revision of Inspection Procedures (IP) 71124.01-.08 represents a significant staff effort in coordination within the agency staff and engagement with external stakeholders. Staff communicated intentions to implement these changes with stakeholders at public meetings on May 30, 2019, July 23, 2019 and December 18, 2019; an industry conference on July 29, 2019; and at several ROP monthly meetings.

Taken separately from the changes to content discussed in Enclosure 1, the changes to the IP formatting should not impact inspection scope or practices. Staff took care to phrase each inspection requirement so that the expectation of an inspector is clear, but also so that the inspection requirement statement is consistent with previous inspection scopes and practices.

In accordance with MD 8.13, the staff has notified the Commission of the changes to the frequency of the 71124.06 and.07 procedures and the addition of Part 37 inspection guidance.

IPs 71124.05 - .08 were published with an effective date of March 30, 2020. At the time the procedures were published, several Regions had already completed 1st quarter 2020 inspections using the old revision of procedures. The RPS program was updated to accommodate this and the cross-reference below is provided to facilitate tracking of ROP completion for the inspection cycle beginning in 2020. Completion of samples listed in column (b) is equivalent to completion of the minimum samples listed in column (d); as modified by the notes listed in column (e). Regions can credit more samples than the minimum based on actual inspection activities; however, the minimum is identified for simplicity.

IP 71124.05 – Radiation Monitoring Instrumentation Frequency: Biennial, Hours per Site: 38 +/- 4				
(a)	**(b)**	**(c)**	**(d)**	**(e)**
Old (2018) Requirement	**#Samples to complete**	**Revised Requirement**	**Revised #Samples to Complete (budgeted range)**	**Notes**
02.01 – Walk downs and observations	1	03.01 – Walk downs and observations	5 (5-10)	
02.02 – Calibration and Testing Program	1	03.02 – Calibration and Testing Program	10 (10-15)	
N/A	N/A	03.03 – Effluent Monitoring Calibration and Testing Program	2 (2-3)	This requirement was moved from IP 71124.06 to IP 71124.05 under requirement 03.03. Completion of 02.02 and 02.04 (2018) constitutes completion of 2 samples of 71124.05 requirement 03.03 (2020) (i.e., 1 sample for 02.02 and 1 sample for 02.04, for a total of 2 samples).
02.03 – PI&R	0	N/A	N/A	PI&R is included within the general guidance as an activity that is completed during each individual requirement; therefore, it is no longer tracked as a separate requirement.

IP 71124.06 – Radioactive Gaseous and Liquid Effluent Treatment Frequency: Triennial Hours per Site: 29 +/- 4				
(a)	(b)	(c)	(d)	(e)
Old (2018) Requirement	**#Samples to complete**	**Revised Requirement**	**Revised #Samples to Complete (budgeted range)**	**Notes**
02.01 – Walk downs and observations	1	03.01 – Walkdowns and observations	3 (3-5)	
02.02 - Calibration and Testing Program (Process and Effluent Monitors)	1	N/A	N/A	This requirement was moved from IP 71124.06 to IP 71124.05 under requirement 03.03. Completion of 02.02 (2018) constitutes completion of 1 sample of 71124.05 requirement 03.03 (2020).
02.03 – Sampling and Analysis	1	03.02 – Sampling and Analysis	3 (3-5)	
02.04 - Instrumentation and Equipment	1	N/A	N/A	This requirement was moved from IP 71124.06 to IP 71124.05 under requirement 03.03. Completion of 02.04 (2018) constitutes completion of 1 sample of 71124.05 requirement 03.03 (2020).
02.05 - Dose calculation	1	03.03 - Dose calculation	2 (2-3)	
		03.04 - Abnormal discharge	1 (1-3)	The abnormal discharges sample was made into its own requirement in 2020 (it was previously part of the dose calculations sample [02.05]). Completion of 02.05 (2018) constitutes completion 03.04 (2020) if an abnormal discharge was reviewed during the inspection. If an abnormal discharge was not reviewed during the inspection, the completion should be documented per IMC 0306, section 06.08.f.3.
02.06 – PI&R	0	N/A	N/A	PI&R is included within the general guidance as an activity that is completed during each individual requirement; therefore, it is no longer tracked as a separate requirement.

IP 71124.07 – Radiological Environmental Monitoring Program Frequency: Triennial Hours per Site: 29 +/- 4				
(a)	(b)	(c)	(d)	(e)
Old (2018) Requirement	**#Samples to complete**	**Revised Requirement**	**Revised #Samples to Complete (budgeted range)**	**Notes**
02.01 – Site Inspection	1	03.01 – Environmental Monitoring Equipment and Sampling	1 (1)	
		03.02 - REMP	1 (1)	
02.02 – GPI Implementation	1	03.03 – GPI Implementation	1 (1)	
02.03 – PI&R	0	N/A	N/A	PI&R is included within the general guidance as an activity that is completed during each individual requirement; therefore, it is no longer tracked as a separate requirement.

IP 71124.08 – Radioactive Solid Waste Processing and Radioactive Material Handling, Storage and Transportation Frequency: Biennial Hours per Site: 34 +/- 4				
(a)	(b)	(c)	(d)	(e)
Old (2018) Requirement	**#Samples to complete**	**Revised Requirement**	**Revised #Samples to Complete (budgeted range)**	**Notes**
02.01 – Rad Material Storage	1	03.01 – Rad Material Storage and Control	1 (1-3)	Part 37 was added to the scope of specific guidance under 03.01 (2020) for an inspector to consider during inspection. However, if 02.01 (2018) was completed prior to March 30, 2020, then 1 sample of 03.01 (2020) can be credited. Therefore, under these circumstances this inspection requirement would be considered complete for the cycle (minimum sample of 1).
02.02 – Radioactive Waste System Walkdown	1	03.02 – Solid Radioactive Waste System Walkdown	1 (1-3)	
02.03 – Waste Characterization and Classification	1	03.03 – Waste Characterization and Classification	2 (2-3)	
02.04 – Shipment Preparation	1	03.04 – Shipment Preparation	1 (1)	
02.05 – Shipping Records	1	03.05 – Shipping Records	3 (3-5)	
02.06 – PI&R	0	N/A	N/A	PI&R is included within the general guidance as an activity that is completed during each individual requirement; therefore, it is no longer tracked as a separate requirement.

RPS Guidance

Staff developed standardized inspection report template scope text statements for each of the inspection requirements in IPs 71124.01-.08. The scope statements consist of black-colored text that should not be adjusted at the individual inspection level and blue-colored text that provides guidance on how to document inspection items. One of the staff's goals with this update is to foster greater consistency in the implementation of the inspection program across all NRC Regional offices. In order to attain that goal, it is important that inspection reports be consistent in content and, to a lesser extent, style. The use of standardized scope text will support that effort. For requirements where inspectors are asked to enter free-form information, the information entered should be concise to satisfy the guidance; bulleted statements are encouraged and preferred.

If changes to the scope text are desired, Regional representatives should provide recommendations to NRR staff for consideration and program-wide implementation rather than making local changes that would significantly differentiate one Region's inspection reports from the others.

Situational inspections

During the 2020 revision of IP 71124.01-.08 the staff developed concise statements that describe inspection completion requirements (i.e., bolded statements in Inspection Requirements section of each IP). In developing these requirement statements, the staff recognized that certain baseline inspection activities within the scope of the Radiation Safety Cornerstones are situational if they are to be risk-informed and performance-based. These are

inspection activities that perhaps cannot be performed within the span of every inspection cycle because the inspected item was not performed by the licensee or did not occur (e.g., abnormal effluent discharge or certain dose assessment-related activities). However, when an appropriate sample for these situational inspection items is available, the staff maintains that, from a risk-informed perspective, that sample should be inspected within the baseline inspection program.

When preparing for inspections that include these situational tasks, inspectors should gather enough information to determine if a risk-informed, performance-based sample will be available for inspection. If an appropriate sample is not available for inspection (e.g., the site has not experienced a special dosimetric situation), the inspector and cognizant branch chief should consider reducing the planned inspection scope and effort by the amount of time it would take to perform the inspection requirement. In these cases, completion of the inspection item should be documented in RPS as described in Inspection Manual Chapter 0306, sections 06.08.f.3/4, as applicable.

Situational Inspections	
Inspection Requirement	**Remarks**
IP 71124.01	IP 71124.01 is best performed at a site during a refueling outage or a period where significant radiological work is being performed. At single unit sites, it is possible that no refueling outage or significant radiological work would be performed during period spanning the frequency of IP 71124.01.
IP 71124.03, Section 03.02 IP 71124.04, Sections 03.03 & 03.04 IP 71124.06, Section 03.04 IP 71124.08, Section 03.04	It is possible that the activities inspected under these requirements would not occur during an inspection cycle. Therefore, an appropriately risk-informed sample would not always be available for inspection during a baseline inspection cycle.