

RP Baseline Inspections

**INPO - New RPM Seminar
August 25, 2022**

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AGENDA

- The RPM, Inspector Perspective
- Implementation of the Baseline Inspection Program (Slide 13)
- Importance of Record Keeping
- Road Mapping an Issue of Concern to a Finding (Slides 23 and 24)
- Alpha Monitoring
- Final Tips

RPMs:

- Understand the licensing and regulatory basis for the Radiation Protection program (Slide 9)
- Represent the radiation safety cornerstone objectives on the Plant Review Committee (Slides 26 & 27)
- Ensure the records routinely reviewed by the NRC are readily available
- Maintain the CAP IAW program requirements for RP issues
- Demonstrate transparency with the inspector

Baseline Inspection Program

- All RS IPs are publicly available on the NRC Public Web Page
- Baseline inspection schedules are announced 18 months in advance
- NRC strives to implement the inspection program in a consistent and reliable fashion

Baseline Inspection Program

- NRC holds monthly counterpart meetings, annual counterpart meeting, and participates in industry RPM and Effluent NEI conferences
- Entrance and Exit meetings with plant management
- Unresolved Items (URIs)
- All findings are preliminary pending NRC management review

Important Records

IP 71124.01 Radiological Hazard Assessment & Exposure Controls

- Changes to Plant Operations (fuel reliability, power uprates, permanent plant shielding changes, spills) since last inspection
- Plant radiological hazard characterizations (beta/gamma, alpha, and neutron)
- Non-fuel SFP Inventory
- Surveys/evaluations for radiological events (intakes, spills)
- Dose and dose rate alarms (PI and HRA concerns only!)

Important Records

~~IP 71124.02 - Occupational ALARA Planning and Controls~~

- ALARA Planning Documents for Current Outage
- Most Recent Outage Report
- Strategic ALARA Plan
- ~~• Actions taken when work exceeds estimates emergent work~~
- ~~• ALARA Mtg Attendance~~
- ~~• EPRI Surveys~~
- ~~• Work in Progress Reviews~~

ALARA is Still the LAW!

Important Records

IP 71124.03 In-Plant Airborne Radioactivity Control and Mitigation

- Surveillance on charcoal and HEPA filters and in-plant installed ventilation systems
- Surveillance on portable HEPA units
- Breathing air quality certifications
- CAM calibration and set-point determinations
- TEDE ALARA evaluations
- SCBA Surveillance records (past 2 years)
- Training/certification records for individuals performing SCBA maintenance

Important Records

71124.04 Occupational Dose Assessment

- NVLAP Accreditation
- Prospective Evaluation
- EPRI Alpha Characterization Study
- SRD/DLR Correlations
- Internal & Skin Dose Assessments
- Declared Pregnant Workers
- Multibadging/EDEX
- Neutron Spectral Studies
- Area TLD Monitoring Results

Important Records

IP 71124.05 Radiation Monitoring Instrumentation

- Calibration records for CHRMs and ARMs
- Calibration records for Effluent Monitors
- Source Certificates showing traceability to primary calibration for the sources used above
- Portable instrument calibration records
- WBC calibrations
- Instrument calibrator calibrations
- HPGE Detector Calibrations

Important Records

IP 71124.06 Radioactive Gaseous and Liquid Effluent Treatment

- Records of changes to effluent monitoring systems (10CFR50.59)
- ~~Effluent Radiation monitor calibrations~~
- Stack Flow Rate Instrument Calibrations
- Records of Compensatory Monitoring
- Evaluations of abnormal releases
- ~~Certificates of traceability for primary and secondary calibrations of effluent monitors~~
- Basis for effluent monitor setpoints and any changes
- Land Use Census
- Basis for any ODCM changes

Important Records

71124.07 Radiological Environmental Monitoring Program

- Met Tower instrument calibrations
- Assessment of any positive sample results
- Changes to ODCM
- 50.75G decommissioning file
- Interlaboratory cross check participation and/or Vendor Lab QC/Interlaboratory results/certifications
- GWPI Program and results

Important Records

IP 71124.08 Radioactive Solid Waste Processing & Radioactive Material Handling, Storage, & Transportation

- 10CFR61 Data and QA methodology
- Records of changes made to the radioactive waste processing systems since the last inspection
- PCP and any changes
- Shipper certifications
- Shipping records since the last inspection
- Records showing compliance with Part 37 (annual training)

Issue Screening

Topics

(Slide 23)

- Surveys in areas such as S/Gs, Cavities, RWCU systems, Rx Heads are not being analyzed for alpha IAW procedure
- Observing patterns of not counting the highest activity and required number of smears for alpha as required by NISP procedures to determine/validate the alpha level

Issue Screening

Topics

- RP technicians counting higher activity smears (>50K)
- Licensees making equipment available for counting higher activity smears for alpha
- Identifying and correcting issues

Issue Screening

Topics

- Alpha characterization studies using smear data which is inadequate to demonstrate that B/gamma to alpha activity ratios of $>30k$ but still conclude that they are an alpha Level I plant?
- Licensees tracking areas but not systems where alpha level II conditions exist. Once systems are closed and deconned, licensee bases alpha level on smears of area post decon?
- Conflicting guidance in site procedures?

Issue Screening

Topics

- Licensees tracking systems where previous surveys indicate higher alpha levels and therefore failing to implement controls in areas > Level 1?
- Supervision and management understanding of the technical requirements and purpose of the alpha program?

Issue Screening

Does a Violation Exist?

- Licensees following procedures for surveying for alpha developed from EPRI guidance. Tech Spec RG 1.33 Violation?
- Licensees assuming that they are Level I because data collection methods are not intrusive enough or inadequate to demonstrate B/gamma to alpha activity ratios are >30K as required by plant procedures developed from EPRI guidance. Tech Spec RG 1.33 Violation?

Issue Screening

Does a Violation Exist?

Note: Shouldn't compliance with licensee procedures ensure that surveys are adequate to meet regulatory requirements?

- 10CFR20.1501(a) Each licensee shall make or cause to be made, surveys of areas, including the subsurface, that —
 - (1) May be necessary for the licensee to comply with the regulations in this part; and
 - (2) Are reasonable under the circumstances to evaluate—
 - (i) The magnitude and extent of radiation levels; and
 - (ii) Concentrations or quantities of residual radioactivity; and
 - (iii) The potential radiological hazards of the radiation levels and residual radioactivity detected

Issue Screening

Hypothetical Violation

Fictional Example: NRC Identified GREEN NCV of 10 CFR 20.1501(a)(1)(2)(iii) which requires in part, that licensees perform surveys to evaluate potential radiological hazards. Contrary to this, licensee failing to perform surveys which are adequate to assess potential alpha hazards in the plant. Specifically:

- Licensee failing to comply with survey procedure requirements for evaluating alpha contamination and,
- Data used in alpha characterization is not adequate to demonstrate that B/gamma to alpha activity ratios are >30
- In addition, some surveys demonstrating higher Alpha Levels exist and are not incorporated into the program

Issue Screening

Performance Deficiency?

(Slide 23 Definition)

Failure to perform adequate surveys for alpha contamination

Is the PD “More-Than-Minor?”

(Slide 25)

Issue Screening

(Slide 25) Is the answer to one of the three questions “YES?”

The performance deficiency is more than minor because **if left uncorrected, it would have the potential to lead to a more significant safety concern.** Performing surveys that do not accurately assess alpha contamination could result in potential unmonitored internal exposure.

Issue Screening

Cross Cutting Aspect (Slide 12, IMC - 310)

- CCA - H.1 - Resources: Leaders ensure that personnel, equipment, procedures, and other resources are available and adequate to support nuclear safety. Licensee management did not ensure that personnel, equipment, procedures, and other resources were available and adequate to assess the alpha hazard in the plant.

Thoughts on Alpha

EPRI Technical Report 3002000409, “Alpha Monitoring Guidelines for Operating Nuclear Power Stations”

Recommendation #1: Plant areas and systems be classified according to the abundance of loose alpha contamination relative to the presence of loose beta-gamma contamination as follows:

Thoughts on Alpha

Level I Areas: Minimal <10% of Internal Dose
 $\beta\gamma/\alpha$ Ratio > 30000

Level II Areas: Significant >10% & <90% of Internal
Dose $\beta\gamma/\alpha$ Ratio < 30000 and > 300

Level III Areas: Elevated >90% of Internal Dose
 $\beta\gamma/\alpha$ Ratio < 300

Thoughts on Alpha

Question: What is the minimum $\beta\gamma$ activity you need on a smear to demonstrate that you are a Level I Plant?

Answer: $\beta\gamma/\alpha$ Ratio of 30K Requires a 600K DPM smear to assure a Level I area if the α MDA is 20 DPM

$$(600K \text{ DPM } \beta/\gamma) / (20 \text{ DPM } \alpha) = 30K$$



Final Tips

- Ensure program changes are thoroughly reviewed against FSAR, ODCM and TRM requirements and perform adequate justification for changes
- Ensure your plants can implement procedures (e.g., NISP, and fleet procedures) and you, supervision, and staff understand the technical basis for procedural requirements when necessary
- Clearly state the problems and including requirement not met in CAP entries
- Be forthcoming on issues that arise during inspections
- Keep your inspector informed!