Efficiency Opportunity

March 26, 2019

Efficiency Opportunity: 19–RP–02

Self-Protection for Radiological Work Activities

Select utility/plant radiation workers will be trained and qualified to perform self-protection worker activities with low radiological risks for themselves only. This initiative will allow radiological protection staffs to focus oversight on higher radiological risk activities, and improve the work efficiency for self-protection workers.

Issue: EO 19-RP-02, Self-Protection for Radiological Work Activities

Summary of Efficiency Opportunity

- Desired end-state – Select utility/plant radiation workers are trained and qualified to perform independent radiological monitoring for activities with manageable radiological risks for themselves only. Qualified workers perform and document radiological surveys, establish effective radiological controls and monitor radiological conditions during defined work activities. Radiological training and qualification are commensurate with assigned tasks.

- Value proposition (vision of excellence)— Trained and qualified workers will be authorized to perform self-briefings and self-monitoring for select activities, improving worker efficiency while increasing radiation protection (RP) resource availability to support oversight of higher risk tasks. Initial training and qualification as well as annual continued training will be conducted using the Systematic Approach to Training (SAT) process.

  Self-protection workers can perform surveys in support of:

  - Work in overhead areas (> seven feet);
  - Decontamination and release of tools and equipment from contaminated areas within the radiological controlled area;
  - Establish and control small contaminated areas, typically less than 10 ft^2 in support of their work, such as an instrument rack breach;
  - Approved system breaches;
  - Work on electrical systems, including breakers, panels, MCCs, and power packs;
  - Work on instrument racks and instrumentation, including instrument rack breaches;
  - LLRTs and MOV/AOV tests and maintenance activities;
  - Hydraulic Control Unit maintenance, charging and draining activities;
  - Filling and draining of approved systems;
  - Scaffold erection and removal;
  - Collect and transport trash and laundry in accordance with NISP-RP-07;
  - Penetration barrier removal and installation;

- Hot Shop tool and equipment decontamination (< 50,000 dpm/100cm2 beta-gamma or < 20 dpm/100cm2 alpha);
- Obtaining and moving chemistry samples;
- Routine surveys, as approved by RP Supervision;
- Perform surveys to validate conditions as requested/approved by RP supervision.

Worker Experience

Utility/plant workers selected for self-protection qualification shall be qualified radiation workers and have a minimum of 24 months of in-plant (i.e. RCA) nuclear power plant experience in areas such as operations, engineering, I&C, chemistry, etc.

Examples of plant staff likely to benefit from self-protection qualifications include:

- Operators;
- Radioactive Waste Handlers;
- Decontamination Technicians;
- Chemistry Technicians;
- Instrumentation and Control Technicians;
- Electrical Maintenance Technicians;
- Mechanical Maintenance Technicians;
- Fix-It-Now team members.

Relevant Standards

- ANSI N18.1-1971 and ANSI/ANS-3.1-1981, "Selection, Qualification, and Training of Personnel for Nuclear Power Plants."
- Performance Objectives and Criteria (INPO) – Radiological Safety RS.1
- Performance Objectives and Criteria (INPO) – Nuclear Professionals NP.1
- Performance Objectives and Criteria (INPO) – Radiation Protection Fundamentals RP.1
- Performance Objectives and Criteria (INPO) – Radiation Dose Control RP.2
- Performance Objectives and Criteria (INPO) - Radioactive Contamination Control RP.3
- Performance Objectives and Criteria (INPO) - Radioactive Material Control RP.4
- ACAD 02-001 Rev1, "The Objectives and Criteria for Accreditation of Training in the Nuclear Power Industry".
- ACAD 93-008, Rev 1, "Guidelines for Training and Qualification of Radiological Protection Technicians".
- NEI 07-08, Revision 3, "Generic FSAR Template Guidance for Ensuring That Occupational Radiation Exposures Are As Low As Is Reasonably Achievable (ALARA)."
- NISP-RP-101, "Radiation Self-Protection Worker (SPW) Program".

Recommended Industry Actions

- Develop a common initial, re-qualification, and continuing training program for self-protection workers per NISP-RP-101. Qualification should be commensurate with worker job functions. Task qualifications will include, but not limited to, the selection and use of beta and gamma radiation and contamination survey instruments, job coverage techniques and methods, radiation survey and documentation requirements, contamination sampling and analysis, transfer of radioactive materials within the radiological controlled area, and handling and use of radioactive sources.

- Develop the standard oversight structure for site Radiation Protection organizations to support the self-protection program (e.g. verification of survey results logged by self-protection workers, routine observations of self-protection worker practices, and monitoring of relevant indicators pertaining to RP work practices).
- Work group supervision performs oversight and monitoring of self-protection workers.
- Communicate this initiative to ANI and NRC.

Change Management Considerations

Company Actions

- Implement NISP-RP-101, "Radiation Self-Protection Worker (SPW) Program".
- Determine which plant staffs and individuals should be selected for self-protection worker training and qualification. Consider the following when making this determination:
    - the type of work activities and frequencies assigned to each work group (it may not be cost-beneficial to train and qualify some work groups in self-protection) and
    - level of craft proficiency for the selected the workers.

- Implement a training and qualification program (including continuing training) for the candidates using the Systematic Approach to Training (SAT) process.
- Develop a change management plan that includes communication of this initiative to plant staff, the basis for selecting workers, the training and qualification process, and implementation date

Guiderails

- Station Radiation Protection management and work group supervision who oversee workers qualified in self-protection will perform:
    - periodic verification of survey results logged by self-protection workers ;
    - routine observations of self-protection worker practices; and
    - monitoring of relevant indicators pertaining to RP work practices with focus on adverse trends.

- To limit risk, self-protection workers are **not** allowed to implement or perform self-protection activities under the following radiological conditions or tasks:
    - Dose rates >80 mR/hr general area
    - Contamination levels >50,000 dpm/100cm2 (beta-gamma) and alpha contamination levels >20 dpm/100cm2.
    - High Radiation Area (HRA)
    - Locked High Radiation Area (LHRA)
    - Very High Radiation Area (VHRA)
    - Alpha Level II or III areas;
    - Airborne Radioactivity Area;
    - Discrete Radioactive Particle Area;
    - Unrestricted release of tools and equipment from the RCA;
    - Release of items from Alpha Level II and III areas.

Efficiencies Gained Evaluation

- Allowing select workers to monitor and document radiological data specific to their work activities will improve work execution efficiencies and allow RP personnel to focus resources on higher risk tasks.

Industry Review:

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