



UNITED STATES
NUCLEAR REGULATORY COMMISSION
Region III
LISLE, ILLINOIS 60532

June 29, 2006

MEMORANDUM TO: Christine Lipa, Chief
Reactor Projects Branch 4
Division of Reactor Projects

FROM: Wayne Slawinski, Acting Team Leader */RA/*
Plant Support Team
Division of Reactor Safety

SUBJECT: PALISADES NUCLEAR POWER PLANT DRS INPUT TO
INTEGRATED REPORT 05000255/2006004

Enclosed is the DRS input for the Palisades Nuclear Plant Integrated Inspection Report 05000255/2006004. This input provides the results of a recent inspection of the licensee's access control to radiologically significant areas program and the ALARA planning and controls program under the occupational radiation safety cornerstone. I have reviewed this input and have determined it is ready for distribution to the licensee and dissemination to the public.

The RPS inputs are as follows:

- IP71121.01: 18 samples completed; and
- IP71121.02: 17 samples completed.

Enclosure: Input to Inspection Report 05000255/2006004

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Cover Letter

T No input, no significant findings.

Title Page

Inspectors: J. House, Senior Radiation Specialist
J. Cassidy, Radiation Specialist

SUMMARY OF FINDINGS

ADAMS boilerplate - Inspectable area: Routine Baseline Inspection

Modify second paragraph as follows:

The baseline inspection was conducted by regional health physics inspectors.

A. Inspector-Identified and Self-Revealed Findings

None.

B. Licensee-Identified Violations

Violations of very low safety significance, which were identified by the licensee have been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. These violations and corrective actions are listed in Section 4OA7 of this report.

REPORT DETAILS

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control to Radiologically Significant Areas (71121.01)

.1 Plant Walkdowns and Radiation Work Permit Reviews

a. Inspection Scope

The inspectors identified four radiologically significant work areas within radiation areas, high radiation areas (HRA) and airborne areas in the auxiliary and containment buildings. Selected work packages and radiation work permits (RWP) were reviewed to determine if radiological controls including surveys, postings, air sampling data and barricades were acceptable. Work areas included:

- Work Order 26447; RX Head Insp - Under Reactor Head Entries;
- Work Order 26964; E-50B, Perform Eddy Current Testing/Tube Plugging;
- Work Order 26963; E-50A, Perform Eddy Current Testing/Tube Plugging; and
- Work Order 25806; Removal of Incores and RVLMS Probes.

This review represented one sample.

The identified radiologically significant work areas were walked down and surveyed to determine if the prescribed RWP, procedures, and engineering controls were in place, that licensee surveys and postings were complete and accurate, and that air samplers were properly located. This review represented one sample.

The inspectors reviewed selected RWPs, and associated radiological controls used to access these and other radiologically significant areas, and evaluated the work control instructions and control barriers that were specified in order to determine if the controls and requirements provided adequate worker protection. Site technical specification requirements for HRAs and locked high radiation areas were used as standards for the necessary barriers. Electronic dosimeter alarm set points for both integrated dose and dose rate were evaluated for conformity with survey indications and plant policy. The inspectors attended pre-job briefings to determine if instructions to workers emphasized the actions required when their electronic dosimeters noticeably malfunctioned or alarmed. This review represented one sample.

The inspectors reviewed job planning records and interviewed licensee representatives to determine if there were airborne radioactivity areas in the plant with a potential for individual worker internal exposures of >50 millirem committed effective dose equivalent. Barrier integrity and engineering controls performance, such as high efficiency particulate filtration ventilation system operation and use of respiratory protection, were evaluated for worker protection. Work areas having a history of, or the potential for, airborne transuranic isotopes were reviewed to determine if the licensee had considered the potential for transuranic isotopes and provided appropriate worker protection. This review represented one sample.

The adequacy of the licensee's internal dose assessment process for internal exposures >50 millirem committed effective dose equivalent was assessed to determine if affected personnel were properly monitored utilizing calibrated equipment and that the data was analyzed and internal exposures were properly assessed in accordance with licensee procedures. This review represented one sample.

b. Findings

No findings of significance were identified.

.2 Problem Identification and Resolution

a. Inspection Scope

The inspectors reviewed the licensee's self-assessments, audits, and condition reports related to the access control program to determine if identified problems were entered into the corrective action program for resolution. This review represented one sample.

Corrective action reports related to access controls and high radiation area radiological incidents (non-performance indicator occurrences identified by the licensee in HRAs <1Rem/hr) were reviewed. Staff members were interviewed and corrective action documents were reviewed to determine if follow-up activities were being conducted in an effective and timely manner commensurate with their importance to safety and risk based on the following:

- Initial problem identification, characterization, and tracking;
- Disposition of operability/reportability issues;
- Evaluation of safety significance/risk and priority for resolution;
- Identification of repetitive problems;
- Identification of contributing causes;
- Identification and implementation of effective corrective actions;
- Resolution of Non-Cited Violations tracked in the corrective action system; and
- Implementation/consideration of risk significant operational experience feedback.

This review represented one sample.

The inspectors evaluated the licensee's process for problem identification, characterization, prioritization, and determined if problems were entered into the corrective action program and resolved. For repetitive deficiencies and/or significant individual deficiencies identified in the problem identification and resolution process, the inspectors determined if the licensee's self-assessment activities also identified and addressed these deficiencies. This review represented one sample.

The inspectors discussed performance indicators with the radiation protection staff and reviewed data from the licensee's corrective action program to determine if there were any performance indicators for the occupational exposure cornerstone that had not been reviewed. There were none to evaluate. The licensee is evaluating an event that occurred on April 18, 2006, as a potential performance indicator occurrence, as discussed in section 4OA7 of this report. This evaluation will be completed before submitting the performance indicator data to the NRC for the second quarter 2006. This review represented one sample.

b. Findings

No findings of significance were identified.

.3 Job-In-Progress Reviews

a. Inspection Scope

The inspectors evaluated selected jobs being performed in radiation areas, potential airborne radioactivity areas, and HRAs for observation of work activities that presented the greatest radiological risk to workers and included areas where radiological gradients were present (Section 2OS1.1). This involved work that was estimated to result in higher collective doses, and included vessel head decontamination, steam generator inspection, and incore instrumentation activities, other selected work areas in the containment building.

The inspectors reviewed radiological job requirements including RWP and work procedure requirements, and attended as-low-as-is-reasonably-achievable (ALARA) job briefings. Job performance was observed with respect to these requirements to determine if radiological conditions in the work areas were adequately communicated to workers through pre-job briefings, and radiological condition postings. This review represented one sample.

The inspectors also evaluated the adequacy of radiological controls including required radiation, contamination and airborne surveys for system breaches, and entry into HRAs.

Radiation protection job coverage, including direct visual surveillance by radiation protection technicians, along with the remote monitoring and teledosimetry systems and contamination control processes, was evaluated to determine if workers were adequately protected from radiological exposure. This review represented one sample.

Work in high radiation areas having significant dose rate gradients was observed to evaluate the application of dosimetry to effectively monitor exposure to personnel, and to determine if licensee controls were adequate. The inspectors observed radiation protection coverage of the vessel head decontamination and steam generator work, which involved controlling worker locations based on radiation survey data and real time monitoring using teledosimetry in order to maintain personnel radiological exposure ALARA. This review represented one sample.

b. Findings

No findings of significance were identified.

.4 High Risk Significant, High Dose Rate High Radiation Area, and Very High Radiation Area Controls

a. Inspection Scope

The inspectors reviewed the licensee's performance indicators for high risk, high dose rate HRAs, and for very high radiation areas to determine if workers were adequately protected from radiological over-exposure. Discussions were held with radiation protection management concerning high dose rate HRA, including procedural changes that had occurred since the last inspection. This was done to determine if any procedure modifications had substantially reduced the effectiveness and level of worker protection. This review represented one sample.

During plant walkdowns, the posting and locking of entrances to high dose rate HRAs, and very high radiation areas were reviewed for adequacy. This review represented one sample.

b. Findings

No findings of significance were identified.

.5 Radiation Worker Performance

a. Inspection Scope

During job performance observations, the inspectors evaluated radiation worker performance with respect to stated radiation protection work requirements. The inspectors also evaluated whether workers were aware of the significant radiological conditions in their workplace, the RWP controls and limits in place, and that their performance had accounted for the level of radiological hazards present. This review represented one sample.

Radiological problem reports, which found that the cause of an event resulted from radiation worker errors, were reviewed to determine if there was an observable pattern

traceable to a similar cause, and to determine if this perspective matched the corrective action approach taken by the licensee to resolve the reported problems. This review represented one sample.

b. Findings

No findings of significance were identified.

.6 Radiation Protection Technician Proficiency

a. Inspection Scope

The inspectors observed and evaluated RP technician performance with respect to RP work requirements. This was done to evaluate whether the technicians were aware of the radiological conditions in their workplace, the RWP controls and limits in place, and if their performance was consistent with their training and qualifications with respect to the radiological hazards and work activities. This review represented one sample.

Radiological problem reports, which found that the cause of an event was RP technician error, were reviewed to determine if there was an observable pattern traceable to a similar cause, and to determine if this perspective matched the corrective action approach taken by the licensee to resolve the reported problems. This review represented one sample.

b. Findings

No findings of significance were identified.

2OS2 As Low As Is Reasonably Achievable (ALARA) Planning And Controls (71121.02)

.1 Inspection Planning

a. Inspection Scope

The inspectors reviewed plant collective exposure history, current exposure trends along with ongoing and planned activities in order to assess current performance and exposure challenges. This included determining the plant's current three-year rolling average collective exposure and comparing the site's radiological exposure on a yearly basis for the previous five years. This review represented one sample.

The inspectors reviewed the outage work scheduled during the inspection period along with associated work activity exposure estimates including four work activities which were likely to result in the highest personnel collective exposures. This review represented one sample.

Site specific trends in collective exposures and source-term measurements were reviewed. This review represented one sample.

Procedures associated with maintaining occupational exposures ALARA, and processes used to estimate and track work activity specific exposures were reviewed. This review represented one sample.

b. Findings

No findings of significance were identified.

.2 Radiological Work Planning.

a. Inspection Scope

The inspectors evaluated the licensee's list of work activities, ranked by estimated exposure, that were in progress and selected the four work activities of highest exposure significance. This review represented one sample.

The inspectors reviewed the ALARA work activity evaluations, exposure estimates, and exposure mitigation requirements in order to determine if the licensee had established procedures, along with engineering and work controls, that were based on sound radiation protection principles in order to achieve occupational exposures that were ALARA. This also involved determining that the licensee had reasonably grouped the radiological work into work activities, based on historical precedence, industry norms, or special circumstances. This review represented one sample.

The interfaces between operations, radiation protection, maintenance, maintenance planning, scheduling and engineering groups were evaluated to identify interface problems or missing program elements. This review represented one sample.

The integration of ALARA requirements into work procedures and RWP documents was evaluated to determine if the licensee's radiological job planning would reduce dose. This review represented one sample.

Shielding requests from the radiation protection group were evaluated with respect to dose rate reduction and reduced worker exposure, along with engineering shielding responses follow up. This review represented one sample.

The inspectors reviewed work activity planning to determine if there was consideration of the benefits of dose rate reduction activities such as shielding provided by water filled components and piping, job scheduling, along with shielding and scaffolding installation and removal activities. This review represented one sample.

b. Findings

No findings of significance were identified.

.3 Job Site Inspections and ALARA Controls

a. Inspection Scope

The inspectors selected four work activities in radiation areas, potential airborne radioactivity areas, and HRAs for observation, emphasizing work activities that presented the greatest radiological risk to workers. Jobs that were expected to result in significant collective doses and involved potentially changing or deteriorating radiological conditions were observed. These included vessel head decontamination, steam

generator inspection, and in core instrumentation activities. The licensee's use of ALARA controls for these work activities was evaluated using the following:

- The use of engineering controls to achieve dose reductions was evaluated to determine if procedures and controls were consistent with the ALARA reviews; that sufficient shielding of radiation sources was provided for, and that the dose expended to install/remove the shielding did not exceed the dose reduction benefits afforded by the shielding. This review represented one sample.
- Job sites were observed to determine if workers were utilizing the low dose waiting areas and were effective in maintaining their doses ALARA by moving to the low dose waiting area when subjected to temporary work delays. This review represented one sample.
- The inspectors attended ALARA pre-job briefings and observed ongoing work activities to determine if workers received appropriate on-the-job supervision to ensure the ALARA requirements were met. This included determining if the first-line job supervisor ensured that the work activity was conducted in a dose efficient manner by minimizing work crew size, ensuring that workers were properly trained, and that proper tools and equipment were available when the job started. This review represented one sample.

b. Findings

No findings of significance were identified.

.4 Source-Term Reduction and Control

a. Inspection Scope

The inspectors reviewed licensee records to determine the historical trends and current status of tracked plant source terms and determined if the licensee was making allowances and had developed contingency plans for expected changes in the source term due to changes in plant fuel performance issues or changes in plant primary chemistry. This review represented one sample.

The inspectors determined if the licensee had developed an understanding of the plant source-term, which included knowledge of input mechanisms in order to reduce the source term. The licensee's source-term control strategy, which included cobalt reduction plus a shutdown and operating chemistry plan which can minimize the source term external to the core, was evaluated. Other methods used by the licensee to control the source term, including component/system decontamination, hot spot flushing and the use of shielding, were evaluated. These reviews represented one sample.

The licensee's process for identification of specific sources was reviewed along with exposure reduction actions and the priorities the licensee had established for implementation of those actions. Results achieved against these priorities since the last refueling cycle were reviewed. For the current assessment period, source-term reduction evaluations were verified, and actions taken to reduce the overall source-term were compared to the previous year. These reviews represented one sample.

b. Findings

No findings of significance were identified.

.5 Radiation Worker Performance

a. Inspection Scope

Radiation worker and RP technician performance was observed during work activities being performed in radiation areas, airborne radioactivity areas, and HRAs that presented the greatest radiological risk to workers. The inspectors evaluated whether workers demonstrated the ALARA philosophy in practice by being familiar with the work activity scope and tools to be used, by utilizing ALARA low dose waiting areas, and that work activity controls were being complied with. Also, radiation worker training and skill levels were reviewed to determine if they were sufficient relative to the radiological hazards and the work involved. This review represented one sample.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES (OA)

4OA6 Meeting(s)

.2 Interim Exit Meetings

An interim exit meeting was conducted for:

- Access control to radiologically significant areas, and the ALARA planning and controls program with Mr. P. Harden on April 14, 2006.

4OA7 Licensee-Identified Violations

The following violations of very low safety significance (Green) were identified by the licensee and are violations of NRC requirements which meet the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as NCVs.

Cornerstone: Occupational Radiation Safety

Technical Specification 5.7.2 requires that high radiation areas greater than 1.0 rem/hour at 30 centimeters from the radiation source and within a larger area where no enclosure can be reasonably constructed shall be barricaded, conspicuously posted, and a clearly visible flashing light shall be activated as a warning device. Technical Specification 5.4.1 requires that written procedures be established and implemented for activities provided in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Procedures specified in Regulatory Guide 1.33 include radiation protection procedures for access control to radiological areas, which are provided by licensee procedure Administrative Procedure 7.13, "Radiological Area Access" Revision 11. The procedure requires that workers ensure and verify that swing gates are returned to the closed position after passing through. Contrary to these requirements, on April 18, 2006, two individuals

working in a high radiation area rotated a swing gate to move a large piece of equipment and failed to return the swing gate to the original configuration. This condition defeated the barricade and the area was not conspicuously posted. This incident is documented in the licensee's corrective action program as AR 01024675. This issue represents a finding of very low safety significance because it did not involve ALARA planning or work controls, there was no overexposure or substantial potential for an overexposure to the workers that entered the high radiation area, nor was the licensee's ability to assess worker dose compromised.

Technical Specification 5.4.1 requires that written procedures be established and implemented for activities provided in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Procedures specified in Regulatory Guide 1.33 include radiation protection procedures for personnel monitoring, which are provided by licensee procedure FP-RP-DP-01, "Dosimetry Program" Revision 0. The procedure requires that workers wear the assigned TLD at all times when in the Radiologically Controlled Area (RCA). Contrary to these requirements, on March 20, 2006, an individual conducted radiography activities inside the RCA without wearing the assigned TLD. This incident is documented in the licensee's corrective action program as AR 01019453. This issue represents a finding of very low safety significance because it did not involve ALARA planning or work controls, there was no overexposure or substantial potential for an overexposure to the worker, nor was the licensee's ability to assess worker dose compromised.

KEY POINTS OF CONTACT

Licensee

C. Moeller, Radiation Protection General Supervisor
B. Patrick, Radiation Protection Manager
G. Sturm, ALARA Specialist

LIST OF DOCUMENTS REVIEWED

2OS1 Access Control to Radiologically Significant Areas: and
2OS2 ALARA Planning And Controls

FP-RP-DP-01; "Dosimetry Program" Revision 0

Administrative Procedure 7.13; "Radiological Area Access" Revision 11

AR 01024675; Radiography performed without primary/secondary dosimetry

WI-RSD-H-003; Control of Radiography

AR 01024675; Movement of Locked High Radiation Area Boundary Swing Gate

AR 0102302; Crane controls not properly secured and controlled located in the Auxiliary Building Clean Waste Filter Transfer Area

QF-1203; Radiological Work Assessment Form; Work Order/Task No. 26447; approved March 31, 2006

QF-1204; Radiological Work Assessment Form Contamination Control; Work Order 26447; approved March 31, 2006

QF-1205; Radiological Work Assessment Form Exposure Control; Work Order 26447; approved March 31, 2006

QF-1206; Radiological Work Assessment Form Internal Exposure Control; Work Order 26447; approved March 31, 2006

QF-1207; Radiological Planning Checklist; Work Order 26447; approved March 31, 2006

QF-1209; Radiological Pre-Job Briefing Form; Work Order 26447; no date provided

RWP 583; RX Head Insp - Under Reactor Head Entries; dated March 30, 2006

QF-1203; Radiological Work Assessment Form; Work Order/Task No. 26447; approved March 31, 2006

QF-1204; Radiological Work Assessment Form Contamination Control; Work Order 25806; approved March 31, 2006

QF-1205; Radiological Work Assessment Form Exposure Control; Work Order 25806; approved March 31, 2006

QF-1206; Radiological Work Assessment Form Internal Exposure Control; Work Order 25806; approved March 31, 2006

QF-1207; Radiological Planning Checklist; Work Order 25806; approved March 31, 2006

QF-1209; Radiological Pre-Job Briefing Form; Work Order 25806; no date provided

RWP 597; RX Head Disassembly and Reassembly Maint.; dated March 27, 2006

LIST OF ACRONYMS USED

ALARA	As Low As Is Reasonably Achievable
AR	Action Request
HRA	High Radiation Area
RP	Radiation Protection
RWP	Radiation Work Permit