

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-255/89025(DRSS)

Docket No. 50-255

License No. DPR-20

Licensee: Consumers Power Company
1945 West Parnall Road
Jackson, MI 49201

Facility Name: Palisades Nuclear Generating Plant

Inspection At: Palisades Site, Covert, Michigan

Inspection Conducted: August 14 through October 9, 1989

Inspector: C. F. Gill
C. F. Gill

10/20/89
Date

Approved By: W. G. Snell
W. G. Snell, Chief
Radiological Controls and
Emergency Preparedness Section

10/20/89
Date

Inspection Summary

Inspection on August 14 through October 9, 1989 (Report No. 50-255/89025(DRSS))

Areas Inspected: Routine, unannounced inspection of the radwaste/transportation program, including: organization and management controls (IP 83750, 84750), training and qualifications (IP 83750, 84750), gaseous radwaste (IP 84750, 84724), liquid radwaste (IP 84750, 84723), solid radwaste (IP 83750, 84750), transportation activities (IP 83750), audits and appraisals (IP 83750, 84750), effluent reports (IP 84750), effluent control instrumentation (IP 84750, 93702), primary coolant radiochemistry (IP 84750), air cleaning systems (IP 84750, 84724), and recurrent very high radiation area entry control incidents (93702).

Results: The organizational structure, management controls, staffing levels, and upper management support for the radwaste/transportation program appeared generally adequate. Four violations were identified: failure to follow procedural requirements regarding conduction of an engineering evaluation before placement of shielding on system components - Section 3 (Unresolved Item No. 255/88021-08); failure to report an abnormal gaseous radioactive release in the Semiannual Radioactive Effluent Release Report - Section 11; failure to lock doors to prevent unauthorized entry into each high radiation area in which the radiation level is greater than 1000 mR/hour - Section 13; and failure of a

radwaste shipment to meet burial site requirements - Section 9. However, because the provisions of Section V.A of Appendix C to 10 CFR Part 2 have been satisfied, Notices of Violation will not be issued for the first two violations. Weaknesses were perceived in the gaseous batch release program (Section 6) and the ventilation system filter testing program (Section 14). Additional regulatory concerns were identified regarding the decontamination of the south radwaste building (Section 3, Open Item No. 255/85019-01), the licensee's request pursuant to 10 CFR 20.302 for in-place retention of contaminated soil adjacent to the south radwaste building (Section 3, Unresolved Item No. 255/86020-01), the steam generator and hotwell liquid release program (Section 7), containment atmospheric cleanup systems (Section 14), and the need for assurance that appropriate effluent instrumentation operability problems are reported as required in the Semiannual Radioactive Effluent Release Reports (Section 12).

DETAILS

1. Persons Contacted

#* C. Axtell, Senior Staff Health Physicist
@#*W. Beckman, Radiological Services Manager
#*E. Bogue, Radiological Safety Supervisor
#*J. Brunet, Licensing Analyst
G. Daggett, Engineering Section Supervisor
#*G. Ellis, Senior Nuclear Operations Analyst
#*M. Grogan, Radiation Materials Control (RMC) Supervisor
J. Hanson, Operations Superintendent
@#*L. Kenaga, Health Physics Superintendent
@#*D. Malone, Senior Nuclear Licensing Analyst
*R. Margol, QA Administrator
@#*T. Neal, RMC Administrator
@# L. Phillips, Senior Engineer
R. Westerhof, Senior Engineer

J. Heller, NRC Resident Inspector
*E. Swanson, NRC Senior Resident Inspector

The inspector also contacted other licensee employees.

*Denotes those present at the onsite interim exit meeting on August 18, 1989.

#Denotes those contacted by telephone during the period August 21 through October 9, 1989.

@Denotes those present at the exit meeting via telephone on October 9, 1989.

2. General

This inspection was conducted to review the radwaste/transportation program. The inspection included tours of the onsite facilities observation of work in progress, review of records, and discussions with licensee personnel.

3. Licensee Action on Inspection Findings

(Closed) Open Item (No. 255/85019-01): Implement actions to prevent future flooding of the south radwaste building (SRB) as a result of the cooling tower overflow events. The licensee has moved the dry-active waste (DAW) process equipment from the SRB to the new addition to the east radwaste building. At the time of the onsite inspection, the licensee still had two high radiation level contaminated filters stored in steel liners in the SRB concrete storage/conditioning vaults. Licensee representatives stated that the filters would be shipped to a radwaste burial site in the near future, the contaminated liners would be removed

from the SRB and the rest of the SRB would be decontaminated so that the building could be released for non-radiological storage. During plant tours, the inspector verified that the DAW process equipment had been moved to the new addition to the east radwaste building, the SRB was decontaminated with the exception of internals of the concrete storage/shielding vaults, and the level of water necessary to intrude into the vaults would need to be much higher than any historical water level due to previous cooling tower overflows (thus it appears highly unlikely that any potential future flooding of the building would spread contamination beyond the vault internals). This item is closed; however, the licensee's progress in decontaminating the rest of the south radwaste building will be reviewed further during future inspections (Open Item No. 255/89025-01).

(Closed) Unresolved Item (No. 255/86020-01): Disposition of contaminated material associated with cooling tower overflows/flooding of the south radwaste building. By letter dated January 25, 1988, the licensee modified their November 12, 1987 request pursuant to 10 CFR 20.302 for in-place retention of contaminated soil adjacent to the south radwaste building. The review of this revised application by NRR indicated that the request contained insufficient information for a complete NRC staff evaluation; therefore, by letter dated March 15, 1988, NRR requested additional information from the licensee. By letter dated June 27, 1988, the licensee supplied the requested additional information to NRR; however, in April 1989, NRR indicated that the approach proposed by the licensee was not acceptable and issued to the licensee a second request for additional information. At the time of the onsite inspection, the matter was still unresolved. Because the intent of this item was to track the licensee's initial request pursuant to 10 CFR 20.302 and the NRC response, the item is closed; however, a new item is opened to track the NRR resolution of this matter (Open Item No. 255/89025-02).

(Closed) Open Item (No. 255/87030-01): Review licensee's evaluation of an airborne incident in the Treated Waste Room. The inspector reviewed the closure package for this issue, dated April 11, 1989; no significant problems were noted. This matter is closed.

(Closed) Violation (No. 255/87030-02): Failure to follow process control program and radwaste burial site requirements. Licensee corrective actions outlined in the licensee's response dated February 4, 1988, were reviewed; no problems were noted.

(Closed) Violation (No. 255/87030-03): Failure to follow Department of Transportation regulations. Licensee corrective actions outlined in the licensee's response dated February 4, 1988, were reviewed; no problems were noted.

(Closed) Open Item (No. 255/88006-01): Review job history file for hot spot removal in the Spent Fuel Pool Heat Exchanger Room. The inspector reviewed the subject job history file (No. 212); no significant problems were noted. This matter is closed.

(Closed) Open Item (No. 255/88006-02): Review corrective actions regarding the 1987 QA Audit of the radiation protection program. The inspector reviewed the closure package for this issue, dated July 24, 1989; no significant problems were noted. This matter is closed.

(Open) Open Item (No. 255/88021-01): Licensee needs to evaluate the apparent desirability of improving the MPC-hr determination methodology. The licensee initiated Commitment Tracking Record (CTR) No. 89-03 on January 19, 1989 (with a requested April 10, 1989 completion date) in response to the commitment to evaluate the apparent need to use ICRP-30 methodology for determining levels of internally deposited radioactivity from whole body count results. The CTR was closed by a memorandum from a Radiological Safety Supervisor to the CTR 89-03 file, dated April 10, 1989. The memorandum concludes that it is not appropriate to modify the procedural (Procedure No. HP 8.2) methodology because the use of HP 8.2 would not result in significant underestimation of MPC-hours; however, this procedure will be changed later to reflect ICRP-30 methodology pursuant to proposed changes to 10 CFR 20. Although the licensee's evaluation has some merit and the licensee is aware of the limitations of the current methodology, the uncertainty regarding the schedule for implementation of the proposed changes to 10 CFR 20 indicates that a reconsideration of the conclusion of the evaluation by the licensee is desirable to preclude the potential for MPC-hour underestimation. This matter will be reviewed further during a future inspection.

(Closed) Open Item (No. 255/88021-02): Licensee needs to evaluate the apparent desirability of improving the location of the access control whole-body contamination monitors. CTR 89-04 was issued on January 19, 1989, to resolve this matter; the CTR was closed on August 24, 1989. The exit area outside door 105B, where the PCM-1Bs are located, is checked daily for contamination. Year-to-date, loose contamination has only been found three times. Daily and monthly checks at clean areas has reportedly not shown any contamination spread to clean areas. The licensee stated that due to space limitations and physical layout of the access control exit area, separate egress and ingress areas are not feasible at this time; but that HP personnel will continue to monitor the area for contamination. This item is closed.

(Closed) Open Item (No. 255/88021-03): Licensee needs to improve the marking/labeling of radioactive material containers/bags. The licensee initiated CTR 89-05 on January 19, 1989 (with a requested June 1, 1989 completion date) in response to the commitment to ensure that the yellow plastic bags used to store contaminated materials are properly marked/labeled with the dose rate and contamination level to inform personnel of the potential hazard associated with handling or unpacking the material. The licensee issued event report No. E-PAL-88-052 on December 5, 1988, to resolve the matter; and the event report was closed on August 24, 1989. The inspector reviewed closure package documentation and discussed the matter with appropriate licensee representatives; the corrective actions taken appear adequate. This item is closed.

(Closed) Open Item (No. 255/88021-04): Licensee needs to correct contamination control programmatic weaknesses. The licensee has successfully completed an extensive corrective action program regarding these weaknesses (see Section 4). This item is closed.

(Closed) Open Item (No. 255/88021-05): Licensee needs to correct an ALARA program weakness regarding the need for source term reduction. Personnel radiation exposure in 1988 was about 730 person-rem, which was one of the higher annual doses per reactor for a U.S. PWR. Although the licensee incurred much of the exposure on unanticipated outage work and on unusually extensive or one-time modification/maintenance activities, work planning deficiencies appear to have contributed to the high dose. Also, because of initial poor plant system design and previous poor operational and maintenance activities, the plant has been plagued with hot spots and relatively high general area radiation fields which impacted the dose. Although the licensee implemented a radiation source reduction plan three years ago, it has not been as effective as anticipated; much additional effort appears necessary to adequately reduce personnel exposure. The licensee's annual dose goal for 1989 is 400 person-rem, through mid-August the licensee remained within the dose projection curve. The licensee has recently embarked on a more extensive, long term project to significantly reduce plant radiation levels and thus future personnel exposure (see Section 4). This item is closed.

(Closed) Violation (No. 255/88021-06): Technical Specification 6.12.2 violation (failure to provide required access control for high radiation areas greater than 1000 mR/hour). Licensee corrective actions outlined in the licensee's response dated February 2, 1989 were reviewed; as discussed in Section 13 the corrective actions were inadequate to prevent recurrence. This item is closed.

(Closed) Open Item (No. 255/88021-07): Licensee needs to evaluate the apparent desirability of implementing a routine WBC operational check program. The CTR on this item was closed by a memorandum from a Radiological Safety Supervisor to the CTR 89-08 file, dated March 30, 1989. The memorandum indicates that the only check performed onsite for the two Helgeson WBCs is a daily background count for Co-58, Co-60, and Cs-137; no other performance trending information is collected onsite. Also, a summary of quality control checks performed by Helgeson Scientific Services is sent to the licensee every four months. Based on past reviews of these reports, the licensee has concluded that onsite operational checks are unnecessary. However, the licensee did agree to review and trend the recorded background counts; which the licensee believes should provide additional confidence in the reliable operation of the Helgeson WBCs. Since CTR 89-08 was closed, the licensee has purchased and implemented a new Canberra Fast Scan WBC, which has generally replaced the Helgeson WBCs for routine use. The licensee stated that routine functional and operational checks are performed on the Fast Scan WBC, including background checks, energy calibration checks, and efficiency determinations. This item is closed.

(Closed) Unresolved Item (No. 255/88021-08): Licensee needs to evaluate whether an adequate engineering evaluation was performed before shielding installation. On January 6, 1988, Radiological Safety Department (RSD) personnel placed four lead blankets over the SFP tilt pit drain line located in the SFP Hx Room; this was contrary to Procedure No. HP 1.6, Revision 1, Control and Use of Shielding and Associated Equipment, which requires that an engineering evaluation be conducted prior to shielding installation. Shielding Engineering Evaluation No. 53 was completed on January 7, 1988, to verify that the shielding had been properly installed. Although during the inspection and at the November 22, 1988 exit meeting the inspectors discussed their concerns regarding the apparent lack of an adequate engineering evaluation before shielding installation, the licensee did not initiate a Deviation Report (No. D-PAL-89-009) to investigate the violation of HP 1.6 requirements and to implement corrective action to prevent recurrence until January 19, 1989 (Inspection Report No. 50-255/88021(DRSS) was issued on January 3, 1989).

The corrective action to prevent recurrence was to add to the RSD Continuing Training Program a two hour training session regarding the circumstances surrounding this event, problems/corrective actions, and the requirements of Administrative Procedure No. 7.14, Control and Use of Shielding and Associated Equipment (which replaced Procedure No. HP 1.6). The inspector verified the adequacy of the training session and completion of the corrective action by review of the training session lesson plan and personnel training records, and discussions with licensee representatives; no problems were noted regarding the lesson plan and appropriate personnel attended the training session (training was completed on March 22, 1989).

Failure to conduct an engineering evaluation prior to the placement of four lead blankets on the SFP tilt pit drain line on January 6, 1988, was contrary to the requirements of Procedure No. HP 1.6 and thus a violation of Technical Specification 6.C.1 which requires adherence to procedural requirements. However, pursuant to Section V.A of Appendix C to 10 CFR Part 2, a Notice of Violation will not be issued for the isolated Severity Level V violation because the licensee initiated appropriate corrective action upon official notification of the discrepancy when Inspection Report No. 50-255/88021(DRSS) was issued on January 3, 1989 (Violation No. 255/89025-03).

The violation was identified; however, a Notice of Violation will not be issued.

(Closed) Open Item (No. 255/88021-09): Review changes made to allow RP personnel to communicate with divers and review any formalization of the policy that divers leave the water upon detection of suit leakage. The licensee initiated CTR 89-01 on January 13, 1989 (with a requested September 1, 1989, completion date) in response to the commitment to modify the underwater diving communication line to allow RP personnel to monitor conversations. CTR 89-01 was closed by the licensee after Radiation Work Plan No. 7.1 (of the Radiological Work Practices Manual) for Underwater Diving Operations was revised (Revision 1) on July 14, 1989. Section III, 7.0 of the revised work plan states that Health

Physics must have a method available to communicate with the diver and the diver's assistant. Although the work plan revision did not formalize the policy that divers are to leave the water upon detection of suit leakage, licensee representatives assured the inspector that RP administrative controls would preclude a recurrence of the October 7, 1988 event (see Section 9 of Inspection Report No. 50-255/88021(DRSS)). This item is closed.

(Closed) Open Item (No. 255/88021-10): Review licensee actions concerning apparent discrepancies among plant workers, RSD, and Training Department personnel regarding the proper interpretation of dedicated RP job coverage. The licensee initiated CTR 89-09 on January 17, 1989 (with a requested April 1, 1989 completion date) in response to the commitment to clarify the definition of dedicated RP job coverage. The CTR was closed by the licensee by a memorandum from a Radiological Safety Supervisor to the CTR 89-09 file, dated March 17, 1989. The memorandum discusses the closure review and additional corrective actions taken, including the findings that (1) policy memoranda (dated September 12, 1986 and August 11, 1987) and administrative documents (T/S 6.12.1.C, Procedure No. 7.03, and Radiation Safety Plan No. 20) have correct and consistent definitions of dedicated coverage; (2) RST training lesson plan HP-SEM-01, Revision 0, Radiation Safety Job Coverage, correctly stated the definition; (3) RST Training Lesson Plan Handout No. SH-HPI-10, Revision 0, Radiological Work Coverage, had an incorrect definition; and (4) the Palisades GET training manual does not specifically address the definition of dedicated RP job coverage.

In response to the above training deficiencies, the RS Supervisor issued (1) a memorandum requesting the Midland Training Center to incorporate the necessary change to the definition of dedicated coverage in the SH-HPI-10 training seminar and (2) a memorandum requesting the Palisades Training Department to incorporate the correct definition of dedicated coverage into the GET program. The inspector verified that current drafts of the Basic Radiation Worker Palisades Specifics General Employee Training Handout (SH-GET-BRW, August 21, 1989) and the RST Radiological Work Coverage Lesson Plan (No. HPI-13) with associated Training Handout No. SH-HPI-13, dated October 11, 1989 and August 17, 1989, respectively) contain corrected definitions of dedicated RP job coverage. The licensee stated that the corrected lesson plans would be approved and implemented in the near future; therefore, this matter is closed.

(Closed) Unresolved Item (No. 255/89018-03): On June 30, 1989, the 1R door to the Dirty Waste Drain Tank (T-60) Room was found to be unlocked and unattended in apparent violation of regulatory requirements. This matter is discussed in Section 13 of this inspection report; it was determined that the incident represents a violation of Technical Specification 6.12.2. This item is closed.

(Closed) Violation (No. 255/89025-03): Failure to follow procedural requirements regarding conduction of an engineering evaluation before placement of shielding on system components. Because the provisions of Section V.A of Appendix C to 10 CFR Part 2 have been satisfied, no Notice of Violation was issued; this item is closed (see Section 3, Unresolved Item No. 255/88021-08).

(Closed) Violation (No. 255/89025-06): Failure of a radwaste shipment to meet burial site requirements. The inspection showed that actions had been taken to correct the identified violation and to prevent recurrence. Our understanding of the licensee's corrective actions is described in Section 9 of this inspection report. Consequently, no reply to the violation is required and we have no further questions regarding this matter at this time.

(Closed) Violation (No. 255/89025-07): Violation of Technical Specification 6.9.3.1.A (failure to report an abnormal gaseous radioactive release in the Semiannual Radioactive Effluent Release Report). Because the provisions of Section V.A of Appendix C to 10 CFR Part 2 have been satisfied, no Notice of Violation was issued; this item is closed (see Section 11).

(Closed) Open Item (No. 255/89025-08): Licensee needs to revise procedural requirements to ensure that failures to return Technical Specification effluent instrumentation to operable status within 30 days are reported in the Semiannual Radioactive Effluent Release Reports. Because the licensee initiated appropriate action before the end of the inspection (see Section 12), this matter is closed.

(Closed) Violation (No. 255/89025-09): Violation of Technical Specification 6.12.2 (failure to lock doors to prevent unauthorized entry into each high radiation area in which the radiation level is greater than 1000 mR/hour). The inspection showed that actions had been completed/planned to correct the identified violation and to prevent recurrence. Our understanding of the licensee's corrective actions is described in Section 13 of this inspection report. Consequently, no reply to this violation is required and we have no further questions regarding this matter at this time.

4. Organization and Management Controls (IP 83750, 84750, 83722)

The inspector reviewed the licensee's organization and management controls for the radiation protection and radwaste/transportation program, including: organizational structure; staffing; effectiveness of procedures and other management techniques used to implement the program; and experience concerning self-identification and correction of program implementation weaknesses.

The organization of the Radiological Safety Department (RSD) remains about as discussed in Inspection Report No. 50-255/88021(DRSS), except for the addition of a radiological engineer and an increase in the radwaste handler staff from seven to twelve members. The turnover rate for the Radiation Safety Technicians (RST) staff continued to be low with well-qualified replacements. The Health Physics Superintendent and the Senior Staff Physicist switched positions in January 1989. The inspector reviewed the qualifications of the present Health Physics Superintendent (who has been designated the Radiation Protection Manager) regarding the RPM requirements as specified by Technical Specification 6.3.2 (meets or exceeds the qualifications stated in Regulatory Guide 1.8, September 1975); no problems were noted. The training and qualifications of other RSD staff members are discussed in Section 5 below.

Management support of RP/radwaste programs has been extensive with resultant improvements in several areas, although some areas appear to require additional management attention. Management initiated improvements include a significant reduction of personnel contamination events (79 PCEs through mid-August) in 1989 (compared to 1471 PCEs in 1988), by increasing the decontamination staff which resulted in lower contamination levels and fewer contaminated areas, contracting an outside protective clothing (PC) laundry service, use of better quality PC and hospital scrubs under the PC, and improved radiation worker practices. In addition, waste gas system and liquid sampling system leakage reduction was improved by the use of a Xenon gas sniffer, ventilation system improvements, modifications of equipment and piping, and flex lancing of piping to remove blockage. The licensee also developed a comprehensive radiation source term reduction plan which includes proposed plans for hydrogen peroxide addition to reduce primary coolant activity during shutdown, hot spot removal, a system chemical decontamination feasibility study, primary coolant and spent fuel pool filter upgrades, and more effective use of the letdown demineralization system. Areas that appear to warrant continued management attention include support for the more extensive source reduction techniques such as system chemical decontamination and cobalt inventory/replacement; improvement of the gaseous batch effluent release program (see Section 6) and of the ventilation system filter testing program (see Section 14); and better support of the outage RP job coverage requirements than occurred during the 1988 fall outage.

No violations or deviations were identified.

5. Training and Qualifications of Personnel (IP 83750, 84750, 83723)

The inspector reviewed the training and qualifications aspects of the licensee's radiation protection, radwaste, and transportation programs including: changes in responsibilities, policies, programs and methods; qualifications of newly-hired or promoted radiation protection/radwaste personnel; and provisions for appropriate radiation protection, radwaste and transportation training for station personnel. Also reviewed were management techniques used to implement these programs and experience concerning self-identification and correction of program implementation weaknesses.

The inspector reviewed the training programs for RST qualification and continuing training, NGET, basic radiation workers, and radioactive waste handler qualification; no significant problems were noted. The inspector also reviewed the Advanced Radiation Worker Training Program which is part of the qualification requirements for members of the Operations Department to allow self-monitoring in designated high radiation areas (HRAs). During a previous inspection (Inspection Report No. 50-255/88021(DRSS)), the inspectors discussed with licensee management the importance of maintaining adequate RSD oversight of the Advanced Radiation Worker Training Program to assure that the privilege of self-monitoring is not abused; the licensee's recent history of poor entry control for HRAs greater than 1R/hour (see Section 13) may be indicative of inadequate oversight of this program. However, radiation

protection/radwaste training has improved significantly during the past year, including establishment of an RP curriculum committee to review and evaluate training effectiveness, development of a formal radwaste worker training and qualification program and an ALARA engineering course specifically for design/system engineers, and introduction of an RP summer internship program.

No violations or deviations were identified.

6. Gaseous Radioactive Radwaste (IP 84750, 84724)

The inspector reviewed the licensee's gaseous radwaste management program, including: changes in equipment and procedures; gaseous radioactive waste effluents for compliance with regulatory requirements; adequacy of required records, reports, and notifications; process and effluent monitors for compliance with maintenance, calibration, and operational requirements; and experience concerning identification and correction of programmatic weaknesses.

The inspector reviewed the licensee's procedural methodology regarding the gaseous batch release permit program. These program requirements are specified by Procedures No. HP 6.6, Evaluation and Release of Waste Gas Decay Tank, and No. 6.4, Containment Purge. Although a review of selected batch permit records did not identify any significant problems, it was noted that the licensee has a continuous containment depressurization system; in the inspector's experience, all previously reviewed PWR plants had batch release containment depressurization systems. Because of the apparently unusual nature of the licensee's containment depressurization system and the potential for this mechanism representing a significant release pathway to the environs, the inspector (with the licensee's aid) analyzed the previous gaseous radioactive effluent release data for Palisades; the results of that review are presented below.

A review of historical radioactive gaseous effluent release data showed that Palisades had releases of about 3700, 173, 1778, 2431, and 44 curies in 1985, 1986, 1987, 1988, and the first half of 1989, respectively. From May 19, 1986 to April 16, 1987, the plant was in an extended maintenance outage; consequently gaseous effluent releases for 1986 and the first half of 1987 reflect lower than anticipated gaseous radioactivity releases. Also, since early 1987, the licensee has conducted an extensive leak reduction program for the plant's waste gas system and liquid sampling systems with good results (see Section 4). The percent of the radioactive gaseous effluent releases for continuous containment depressurization, containment purge, and waste gas decay tank (WGDT) were 78.9, 17.4, 3.7; 92.2, 5.2, 2.5; and 80.4, 5.7, 13.9 for 1987, 1988, and the first half of 1989, respectively. Because 80-90% of the gaseous radioactive effluent release from the plant is via the continuous containment depressurization pathway, the inspector discussed with the licensee the apparent desirability of performing an evaluation to determine if the postulated offsite dose release savings would justify the modification of procedures and system components to treat containment depressurization/vents as batch releases. This matter was discussed at the exit meeting (see Subsection 16.d) and will be reviewed further during a future inspection (Open Item No. 255/89025-04).

In Inspection Report No. 50-255/87030(DRSS), two recent events (on June 4 and July 8, 1987), were discussed as possible indications of minor programmatic problems regarding operation of the waste gas system because of operator inattention to detail and failure to follow procedures; three additional events have occurred since that inspection. On October 19, 1987, contrary to T/S 3.24.6.1, the gaseous contents of WGDT T-101B were released to the atmosphere without being held for a minimum of 15 days. The cause of the unauthorized WGDT release was inattention to detail and procedure non-compliance; 7.2 curies of noble gases were released. On February 9, 1988, contrary to T/S 3.24.6.1, the partial contents of WGDT T-68C were released without being held for a minimum of 15 days. The WGDT lost pressure and contents due to loose valve bonnet bolts; the licensee estimated that 6.032 curies of noble gases were released to the environs before the problem was corrected. On December 24, 1988, approximately 14 percent of the gaseous contents of WGDT T-68B were accidentally released to the atmosphere without being held for a minimum of 15 days as required by T/S 3.24.6.1. The cause of the unauthorized WGDT release was again operator inattention to detail; however, the release was terminated as soon as the error was realized; only 1.16 millicuries of Xe-133 were released. LERs were issued for all five events (87-017, 87-020, 87-036, 88-002, and 88-024). The LERs were reviewed by the resident inspectors and documented in inspection reports. Because the above events appear to meet the criteria of 10 CFR Part 2, Appendix C, for self-identification and correction of problems, no Notices of Violation were issued.

No violations or deviations were identified by the inspector; however, one open item was identified.

7. Liquid Radioactive Waste (IP 84750, 84723)

The inspector reviewed the licensee's liquid radwaste management program, including: changes in equipment and procedures; liquid radioactive waste effluents for compliance with regulatory requirements; adequacy of required records, reports, and notifications; process and effluent monitors for compliance with maintenance, calibration, and operational requirements; and experience concerning identification and correction of programmatic weaknesses.

Sampling and release methods and procedures, records, and reports appear generally adequate. The inspector selectively reviewed liquid batch release permit records for 1987, 1988 and the first half of 1989; no significant problems were noted. There were 99,176, and nine liquid radioactive effluent batch releases for 1987, 1988 and the first half of 1989, respectively; corresponding 1985 and 1986 totals were 112 and 140, respectively.

The inspector reviewed summaries of liquid radioactive effluent releases for 1985-1988 and the first half of 1989. The 1989 whole body; maximum organ dose totals were .0594%, .0350% and .0497%; .0256% of the T/S dose limits for the first and second quarter, respectively. The 1988 whole body and maximum organ dose totals were .525% and .282% of the T/S

annual dose limits, respectively; the corresponding 1987 totals were 2.43% and 1.21%, respectively. The total liquid tritium and fission/activation products (without tritium, gases, alpha) releases for the first half of 1989 were 38.6 curies and 2.21 E-3 curies, respectively; the corresponding 1988 totals were 283 and .0355 curies, respectively; and the corresponding 1987 totals were 120 and .0923 curies, respectively. The liquid release data for 1985 and 1986 showed whole body; maximum organ dose totals of .96%; .615% and 1.32%; .500% of the T/S annual dose limits, respectively.

Licensee representatives stated that most of the postulated offsite dose contributions have historically been due to the release of processed laundry water. Specifically, the onsite laundry facility processed a large number of significantly contaminated PC in 1987 which resulted in somewhat elevated radioactive liquid effluents. During the first half of 1988, most of the higher contaminated PC was processed by a vendor who did not discharge waste water offsite, and during the last half of 1988, the onsite laundry facility was dismantled because all PC was processed by an offsite vendor; therefore, the radioactive liquid releases offsite decreased in 1988 and to an even greater extent in 1989. Thus, not only did the decision to process PC offsite contributed to the reduction of PCEs but it also significantly reduced both the number of batch releases and the radioactive liquid effluent. The licensee has used the free space in the auxiliary building created by elimination of the laundry facility to greatly enhance the capability of the access control facility.

On November 4, 1988, there was an apparently unmonitored release from the B steam generator (S/G) to the lake. During the drain of the B S/G to tank T-2 (Condensate Storage Tank), a hotwell batch release was initiated while the makeup valve from T-2 to the hotwell was open. Since it initially appeared that an unmonitored release occurred through the aforementioned pathway without a batch analysis of the S/G or continuous monitoring, event report No. E-PAL-88-046 was issued to investigate the matter. (Technical Specification Surveillance Requirement 4.24.3.1.a states that radioactive liquid wastes shall be sampled and analyzed according to Table 4.24-3; Table 4.24-3 requires that each batch waste release tank be sampled prior to release.) By a review of the Auxiliary Operator (AO) logs, the Operations Department evaluation concluded that an unmonitored release did not occur. The drain of the B S/G commenced at 0850; however, per the secondary side AO log, the makeup valve was manually isolated at 0340. Although I&C worked on the valve positioner (cycling the valve) during the hotwell batch release, no water was transferred from T-2 to the hotwell since the valve was manually isolated during the hotwell batch release. S/G and T-2 water level logs and flow rate logs also support the conclusion that T-2 was not discharging into the hotwell during the batch release.

Although the evidence indicated that an unmonitored release did not occur, discussions with licensee representatives imply that may have been somewhat fortuitous. The inspector also noted that on February 21, 23, and 24, 1988, the secondary side contents of two S/G's were discharged to

the lake without the required liquid effluent analyses; therefore, it may be desirable to enhance the procedural methodology for S/G and hotwell batch releases. It appears that the licensee would be prudent to conduct an evaluation of the S/G and hotwell release program to assure that future unmonitored releases are precluded. This matter was discussed at the exit meeting and will be reviewed further during a future inspection (Open Item No. 255/89025-05).

No violations or deviations were identified by the inspectors; however, one open item was identified.

8. Solid Radwaste (IP 83750, 84750)

The inspector reviewed the licensee's solid radwaste management program, including: changes to equipment and procedures; processing, control, and storage of solid wastes; adequacy of required records, reports, and notifications; implementation of procedures to properly classify and characterize waste, prepare manifests, and mark packages; and experience concerning identification and correction of programmatic weaknesses.

The inspector reviewed selected portions of the licensee's solid radwaste processing, storage and shipping records for 1985-1988 and the first half of 1989; no significant problems were noted. The licensee's records indicate that approximately 16,914; 8445; 7889; 6612; and 5086 cubic feet of solid radwaste were shipped in 1985, 1986, 1987, 1988, and the first half of 1989, respectively. The corresponding records indicate that approximately 12,360; 6851; 6533; 9181; and 1871 cubic feet of solid radwaste were generated in 1985, 1986, 1987, 1988, and the first half of 1989, respectively. The generation peak in 1988 was due to solid radwaste produced during an extensive outage; the solid radwaste volume shipment in 1989 is much larger than the volume generated because the licensee greatly reduced stored inventory because of the perceived potential for possible closure of some burial sites. As of August 14, 1989, the licensee's records indicated a total of approximately 1500 cubic feet of solid radwaste was temporarily stored onsite, awaiting shipment to burial sites. The inspector reviewed radwaste generated/shipped trend charts for 1988 and 1989; it was noted that the licensee sets radwaste generation goals which are approximately equal to the previous year's national average and although the goal was exceeded for 1988, the radwaste generated for 1989 remains well within the cumulative monthly goal. It was also noted that the vast majority of the radwaste generated is dry-active-waste (DAW); since December 1988, the licensee has been reducing the volume of DAW generated by using the services of an offsite vendor who significantly increases the compaction ratio. The inspector toured the solid radwaste facilities including the storage facility and shipment staging area; no significant problems were noted. The progress in decontaminating the south radwaste building (SRB) and the transfer of processing equipment from SRB to the new addition to the east radwaste building is discussed in Section 3.

No violations or deviations were identified.

9. Transportation Activities (IP 83750)

The inspector reviewed the licensee's transportation of radioactive materials program, including: determination whether written implementing procedures are adequate, maintained current, properly approved, and acceptably implemented; determination whether shipments are in compliance with NRC and DOT regulations and the licensee's quality assurance program; determination if there were any transportation incidents involving licensee shipments; adequacy of required records, reports, shipment documentation, and notifications; and experience concerning identification and correction of programmatic weaknesses.

The inspector selectively reviewed portions of the radwaste shipment records for 1988 and to date in 1989. The information on the shipping papers appears to satisfy NRC, DOT, and burial site requirements. However, significant problems were found with a Palisades radwaste shipment upon arrival at the Barnwell waste burial facility, as described below.

The inspector reviewed the finding from an investigation of a radioactive waste shipment from Palisades conducted on November 20, 1988, by representatives of the Department of Health and Environmental Control, State of South Carolina, upon arrival at the Barnwell, South Carolina low-level waste burial site. Information regarding the findings and the licensee's subsequent corrective actions was gathered mainly from interviews with licensee representatives; letters dated December 6, 1988, and December 23, 1988, from the State of South Carolina, Bureau of Radiological Health, to the licensee; a letter dated December 13, 1988, from Chem-Nuclear Systems, Inc. (CNSI) to the licensee; and licensee Deviation Report No. D-PAL-88-245.

In September 1988, the licensee and CNSI conducted an investigation to demonstrate that old liners, reportedly stored under less than ideal conditions for more than ten years, could be dewatered to current burial license criteria. In October 1988, the liners were evaluated for containment integrity because of extensive surface rust with some pitting; the licensee decided to ship the containers because, even with the rust and pitting, the quarter-inch steel containers were deemed adequate to meet LSA requirements and were too expensive to discard. On November 21, 1988, the licensee dispatched exclusive use radioactive waste shipment 88-075 (CNSI 1188-253) to the Barnwell, South Carolina low-level waste burial site on a flatbed trailer, classified as Radioactive Material, LSA, N.O.S., described as dewatered resins packaged in four steel liners (the aforementioned rusted and pitted containers). On November 23, 1988, the shipment arrived at the Barnwell site and the CNSI Licensing Manager informed the licensee's RMC Supervisor by telephone about concerns regarding the rusty liners, the lack of resin isotopic analysis documentation (reportedly, the analysis documentation was telecopied to Barnwell by the licensee upon notification), and the lack of attached lifting cables for offloading the liners. On November 28, 1988, the CNSI Licensing Manager again called the RMC Supervisor to state that the liners could be buried if they posted an inspection for free water.

On December 1, 1988, the CNSI Licensing Manager informed the RMC Supervisor that no free water was found in the liners and the containers' integrity was adequate for burial after liner surface preparation and painting.

In a letter dated December 6, 1988, the State of South Carolina cited the licensee for two violations of the burial site license requirements because of the problems found with Palisades radioactive waste shipment No. 1188-253 during an investigation conducted on November 28, 1988, by the S.C. Department of Health and Environmental Control. The violations were (1) the four steel liners exhibited considerable corrosion upon arrival at the burial facility, contrary to the requirements of Condition 61 of S.C. Radioactive Material License No. 097 and (2) upon arrival at the Barwell facility the shipment documentation did not include an isotopic analysis for the dewatered resin, contrary to the requirements of Condition 37 of S.C. Radioactive Material Licensee 097. The letter further stated that it is common practice for the shipper to provide appropriate lifting attachments, although the lack of lifting cables on the four liners was not a violation because this was not a cask shipment. The licensee was assessed a civil penalty of two thousand dollars and notified that their Radioactive Waste Transport Permit No. 0006-21-88-X had been suspended until such time as the licensee demonstrates to the satisfaction of the Department that adequate measures have been implemented to ensure compliance with all applicable provisions of Federal and State law.

By letter dated December 13, 1988, the CNSI Licensing Manager enclosed a copy to the licensee's RMC Administrator of the completed site discrepancy form for the subject radwaste shipment. Also on December 13, 1988, DR-PAL-88-245 was prepared by the licensee. On December 14, 1988, the RMC Administrator informed the S.C. Bureau of Radiological Health that the licensee did not contest the violations and enclosed payment for the civil penalty. The letter also discussed the root causes of the violations and the corrective actions, as follows:

- The isotopic analysis of the dewatered resin was omitted because of an incomplete requirement on the HP 6.34 shipping procedure QC checksheet which was interpreted as only being required for greater than one microcurie/cc activity resin. The licensee stated that the checklist requirement has been changed to reflect the actual requirement of Condition 37 of S.C. Radioactive Material License 097.
- The liners in question were evaluated before shipment and it was determined by the licensee that the surface condition appeared to meet the requirement of Condition 61 of S.C. Radioactive Material License 097; however, in hindsight, the licensee admitted that this interpretation should have been discussed with the S.C. Bureau of Radiological Health before shipment. The licensee stated that packaging procedure HP 6.18 will be expanded to address and discuss the Condition 61 requirements including package integrity, corrosion/rust requirements and appearance.

- Because the liners were loaded and handled by fork truck at the Palisades site, the licensee assumed that the CNSI Barnwell site crews would use the same method; therefore, the licensee did not install lifting cables. The licensee stated that this requirement will be added to the truck loading checksheet to prevent recurrence.

By letter dated December 28, 1988, the S.C. Bureau of Radiological Health informed the licensee that the South Carolina Department of Health and Environmental Control was satisfied that the licensee's corrective actions will result in compliance with applicable provisions of the disposal facility license; therefore, the licensee's Radioactive Waste Transport Permit No. 0006-21-98-X was reinstated effective December 22, 1988. The inspector verified that Deviation Report No. D-PAL-88-245 had been appropriately resolved and that Procedures No. 6.18 and 6.34 had been appropriately revised. The licensee's corrective actions appear adequate to prevent recurrence.

The aforementioned failures of the licensee to comply with the Barnwell waste burial facility license conditions represent a failure to adhere to Procedure No. HP 6.34, Radioactive Material Shipments - Burial Sites Only, which requires that all shipments meet burial site requirements. Failure to adhere to Procedure No. HP 6.34 is a violation of Technical Specification 6.8.1 which requires that written procedures be established, implemented, and maintained (Violation No. 255/89025-06).

One violation was identified.

10. Audits and Appraisals (IP 83750, 84750)

The inspector reviewed reports of audits and appraisals conducted for or by the licensee including audits required by Technical Specifications. Also reviewed were management techniques used to implement and audit the program, and experience concerning identification and correction of programmatic weaknesses.

The inspector selectively reviewed portions of the QA audit and surveillance reports for 1988 and to date in 1989. The licensee's QA audit/surveillance program appears adequate to assess technical performance, compliance with requirements, and personnel training/qualification relating to the radwaste/transportation program. The QA auditors assigned to review this functional area appear to have the necessary expertise and experience prerequisites. Interviews with appropriate licensee personnel indicate that responses to audit/surveillance findings are generally thorough, timely, and technically sound.

No violations or deviations were identified by the inspector.

11. Effluent Reports (IP 84750)

The inspector selectively reviewed radiological effluent analysis results to determine accuracy of data reported in the Semiannual Radioactive Effluent Release Reports for 1985-1988 and the first half of 1989. Technical Specification 6.9.3.1.A requires, in part, that the Semiannual Radioactive Effluent Release Reports include the identification and quantification of abnormal releases of radioactive material to the environment and include a summary of radioactive gaseous effluents as specified in Appendix B to Regulatory Guide 1.21, Revision 1, June 1974. Section A.6 of the aforementioned appendix specifies, in part, the identification and quantification of abnormal (unplanned or uncontrolled) gaseous releases. The inspector identified an abnormal gaseous radioactive release which occurred on February 9, 1988 (see Section 6), but which was not reported by the licensee in the Semiannual Radioactive Effluent Release Report for the period from January 1 through June 30, 1988. On October 4, 1989, upon notification by the inspector, the licensee agreed that the subject event was required to have been reported, committed to correct the oversight in the next Semiannual Radioactive Effluent Release Report, and promptly initiated corrective actions to prevent recurrence. The licensee will be revising Procedure No. HP 10.5, Palisades Semiannual Radioactive Effluent Release Report, to require that the licensing events and deviation report logs be checked for all abnormal releases. Failure to report the February 9, 1988, abnormal release is a violation of Technical Specification 6.9.3.1.A; however, pursuant to Section V.A of Appendix C to 10 CFR Part 2, a Notice of Violation will not be issued for this isolated Severity Level V violation because the licensee initiated appropriate corrective action before the inspection ended (Violation No. 255/89025-07).

One violation was identified; however, a Notice of Violation will not be issued.

12. Effluent Control Instrumentation (IP 84750, 93702)

The inspector reviewed the records for effluent control instrumentation surveillance/operability, including reports to the NRC required by Technical Specifications (T/S).

a. Semiannual Radioactive Effluent Release Reports of Inoperability

T/S 3.24.2.1.b, Radioactive Gaseous Effluent Monitoring Instrumentation Limiting Condition for Operation, requires the licensee, with less than the minimum number of channels operable, to exert best efforts to return the instrument to operable status within 30 days and, if unsuccessful, explain in the next Semiannual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner. The inspector reviewed these reports for 1985-1988 and the first half of 1989; the licensee has reported only one failure to return T/S gaseous effluent instrumentation to operability within 30 days. T/S 3.24.1.1.b requires the same reportability for inoperable radioactive liquid effluent monitoring

instrumentation; for the same four and a half year period, the licensee did not report any failures to return liquid effluent instruments to operability within 30 days. This appears to represent good licensee performance regarding maintenance and repair of T/S effluent monitoring instruments; however, because the licensee failed to report an abnormal release in a Semiannual Radioactive Effluent Release Report (see Section 11) apparently due to an inadequate procedure, the potential exists for failures to report instrument operability problems. This matter was discussed with a licensee representative on October 4, 1988. In response to the inspector's concern, the licensee initiated appropriate corrective action by drafting a revision to Procedure No. HP 10.5, Palisades Semiannual Radioactive Effluent Release Report, to require that the licensing event and deviation report logs be checked for any effluent instrumentation operability problems. Because the licensee initiated appropriate corrective action before the end of the inspection, this matter is closed (Open Item No. 255/89025-08).

Pursuant to T/S 3.24.2.1.b, the licensee reported a failure to return gaseous effluent instrumentation to operable status within 30 days in the Semiannual Radioactive Effluent Release Report for the first half of 1987. T/S 3.24.2.1.b and Table 3.24-1, actions 50 and 31, further stipulates that radioactive gaseous effluent releases may continue with less than the required number of operable gaseous effluent monitor channels providing that the flow rate is estimated at least once per 24 hours for continuous releases or once per every four hours for batch releases. On June 4, 1987, WGDT T-68C (batch No. 87-018-G) was scheduled for release; however, due to poor communications during shift turn-over and the lower than usual release rate, the flow rate estimate was not performed. The radioactive gaseous effluent monitor had originally been declared inoperable on March 5, 1987. Due to an extended time period to troubleshoot the problem and obtain parts (12 weeks) plus an additional lead time (8 weeks) for repair, work completion was estimated for August 7, 1987. Pursuant to 10 CFR 50.73(a)(2)(i), the licensee issued LER No. 255/87-017-00.

b. Technical Specification Special Reports of Inoperability

Technical Specification 3.24.2.1.b and Table 3.24-2, Action 38 requires the licensee, that with less than the minimum channels operable, to initiate the preplanned alternate method of monitoring the appropriate parameter(s) within 72 hours and either restore the inoperable channel(s) to operable status within seven days or prepare and submit a special report to the Commission pursuant to T/S 6.9.3.3.b within 30 days following the event outlining the action taken, the cause of the inoperability and the plans and schedule for restoring the system to operable status. Action 38 is applicable to the high range noble gas stack effluent monitor (RIA 2327), the main steam safety and dump valve discharge line gross gamma activity monitors (RIA 2323 and 2324), and the engineered safeguards room vent system noble gas activity monitors

(RIA 1810 and 1811). T/S 6.9.3.3.b requires that special reports be submitted in accordance with 10 CFR 50.4, within the time period specified for each report. The licensee reportedly submits special reports as voluntary LERs with the designation, TS; even though they are not reportable pursuant to 10 CFR 50.73. The inspector reviewed the TS LERs for 1988 and to date in 1989 to determine if Action 38 had been invoked; the one identified event is discussed below. (Also, LER No. 255/87-033-00, Detector Failure and Inoperability Greater Than Seven Days Results in Technical Specification Special Report, and LER No. 255/87-034-00, Inadequate Procedure Results in Radioactive Effluent Technical Specification Noncompliance, are discussed in Section 21 of Inspection Report No. 50-255/87030(DRSS).) Voluntary LER No. 255/89-TS1-00 was issued on June 22, 1989, pursuant to T/S 3.24.z Action Statement 38 which requires that the minimum number of operable channels be restored within seven days or a special report be submitted within the following 30 days. At 1035 on May 16, 1989, the West Engineering Safeguards Room (WESR) radwaste ventilation isolation monitor (RIA 1811) slowly failed downscale and was declared inoperable. In accordance with T/S Table 3.24-2, alternate methods of assessing the WESR environment were implemented per Procedure No. HP 6.51, Radiological Effluent Operating Procedure. However, the radiation monitor was not returned to service within seven days; RIA 1811 was repaired, tested, and declared operable at 2200 on May 24, 1989. The monitor failed when water originating from maintenance on the waste gas vent collection header contacted the monitor and failed its pre-amplifier board. The waste gas vent collection header was cut into to remove blockage, believed to be spent ion exchange resin which was expected to be dry. The unexpected water is believed to have originated from 1986 resin sluicing activities. While sluicing resins from the spent resin storage tank T-69, an overpressure was applied to provide the motive force for moving resins out the top of the tank. Until approximately 1986, as difficulties were experienced with resin outflow, Operations personnel would reportedly open the tank's vent to relieve pressure (which allowed water and resin to enter the waste gas collection header). The failure to return the monitor within seven days as required by T/S has been attributed by the licensee to failure to apply appropriate attention to secondary action statements such as Action Statement 38. To enhance management attention of secondary Action Statements, Operations personnel will add these action statements to the Plant Daily Status Sheet and will identify them on work orders, so that appropriate priority is given to scheduling repairs.

c. Radiation Monitor Q-List

In Inspection Report No. 50-255/89015(DRP), Subsection 2.e, Open Items No. 255/86035-96(DRP) and No. 255/86035-109(DRP), Perform Q-List interpretations for Safeguards Room Ventilation Radiation Monitor sample pumps (P-1810 and P-1811) and the Radwaste Ventilation Monitor (RE-1809), were closed. As a result of licensee evaluations, P-1810 and P-1811 are now Q-listed. The Material Condition Task

force recommended a Q-list interpretation be performed for RE-1809 based on prior reliability problems. The interpretation was initially performed in 1987 and revised in February 1989. The NRC determined that the licensee's actions appeared acceptable in both cases above. In Subsection 2.f of the same inspection report, Open Item No. 255/86035-102(DRP), Perform Q-list interpretation and replace monitoring system for RIA-2318 Stack Gas Monitor Radiation Alarm, was closed. RIA-2318 is a Q-listed backup noble gas monitor for RIA-2326 and is subject to T/S 3.24.2, Table 3.24-2 requirements. After extensive maintenance, the electronic portion of the monitor was considered reasonably reliable; however, the mechanical portion (sample transport) was not. The licensee stated that this monitor is normally shutdown with RIA-2326 normally operating and that a T/S charge request was in preparation to delete RIA-2318 from the T/S. Further, the licensee has a long term radiation monitoring upgrade program in progress with funds budgeted in the Five Year Plan for progressive replacement of the existing system through 1991.

d. Instrument Upgrade Program

The inspector reviewed the Radiation Monitoring System (RMS) portion of the Instrument Upgrade Program Five Year Plan and Appendix C, Plant Equipment Status Observations and Resolutions, of the licensee's Material Condition Task Force response to the NRC's May 22, 1986 Confirmatory Action Letter. The inspector also discussed the RMS improvement program with appropriate licensee representatives, including the RMS system engineer. The instrument upgrade program acknowledged that much of the plant instrumentation has exceeded design life, resulting in frequent repairs or difficulty in obtaining spare parts. The program objectives are to identify the obsolete or high maintenance components and replace them with state-of-the-art equipment; in the short term, this includes the upgrade of 47 radiation monitors. Part of the five year plan includes consideration of replacement of all area monitors, upgrade of the Victoreen RMS, and upgrade (or replacement) of effluent and process RMS. Documentation reviews and personnel interviews indicate that the RMS upgrade program is thorough and comprehensive; the implementation seems to be timely and appropriate.

e. Radiation Monitor Reliability Trending

The inspector reviewed the Second Quarter 1989 RMS trend report and discussed the contents with the RMS system engineer. There were 20 active work orders (WOs) on 17 area monitors (RIA) for a total of 645.5 manhours and 20,383.5 out-of-service (OOS) hours; 15, 4, and 1 WO were for repair, setpoint adjustment, and monitor failure, respectively. There were 8,088 additional OOS hours from the WO backlog, yielding a percent availability for the 37 RIAs of 64.8%; due to the equipment upgrade project, two additional RIAs have been OOS since July 27 and August 8, 1988, and will not be repaired by the vendor until the 1989 maintenance outage. There were four WO's

for three process monitors for a total of 100 manhours and 719 OOS hours; 2, 1, and 1 WOs were for monitor failure, no signal, and failed low, respectively. The percent availability of the 23 process monitors was 98.6%. The data presented in the trend report and discussions with the RMS system engineer clarify the primary objective of the five year RMS improvement plan, which is to consider replacement of all area monitors and either the replacement or upgrade of the process monitors. Although the licensee has a fairly good corrective maintenance for the process monitors, the area monitors have been too unreliable for a corrective maintenance program to be effective.

f. Radiation Monitor Surveillance Program

The inspector reviewed the Technical Specifications Surveillance Procedure Basis Document for Process Monitor Functional Checks, Procedure No. QR-22; Palisades Nuclear Plants Technical Specifications Surveillance Procedure, Process Monitor Functional Checks - Quarterly, Procedure No. QR-22; and selected documentation of completed acceptability criteria and operability surveillance tests, no significant problems were noted. It was noted, however, that even though all acceptance criteria may be met, work orders are written when monitors, their indicator systems, recorders, alarm system, etc., are functioning less well than desirable. This conservative approach to improving monitor performance is a good practice, which should have a significant positive impact on monitor reliability.

g. RMS Responsibility and Coordination

The responsibility for the PMS is shared by RSD, Operations, I&C, System Engineering, and Maintenance. These departments usually work well together with some occasional coordination problems which sometimes lead to T/S violations or extended OOS periods; however, corrective actions to prevent recurrence are usually adequate and better oversight of the RMS upgrade program should eventually reduce OOS times. Until the RMS is sufficiently upgraded, it is desirable to somewhat improve coordination between departments and increase RMS WO priorities to improve RMS availability.

No violations or deviations were identified by the inspector; however, one open item was identified.

13. Access Control for Areas with Radiation Levels >1 R/hr (IP 93702)

Previously identified weaknesses of the licensee's access control for areas with radiation levels >1 R/hr are discussed in Inspection Reports No. 50-255/87005(DRP), No. 50-255/87030(DRSS), No. 50-255/88006(DRSS), and No. 50-255/88027(DRSS). In the latest of these inspection reports, dated January 3, 1989, the NRC issued a Notice of Violation (NOV) because the failures on June 10, September 30, and December 17, 1987, and on September 5 and 7, 1988, to maintain locked doors to prevent unauthorized access to areas >1 R/hr were violations of Technical Specification 6.12.2

(Violation No. 255/88021-06), and although these violations were predominantly licensee-identified, licensee corrective measures to date had not been adequate to prevent recurrence.

On February 2, 1989, the licensee transmitted to the NRC a written response to the above violation which included corrective actions taken and results achieved, corrective actions to be taken to avoid further non-compliance, and the date when full compliance will be achieved. The licensee stated that the root cause of all five events has been attributed to inadequate personnel performance, the responsible individuals have been counseled as to the significance of the failure, and all RSTs have been trained as to the importance of maintaining control of IR door keys and the IR door key log. The licensee also delineated the tighter controls that had been implemented for storage and use of IR door keys. Corrective actions to be taken to avoid further non-compliance included a program to provide secondary independent verification that IR doors accessed have been locked and a Management Review Board with the Plant General Manager in attendance to be held with any individual identified to have failed to properly secure a IR door. The licensee stated that the board will provide a review of the incident and senior plant management involvement in determining appropriate corrective action. Among the licensee commitment dates for achievement of full compliance were that inventory of IR door keys would be completed by April 30, 1989, and the secondary verification program would be implemented by February 28, 1989.

Despite the above corrective actions to preclude recurrence, on June 30, 1989, the IR door to the Dirty Waste Drain Tank (T-60) Room was discovered by a RST to be unlocked and unattended; thus not providing positive control over entry to the area. Inspection Report No. 50-255/89018(DRP) documented that this incident appears to be a violation of regulatory requirements and will be followed up in a subsequent NRC inspection (Unresolved Item No. 255/89018-03). The licensee issued Deviation Report No. D-PAL-89-126 to document the incident investigation, root cause analysis, and corrective actions. The licensee determined that an auxiliary operator (AO) had signed out a IR key to enter the Spent fuel Pool Heat Exchanger (SFP Hx) Room, later used the same key to enter the T-60 area to perform other assigned tasks without indicating on the IR key log that he was also going to enter that area, forgot to lock the T-60 Room door, but correctly had another individual verify that the SFP Hx Room door was locked, and the verification signature for the SFP Hx Room door being properly locked was placed in the IR key log. Similar to the five earlier incidents that were the subject of the aforementioned NOV, the licensee determined that the root cause of this incident was due to a human performance deficiency. The licensee's investigation indicated that no work was scheduled in the T-60 area and apparently no individual entered the area in the interval between the time when the AO left the area with the door unlocked and the time the RST found the door unlocked and subsequently locked the door.

On July 10, 1989, a Management Review Board determined that additional administrative controls should be implemented and that Health Physics should not issue IR door keys until proposed actions to prevent recurrence have been addressed. At the time of the conclusion of the onsite inspection, Health Physics personnel were still denying AOs access to IR keys because proposed administrative controls had not yet been implemented. These proposed controls include (1) installation of distinct and separate keys for the four IR area doors where AOs accomplish routine tasks (T-60 Room, SFP Hx Room, SWRT Room, and the 602-ft south pipeway), was completed on October 7, 1989 (locks for these four doors are reportedly of the type that the key cannot be removed from the lock core/padlock core unless the core is in the locked position and since the old locks remain installed, the doors are double locked); (2) evaluate the installation of alarms on the doors to alert the person leaving the area that the latch/lock is not secure, which was completed on September 20, 1989 with the interim recommendation not to install the alarms; and (3) a re-evaluation of the controls for IR doors in containment during outages, which was completed on September 19, 1989, by issuance of Revision 1 to RSD Policy and Practices Memorandum No. 89-002, IR Door Verification, that specifies much tighter controls over IR doors in containment during power operations and outages.

Although the above proposed corrective actions have achieved the status of interim resolution, there is some opposition with RSD and between departments regarding the final disposition of this matter. Also, QA must conduct a completion review to assure all requirements are met and that closure of the deviation report is appropriate. Meanwhile, The denial of IR keys for AOs makes the RST staff somewhat less efficient in that in addition to all other required duties, the RSTs must accompany AOs to work assignments in IR locked areas, unlock the IR doors for the AOs, establish positive entry control until the AOs complete assigned tasks, lock the IR doors after task completion, and verify that the IR doors are locked and key log properly completed. The second verification requirements may be waived by the HP Superintendent for containment outage work activities if stringent criteria established by Memorandum 89-002 (Revision 2) are met.

A review of Procedure No. HP 2.5, Entry Control for High Radiation Areas Over 1R/hr, Revision 8, July 21, 1989, indicates that the present wording could be clarified and more explicit in that the procedure does not appear to specifically require AOs to declare each area of entry and the associated verification that each IR door was locked after task completion (although these requirements are implicit in the text and key log form, and in RSD Policy and Practices Memorandum No. 89-002 (Revision 2)). Prerequisite No. 3.3 of Procedure No. 2.5 states that operations personnel with advanced radiation worker training and qualifications for self monitoring may make one person entries into all high radiation areas except those areas requiring two people. As stated in Section 8 of Inspection Report No. 50-255/88021(DRSS), the inspectors discussed with RSD supervisory and managerial personnel the importance of maintaining adequate RSD oversight of the advanced radiation worker

training and qualifications programs for AOs and the desirability of taking appropriate action if the privilege of self-monitoring is abused. The inspector concerns regarding procedural, training, and qualification adequacies were discussed with appropriate licensee personnel.

Despite the licensee's attempts to institute effective corrective action to prevent recurrence of the 1987 and 1988 failures to maintain locked doors to prevent unauthorized access to areas >1R/hr, on June 30, 1989, the licensee found the 1R door to the Dirty Waste Drain Tank (T-60) Room unlocked and thus in violation of Technical Specification 6.12.2. The licensee's extensive completed/planned corrective actions in response to this latest violation appear adequate to prevent further recurrence. Although the NRC endeavors to encourage licensee identification and correction of problems through discretionary use of the enforcement policy (10 CFR Part 2, Appendix C), the licensee's past failure to implement effective corrective actions to prevent recurrences of this violation necessitates the issuance of a Notice of Violation for this latest incident (Violation No. 255/89025-09).

One violation was identified.

14. Air Cleaning Systems (IP 84750, 84724)

Technical Specifications (T/S) require filter testing of the Control Room Ventilation and Isolation System (CRVIS, VF-26) and the Fuel Storage Area HEPA/Charcoal Exhaust System (FSAES, VF-66) as specified by Surveillance Requirement Table 4.2.3, HEPA Filter and Charcoal Adsorber Systems. The in-place leakage test criterion specified for both the DOP testing of HEPA filters and freon testing of charcoal adsorbers is equal to or less than one percent penetration. The laboratory test criterion for carbon sample removal efficiency for methyl iodide is equal to or greater than 94 percent. Procedure No. RT-85C,D, Technical Specifications Surveillance Procedure Basis Document for In-place HEPA and Charcoal Filter Testing, Revision 1, August 7, 1989, establishes more stringent filter testing requirements for VF-26 in that the CRVIS in-place leakage test criterion specified for both the DOP testing of HEPA filters and freon testing of charcoal adsorbers is equal to or less than 0.05 percent penetration, and the laboratory test criterion for carbon sample removal efficiency for methyl iodide is equal to or greater than 95 percent; the test criteria for the FSAES (VF-66) are the same as the T/S Surveillance Requirements.

On May 11, 1989, the licensee issued LER No. 255/89-008-00 to report to the NRC, pursuant to 10 CFR 50.73(a)(2)(i), a failure to meet T/S Surveillance Requirements identified in Table 4.2.3 pertaining to surveillance testing of spent fuel pool ventilation system (VF-66) charcoal adsorbers; the LER was closed in NRC Inspection Report No. 50-255/89018(DRP), transmitted to the licensee on August 11, 1989. The LER states that on April 12, 1989, Corporate Quality Assurance (QA) personnel identified that representative samples of the charcoal adsorber sent to a vendor for iodine removal efficiency testing did not meet the required 94 percent acceptance criterion on October 7, 1988, results of the testing were not received within the required 31 days (45 days had elapsed between sample removal and sample testing/receipt of results), and the resultant system inoperability was not recognized by the licensee.

until the QA audit. The inspector reviewed the licensee's performance regarding this matter (discussed below), although the resident inspectors had previously reviewed the licensee's corrective actions as documented in event report No. E-PAL-89-018, found them acceptable, and in accordance with 10 CF2, Part 2, Appendix C, Section V.G.1 determined that a Notice of Violation will not be issued (Violation No. 255/89018-04).

NRC Information Notice No. 87-32, Deficiencies in the Testing of Nuclear-Grade Activated Charcoal, was closed in Inspection Report No. 50-255/87030(DRSS) because the licensee's charcoal testing vendor reportedly uses the testing protocol which the information notice designates as acceptable. According to vendor representatives, on October 15, 1987, a sample cell of onsite charcoal was tested with methyl iodide at 30°C and 95% RH, using the testing protocol recommended by IN 87-32. When the sample results indicated essentially 100% penetration, the vendor reportedly discussed with the licensee the unacceptability of the charcoal and concern regarding the adequacy of the storage facility. On May 5, 1988, a VF-66 charcoal sample showed a methyl iodide efficiency of 53.576% when tested with the IN 87-32 recommended protocol at 25°C and 95% RH; Work Order (WO) No. 24802986 was initiated to replace the VF-66 charcoal adsorbers. On June 10, 1988, the charcoal adsorbers (27) and sample canisters (4) were replaced per the WO; 24 adsorbers and the four sample canisters were procured under Purchase Order (PO) CP11-3701Q and the remaining (3) adsorbers under PO CP11-1058. Although the QA auditors identified that it was improper to use sample canisters from PO CP11-3701Q (received in February 1986) to represent the adsorbers installed from PO CP11-1058 (received in September 1983) and that there was no requirement to vendor-test the replacement charcoal, apparently they did not express concern regarding the earlier vendor-identified stored-charcoal viability problems. On October 7, 1988, the vendor notified the licensee that the VF-66 sample demonstrated a methyl iodide removal efficiency of 89.855% using the IN 87-32 recommended protocol at 25°C and 95% RH. The charcoal adsorbers were replaced and declared operable on March 30, 1989, with the successful completion of RT-85C; the VF-66 system had apparently been inoperable since at least May 5, 1988. Further corrective actions are discussed below.

The failure to maintain charcoal adsorber efficiencies within the T/S limits has been attributed by the licensee to improper storage of spare charcoal for the ventilation system and improper scheduling of the required efficiency testing. The licensee concluded that the charcoal may have degraded due to storage in an environment which is not temperature and humidity controlled or while installed due to the potential presence of unknown or unmonitored airborne fumes to which charcoal adsorption properties are susceptible. As corrective action to preclude recurrence, an agreement has been signed with the testing vendor to provide for appropriate storage of charcoal trays and maintenance of tray condition (as well as to refill trays with acceptable charcoal and return when required), and appropriate system operating procedures and Operations Department checklists have been or will be revised to provide for logging VF-66 operating hours to assure to the extent possible that adsorber contaminating fumes are not drawn into VF-66 during operation. Because personnel involved in Plant Corrective Action Review Board (PCARB) on October 7, 1988, failed to recognize that adsorber test results

indicated that VF-66 was inoperable, and that this condition was required to be reported to the NRC, these persons, as well as plant personnel involved in reportability determinations and all PCARB Chairmen, have reportedly been made cognizant of this event to prevent recurrence. Also, T/S Surveillance Test Procedure No. RT-85C,D has been revised to address test scheduling, plant conditions allowed for test performance, clarification of T/S requirements, and a requirement for plant material management to sign-off receipt of sample test results within T/S required time limits. The NRC's assessment of the licensee's performance in this matter and the overall quality of the licensee's filter testing program are discussed below.

Although the QA auditors conducted a thorough and commendable review of the above event and the corrective actions were appropriate and timely, it appears that the licensee knew of the likelihood that the onsite stored charcoal would fail the methyl iodide efficiency test for approximately one year before the failure on October 7, 1988, and should have been cognizant of the T/S requirements to have prevented an ESF system (VF-66) being inoperable for at least 11 months without discovery despite numerous opportunities for early detection. Because of the licensee poor performance regarding this event represented an apparent pre-existing significant programmatic problem (which presumably has been corrected), the inspector selectively received recent filter surveillance tests to ascertain if there were further programmatic problems. Although the surveillance tests reviewed indicated VF-66 and VF-26 had met test acceptance criteria, two additional programmatic concerns were noted in that (1) the methyl iodide testing conditions specified to the vendor showed inconsistencies and (2) in some cases the testing protocol recommended by IN 87-22 had not been used (contrary to information previously supplied to the NRC by the licensee and documented in Inspection Report No. 50-255/87030).

Specifically, the protocol of the VF-66 October 7, 1988 test included equilibrium, loading, and post-sweep times of 16, 2, and 2 hours, respectively at 25°C and 95% RH (although the PO inconsistently specified testing per ANSI N509-776 and R.G. 1.52-78); the protocol of the VF-26 (Train B) April 30, 1989, test included equilibrium, loading, and post-sweep times of 0, 1, and 2 hours, respectively at 25°C and 95% RH (the PO specified testing per ASTM D3803-79, Section 3.1, Method A for used carbon); and the protocol for the VF-26 (Train A) October 13, 1988, and VF-26 (Train B) November 4, 1988, tests included equilibrium, loading, and post-sweep times of 0, 1, and 2 hours, respectively at 25°C and 70% RH (the PO specified testing per ANSI N509-80 and ASTM D3803, Method A). Included among the problems associated with just these three examples are the fact that none of the test protocols (including temperatures and relative humidities) is that recommended by IN 87-32, all three protocols are different and the specifications on the POs are different and do not match the testing protocols used. The licensee appears to have a serious programmatic problem regarding methyl iodide charcoal adsorber testing. The inspector also noted during the review of the in-place test reports of HEPA filters with DOP and charcoal adsorbers with freon that in some cases there was a significant scattering of test data points which may be indicative of poor test quality and perhaps an invalid test. It seems appropriate for the

licensee to review the adequacy of these tests, the testing equipment and methodology, and possibly the training and qualification of the testing personnel.

The above programmatic concerns were discussed at the exit meeting will be reviewed further during a future inspection, and pending completion of the licensee's evaluation of their filter testing program adequacy, this matter is considered an unresolved item (Unresolved Item No. 255/89025-10).

On October 9, 1989, the inspector was informed that the aforementioned charcoal sample, which showed essentially 100% penetration on October 15, 1987, was from a containment air cleaning unit, no charcoal has been tested from these units since that date, and the units have apparently not been effective in reducing airborne concentrations in containment. It appears desirable for the licensee to evaluate the adequacy of the operational requirements for containment air cleanup units. This matter was discussed at the exit meeting (see Subsection 16.k) and will be reviewed further during a future inspection (Open Item No. 255/89025-11).

No violations or deviations were identified; however, an unresolved item and an open item were identified.

15. Primary Coolant Radiochemistry (IP 84750)

Technical Specification 3.1.4 requires that the specific activity of the primary coolant not exceed one microcurie of I-131 dose equivalent per gram except under certain limiting conditions of operation. The inspector selectively reviewed the licensee's primary coolant radiochemistry results for the past year (June 1, 1988 through August 15, 1989), to determine compliance with the Technical Specification requirements for the I-131 dose equivalent (DEI-131) concentration. The selective review and discussion with licensee personnel indicated that the DEI-131 concentration for the primary system remained less than the applicable Technical Specification limit throughout the review period.

No violations or deviations were identified.

16. Exit Meeting

The inspector met with licensee representatives (denoted in Section 1) at the conclusion of the onsite inspection on August 18, 1989, and by telephone on October 9, 1989. The inspector summarized the scope and findings of the inspection. The inspector also discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspector during the inspection. The licensee did not identify any such documents or processes as proprietary. The following matters were discussed specifically by the inspector.

- a. Management support of RP/radwaste programs has been extensive with resultant improvements in several areas, also some areas appear to require additional management attention. (Section 4)
- b. Decontamination of the south radwaste building and disposition of the adjacent contaminated soil. (Section 3)

- c. Failure to follow procedural requirements regarding conduction of an engineering evaluation before shielding placement. (Section 3)
- d. Apparent need to perform an evaluation to determine if containment depressurization/vents should be batch releases. On October 10, 1989, the licensee issued Action Item Record (AIR) No. A-PAL-89-124 to perform this evaluation; the ARI requested completion date is May 29, 1990. (Section 6)
- e. Apparent need to conduct an acceptability evaluation of the S/G and hotwell release program. (Section 7)
- f. Failure of a radwaste shipment to meet burial site requirements. (Section 9)
- g. Failure to report an abnormal gaseous radioactive release in the Semiannual Radioactive Effluent Release Report. (Section 11)
- h. Procedural requirements should be revised to ensure that effluent instrumentation inoperability is properly reported in the Semiannual Radioactive Effluent Release Reports. (Section 12)
- i. Failure to lock a 1R door as required by T/S 6.12.2. (Section 13)
- j. Apparent need to evaluate the adequacy of the air cleaning system filter testing program. (Section 14)
- k. Apparent need to evaluate the adequacy of the operational requirements for the containment air cleaning system. On October 10, 1989, the licensee issued AIR No. A-PAL-89-122 to review the adequacy of the current containment iodine removal system testing and charcoal replacement practices, and AIR No. A-PAL-89-123 to review the adequacy of the current operational practices for this system. The requested completion date for both AIRs is May 29, 1990. (Section 14)