APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-482/89-20 Operating License: NPF-42

Docket: 50-482

Licensee: Wolf Creek Nuclear Operating Corporation (WCNOC)
P.O. Box 411
Burlington, Kansas 66839

Facility Name: Wolf Creek Generating Station (WCGS)

Inspection At: WCGS Site, Burlington, Coffey County, Kansas

Inspection Conducted: August 28 - September 1, 1989

Inspectors: H Chaney 10/20/89

H. Chaney, Team Leader, Senior Radiation Specialist, Facilities Radiological Protection Section — Date

E Blair Nicholas 10/20/89

B. Nicholas, Senior Radiation Specialist, Facilities Radiological Protection Section — Date

for H Chaney 10/20/89

C. Hooker, Fuel Facilities Inspector, NRC Region V — Date

for H Chaney 10/20/89

M. Skow, WCGS Resident Inspector — Date

Approved: Blaine Murray 10/20/89

Blaine Murray, Chief, Facilities Radiological Protection Section — Date

Inspection Summary

Inspection Conducted August 28 - September 1, 1989 (Report 50-482/89-20)

Areas Inspected: Special, unannounced team inspection of the licensee's radiological control program including: radiation protection, radioactive effluent releases, low-level radioactive waste, and radioactive materials (RAM) transportation programs.

Results: Within the areas inspected, no violations or deviations were identified. One unresolved item was identified (see paragraph 5). The inspectors identified 10 items that the licensee should consider for program improvement (see paragraph 3). Eighteen previous inspection findings were closed (see paragraph 2).

The NRC became concerned about the declining trend noted in the licensee's radiological control program based on the findings in the 1988 and 1989 Systematic Assessment of Licensee Performance (SALP) reports. As a result, a special inspection was performed to review root cause of the problem areas and review the implementation of licensee commitments in their response to the 1989 SALP report.

The licensee has expended considerable resources and effort to stop the declining trend in the radiological control area. Licensee Quality Assurance (QA) audits and performance based surveillances were comprehensive and contributed to the licensee's ability to identify and resolve program weaknesses. The inspectors noted that: (1) continued attention is needed to ensure that workers follow plant procedures, and (2) first-line health physics supervisors (HPSs) need to spend more time in the plant observing work activities. The licensee's response to NRC initiatives and resolution of technical issues has improved.

Overall, the inspectors noted that the licensee has stopped the declining trend in the radiological control area and that there was a good indication that this area should show improvements in the future.

DETAILS

1. Persons Contacted

WCNOC

*J. Bailey, Vice President, Nuclear Operations
*R. Grant, Vice President, Quality
*G. Boyer, Plant Manager
*W. Lindsay, Manager, Quality Assurance (QA)
*O. Maynard, Manager, Regulatory Services
*T. Morrill, Manager, Radiation Protection (RP)
*B. Norton, Manager, Technical Services
*C. Parry, Manager, Site Quality
*C. Swartzendruber, Manager, Radiological Services Section (RSS)

NRC

*B. Bartlett, NRC Senior Resident Inspector, WCGS
*B. Murray, Chief, Facilities Radiological Protection Section

*Denotes a partial listing of personnel in attendance at the exit interview conducted on September 1, 1989.

A complete listing of personnel contacted during the inspection is contained in Attachment 2.

2. Followup on Previous Inspection Findings (92700, 92701, 92702)

(Closed) Licensee Event Report (LER) 88-017: Failure to Leak Test Four Sealed Sources - This item was previously discussed in NRC Inspection Report 50-482/88-25 and involved the licensee's failure to leak test four strontium-90 check sources (see Violation 482/8825-02). The licensee's root cause analysis was inconclusive in determining why the sources were not leak tested. The licensee considered the root cause to be a misinterpretation of the regulatory requirements by previous RP supervisors. The licensee's corrective action was to locate all sources and determine if they should be included in the semiannual leak test program (Technical Specification (TS) 4.7.9.2). The licensee's revision of STS HP-001 should prevent a recurrence of this problem.

(Closed) Unresolved Item (482/8825-03): Licensee Self Identified Loss of Radioactive Source Control - This item was previously discussed in NRC Inspection Report 50-482/88-25 and involved the licensee's QA department identification of problems as reported in LER 88-017. The licensee's corrective action for LER 88-017 was found adequate to resolve this item.

(Closed) Violation (482/8825-02): Failure to Leak Test Radioactive Sources - This violation was previously addressed in NRC Inspection

Report 50-482/88-25 and LER 88-017 and involved the licensee's failure to include four strontium-90 check sources in the semiannual source leak test program required by TS 4.7.9.2. The inspectors reviewed the licensee's response to the Notice of Violation, dated November 21, 1988, and verified that the licensee's corrective action had been implemented by reviewing completed STS HP-001 data sheets for December 20, 1988, June 12, 1989, and August 14, 1989. The licensee's corrective action should prevent a recurrence of this problem.

(Closed) Violation (482/8832-01): Failure to Post Notice of Violations - This violation was previously discussed in NRC Inspection Report 50-482/88-32 and involved the licensee's failure to post NRC Notice of Violations as required by 10 CFR Part 19.11. The inspectors reviewed the licensee's response to the Notice of Violation, dated March 9, 1989, and verified that the licensee's corrective action had been implemented. The licensee's corrective action appeared to be adequate to prevent a recurrence of this problem.

(Closed) Violation (482/8832-02): Failure to Post High Radiation Area - This violation was previously discussed in NRC Inspection Report 50-482/88-32 and involved the failure to post two high radiation areas. The inspectors reviewed the licensee's corrective action to the Notice of Violation, dated February 13, 1989, and verified that the licensee's corrective action had been implemented. Inspection of the facility and confirmatory radiation surveys indicated that the licensee's corrective action appeared to be adequate to correct this problem.

(Closed) Violation (482/8832-03): Failure to Follow Procedure - This violation was previously discussed in NRC Inspection Report 50-482/88-32 and involved the licensee's failure to follow Procedure HPH 09-503 when packaging radioactive material (RAM)/waste. The inspectors reviewed the licensee's corrective actions to the Notice of Violation, dated February 13, 1989, and verified that the licensee's corrective actions had been implemented. Random examinations and radiation surveys of packaged RAM/waste indicated that the licensee's corrective actions were effective.

(Closed) Violation (482/8832-04): Failure to Meet Transportation Regulations - This violation was previously discussed in NRC Inspection Report 50-482/88-32 and involved the licensee's failure to properly identify the radiation levels on a vehicle and block/brace the materials for a shipment of radioactive waste to a burial site. The inspectors reviewed the licensee's corrective actions to the Notice of Violation, dated February 13, 1989, and verified the implementation of the proposed corrective actions. The licensee's corrective actions appeared to be adequate to prevent a recurrence of this problem.

(Closed) Open Item (482/8717-03): Health Physics Management Training - This item was previously discussed in NRC Inspection Report 50-482/87-17 and involved the licensee's lack of a formal, organized training program

for health physics supervisors (HPSs) and professionals. The licensee had developed and implemented Procedure KGP-1851, "Professional and Supervisory Training Program," Revision 1, August 4, 1987, which established and outlined the professional and supervisory training program requirements for nonlicensed professional WCNOC staff. The inspectors reviewed the supervisor training matrix outlined in the above procedure and determined that it resolved the NRC's concerns.

(Closed) Open Item (482/8825-04): Organization Chart Update - This item was previously discussed in NRC Inspection Report 50-482/88-25 and involved the licensee's TS and Updated Safety Analysis Report (USAR) organization charts being out-of-date. The licensee had submitted TS Amendment Nos. 20 and 24 which removed the organization charts from the TS, and submitted, March 10, 1989, an update to Figure 13.1-2 of Revision 2 to the USAR showing the current WCNOC organization chart.

(Closed) Open Item (482/8825-05): Radiation Survey of Work Areas - This item was previously discussed in NRC Inspection Report 50-482/88-25 and involved the licensee's inconsistency in using current work area surveys and evaluating operations that may change radiological conditions. The licensee had reemphasized to health physics (HP) technicians the need to perform detailed surveys following radwaste operations involving the transfer of radioactive liquids and RAM. The inspectors observed HP technicians conducting surveys of areas following routine radwaste operations. The licensee's current practices resolved the NRC's concern in this area.

(Closed) Open Item (482/8825-06): Tracking of Maximum Permissible Concentration (MPC)-Hours of Exposure During Emergencies - This item was previously discussed in NRC Inspection Report 50-482/88-25 and involved the NRC's concern over whether personnel exposure to airborne radioactivity during emergency response operations would be adequately tracked for radionuclides other than iodine-131. The licensee revised their radiological emergency response implementing procedures to include use of the airborne radioactivity tracking procedure (HPH 01-008). This resolved the NRC's concern in this area.

(Closed) Open Item (482/8825-07): Continuous Airborne Monitor (CAM) Procedures and Performance - This item was previously discussed in NRC Inspection Report 50-482/88-25 and involved the licensee's radioactivity CAM program and deficiencies in the oversight of the CAMs operation and the procedures for setting CAM alarms. The inspectors reviewed the licensee's QA audits and surveillances associated with the CAMs (see Attachment 1). The licensee's QA department had issued a Quality Program Violation (QPV) 2/89-020A for the tracking of corrective actions concerning CAM operation oversight and alarm setpoint problems. The inspectors observed that CAMs were operating with proper alarm setpoints in several areas of the plant. The licensee had implemented a comprehensive program to resolve the CAM problems (see paragraph 9). This item is considered resolved.

(Closed) Open Item (482/8825-09): Emergency Kit Inventory - This item was previously discussed in NRC Inspection Report 50-482/88-25 and involved finding portable RP survey instruments with expended batteries in emergency supply kits. The licensee had identified the reason for the batteries being drained (easily "toggled" switch for instrument on/off operation) and had replaced the instruments with a model that cannot be accidentally turned on during placement into the kits. This resolved the NRC's concern in this area.

(Closed) Open Item (482/8832-05): Corrective Action Program Effectiveness - This item was previously discussed in NRC Inspection Report 50-482/88-32 and involved the licensee's problem identification and corrective action program for RP findings. The inspectors reviewed the licensee's corrective action programs and found them to be properly implemented. The licensee had conducted QA audits of the RP corrective action program and had made recommendations on program improvement areas. This resolved the NRC's concerns in this area.

(Closed) Open Item (482/8832-06): HP Oversight of Radwaste Building Activities - This item was previously discussed in NRC Inspection Report 50-482/88-32 and involved the inadequate oversight of radiological work operations taking place in the radwaste building. The licensee had assigned two HP technicians to the radwaste staff to provide work coverage. This resolved the NRC's concerns in this area.

(Closed) Open Item (482/8832-07): Maintenance of Radiological Posting - This item was previously discussed in NRC Inspection Report 50-482/88-32 and involved the condition of radiation and high radiation area posting found during Refueling Outage (RO)-III. The inspectors noted that the radiological posting of all areas was maintained in a proper manner and was easily observed from all directions. This item is considered resolved.

(Closed) Open Item (482/8832-08): Radiologically Controlled Area (RCA) Housekeeping - This item was previously discussed in NRC Inspection Report 50-482/88-32 and involved the licensee allowing debris to collect in areas of the RCA. The inspectors noted that the entire plant and all work areas within the RCA were being maintained at a high state of cleanliness. This item is considered resolved.

(Closed) Open Item (482/8832-09): Segregation of Radioactive and Clean Wastes - This item was previously discussed in NRC Inspection Report 50-482/88-32 and involved the inspector's observation that too much clean waste was being taken into the auxiliary and containment buildings and much of this clean waste was then being disposed of haphazardly into the radiological trash receptacles. The inspectors examined many clean and radiological trash receptacles in the RCAs and found that trash was being placed in the proper receptacles.

3. Inspector Observations

An inspector observation is a matter discussed with the licensee during the exit interview. Observations are neither violations, deviations, nor unresolved items. They have no specific regulatory requirement, but they are suggestions for the licensee's consideration for program improvement. The licensee acknowledged the following inspector observations at the exit interview:

a. HP Technician Staffing Level

HP technician staffing level is considered adequate for routine operational activities, but would be stressed by plant problems requiring increased HP staff support or oversight. (See paragraph 6)

b. HPS Office Space

The office space allocated to the two in-plant HPSs is inadequate for the conduct of normal supervisory duties. (See paragraph 11)

c. Technical Support

Day to day personnel supervision and work area oversight activities are suffering due to insufficient onsite technical support for HPSs. (See paragraph 6)

d. Practical Factors Requalification

Requalification training for radiation workers does not include demonstration of practical factors involving the use of protective clothing. (See paragraph 7)

e. Chair Whole Body Counter

Action needs to be taken to resolve the counting bias on Detector Number 1 of the chair whole body counter (WBC). (See paragraph 9)

f. Breathing Air System

The personnel air-line breathing air system is not surveyed for radioactivity on a routine basis. (See paragraph 9)

g. Personnel Contamination Monitors

The high sensitivity personnel monitors' (Friskall) procedures do not reference the need to maintain a specific counting geometry (face orientation and open hands) during use. (See paragraph 10)

h. Radiation Survey Instrumentation

Inplant radiation survey instruments are not being returned to the issue room at the end of each shift. (See paragraph 10)

i. Operations ALARA Involvement

Operations personnel are not actively participating in station ALARA planning/coordinating programs. (See paragraph 12)

j. RAM Shipping Document Review

The 49 CFR Part 172.202 required manifest/shipping papers are not always given independent review prior to a shipment leaving the licensee's facility. (See paragraph 15)

4. Open Items Identified During this Inspection

An open item is a matter that requires further review and evaluation by the inspector or licensee. Open items are used to document, track, and ensure adequate followup on matters of concern to the inspector. The following open items were identified:

Open Item	Title	Paragraph
482/8920-01	Personnel Dosimetry Quality Control Tests	8
482/8920-02	Extremity Dosimetry	8
482/8920-03	High High Radiation Area (HHRA) Radiation Work Permits (RWPs)	8
482/8920-04	Tritium Bioassay Program	9
482/8920-05	Alpha Calibration Source	10
482/8920-06	Review of Valve Lineup	14

5. Unresolved Item Identified During this Inspection

An unresolved item is a matter about which more information is required to ascertain whether it is an acceptable item, a deviation, or a violation. The following unresolved item was identified:

Unresolved Item	Title	Paragraph
482/8920-07	Applicability of 10 CFR Part 50.73 Requirements to Licensee Identified TS 6.12 Violations	8

6. Organization and Management Controls

The licensee's onsite and offsite RP organization, staffing, and assignment of responsibilities were examined to determine compliance with the requirements of TS 6.2 and 6.2.2.f and agreement with the commitments

contained in Chapters 12.5 and 13 of the USAR. The licensee's QA audit and surveillance program for RP activities was also reviewed.

The licensee's RP organization (HP group) is included in the Technical Support Department along with Instrumentation and Controls, Reactor Engineering, Results Engineering, and Plant Chemistry groups. The current manager of the Technical Support Department (the third person assigned to this position in less than 3 years) was transferred from the Reactor Engineering Section approximately 6 months ago. Discussions with the Technical Support Manager (TSM) indicated that there may be insufficient time available for him to conduct routine plant inspections of HP activities and also supervise his subordinates due to the technical demands of managing five groups. The TSM does interface with the Manager RP (MRP) on a daily basis.

The assignment of the incumbent MRP was the subject of a Notice of Violation (see NRC Inspection Report 50-482/87-12) due to the MRP possessing less than the years of experience required by the TS and NRC Regulatory Guide (RG) 1.8-1975. As part of the corrective actions, the licensee had hired, temporarily, a person who met the RG 1.8 criteria to provide technical support to the plant manager and MRP until all experience criteria had been met by the incumbent MRP. The MRP now fully meets the experience criteria of RG 1.8. Even though the MRP reports to the TSM during the normal course of business, policies and procedures allow the MRP to contact the plant manager directly in the event of radiological concerns not resolvable at the TSM level.

Currently the licensee's onsite RP staff is comprised of 47 personnel. Of these, 29 are HP classified personnel (18 senior HP technicians, 6 junior HP technicians, and 5 HPSs). The HP technician staff turnover has been less than 15 percent in the last 20 months. The inspectors noted that the RP staff was adequate to provide coverage for routine plant operations. However, it appeared that the staff would be stretched thin when confronted with plant problems that would involve increased RP coverage.

The RP staff was implementing the RP program in a diligent manner and attention to detail was at a high level. There appeared to be no interdepartmental or working group rivalries. Plant staff appeared to adhere to RP policies and consulted with HP technicians freely and frequently.

The onsite RP organization is supported by an offsite RSS which is part of the WCNOC Nuclear Services Division. The RSS is comprised of seven professional personnel of which three (not counting the manager of the group) directly interface with the onsite HPSs in the areas of RP and radwaste activities. RSS personnel visit the site on the average of 1 day per week and certain RSS personnel are assigned full time functional positions on the RP staff during extended outages. The organization and functional area support provided by the RSS was in agreement with the commitments contained in Chapter 12.5.1 of the USAR.

The inspectors discussed with licensee representatives the small RP staff and the lack of full time onsite technical personnel which may be diluting the amount of time the two in-plant HPSs (operations and radwaste) have to observe active work activities. The inspectors noted that the HPS-Radwaste was responsible for maintaining all technical computer programs for classification and characterization of radioactive wastes. These nonsupervisory activities occupied a significant portion of this supervisor's time.

In response to the NRC's concerns discussed in NRC Inspection Report 50-482/88-32 and the last SALP NRC Inspection Report 50-482/89-14, the licensee had increased the frequency and scope of QA audits and surveillances in the RP area and had also requested and received an Institute of Nuclear Power Operations (INPO) "assist visit" in July 1989. Attachment 1 to this report lists the QA audits and surveillances examined by the inspectors. Many of the concerns previously raised by inspectors have also been identified in licensee QA audits and are being tacked via the licensee's QA program corrective action system. Overall, the licensee's QA audit and surveillance program is of high quality and is adequate in scope to allow proper assessment of licensee performance.

Most of the licensee's policies, directives, and procedures for defining and implementing the RP program were examined by the inspectors. Procedures and other documents reviewed by the inspectors are listed in Attachment 1 to this report. The licensee had implemented detailed policies and directives concerning procedure hierarchy, development, review, revision, approval, and use. Procedures receive peer and management review prior to issuance. The inspectors identified a concern regarding a vendor provided procedure that was reviewed and approved by the Plant Safety Review Committee (PSRC), but contained an inaccurate valve lineup (see paragraph 14).

The licensee's RP manual (RPM), WCNOC policies and directives, and station RP implementing procedures are comprehensive and descriptively written. Procedure format is in agreement with industry recommendations (ANSI/ANS 3.2-1982) and RG 1.33. Since 1988, the licensee has revised nearly all of the RP implementing procedures. The technical quality of the procedures is very good. As a whole, the procedures appear to be adequate. QA audits and surveillances have identified a long standing problem with the way RP personnel use and follow procedures. The inspectors noted that the licensee had increased the use of disciplinary action in resolving procedural noncompliance incidents. The licensee has reemphasized the need for all employees to adhere to procedural requirements and have procedures changed or revised when a task can not be accomplished in accordance with the procedure. The inspectors discussed with licensee management the need to ensure that implementing procedures are designed to provide sufficient instructions so that personnel with the lowest experience level expected to use the procedures can accomplish the tasks required by the procedures in an efficient and safe manner. The inspectors observed several work operations and found, for the most part, that workers conscientiously used and followed procedures. The licensee

is attempting to reverse a "follow it if you like" mind set on procedural compliance.

No violations or deviations were identified.

7. Training and Qualification

The inspectors reviewed the licensee's training and qualification program for general employees, RP personnel, and nonlicensed radwaste operators including adequacy and quality of training, qualification requirements, new employees, INPO accreditation, and audits and surveillances to determine agreement with commitments in Chapters 12.5.3 and 13.2 of the USAR; compliance with the requirements in Sections 6.3 and 6.4 of the TS, and 10 CFR Part 19.12, Inspection and Enforcement (IE) Bulletin 79-19; and the recommendations of RGs 8.8, 8.10, 8.13, 8.27, and 8.29, and ANSI/ANS 3.1-1978.

The inspectors reviewed the licensee's radiation worker training programs for permanent plant employees, visitors, and contractors. Training procedures, controls of course content, lesson plans, course handouts, and student reference materials were reviewed. The licensee's general employee training (GET) and radiation worker training appeared to satisfy the requirements of 10 CFR Part 19.12 and the guidance in RGs 8.13, 8.27, and 8.29. Selected GET and HP training instructors' training and qualifications were examined. It was determined that the HP training program had received INPO accreditation in December 1986. While reviewing radiation worker training, the inspectors noted that requalification training for radiation workers does not include a practical factors session involving the use of prctective clothing.

The inspectors reviewed the licensee's training program for RP personnel (ADM 03-801) and nonlicensed radwaste operators including a review of course descriptions and personnel training records. The licensee's training program was being implemented in accordance with WCGS procedures and met the information in IE Bulletin 79-19 for training of RP and radwaste personnel involved in the transfer, packaging, and transport of low-level radioactive waste (LLRW) materials.

The inspectors verified that the licensee had a program for integrating industry problems and NRC regulatory information into the training program. The inspectors reviewed the effectiveness of this program and determined that NRC and industry events, plant modifications, INPO publications, and plant procedure changes were routinely being incorporated into lesson plan updates.

The inspectors evaluated the RP group functional area assignments versus individual RP technician's qualifications and training. All RP technicians appeared to be assigned positions commensurate with their qualifications and training.

The inspectors reviewed the QA audit and surveillance reports generated during 1989 in the areas of GET and RP training. The surveillances, audit plans, and checklists were comprehensive and performance based to ensure training activities were in compliance with the USAR, TS, and WCGS procedures. The documents reviewed are listed in Attachment 1 to this report.

No violations or deviations were identified.

8. External Radiation Exposure Controls

The inspectors examined the licensee's external radiation exposure control program to determine agreement with the commitments contained in Chapter 12 of the USAR; compliance with 10 CFR Parts 19.12, 19.13, 20.101, 20.102, 20.104, 20.105, 20.202, 20.203, 20.205, 20.206, 20.405, 20.407, 20.408, 20.409, and 50.73; and Sections 6.11 and 6.12 of the TS.

The inspectors reviewed the licensee's personnel dosimetry program. The inspectors examined the licensee's thermoluminescent dosimeter (TLD) and pocket ion chamber (PIC) issuance, use, quality control, and calibration procedures and records. The inspectors reviewed the licensee's PIC calibration and drift check records for 1988 and the first 6 months of 1989 and found them in accordance with RG 8.4 recommendations.

The TLD quality control program is implemented by Procedure HPH 01-017, "Evaluation of Personnel TLD Monitoring Devices," which requires a bimonthly onsite irradiation of a selected number of TLDs for beta and beta-gamma exposure and an offsite irradiation at least once every 6 months for beta-gamma or neutron exposure for the purpose of TLD intercomparison evaluations. The measured exposure is compared to the delivered exposure for each TLD. An acceptance criteria of ±50 percent difference has been established to determine whether the TLD results are acceptable. Results indicating a discrepancy greater than ±25 percent are to be investigated and evaluated. However, the procedure does not establish any protocols for these evaluations. The inspectors reviewed the bimonthly TLD quality control data sheets for the period April 1987 through July 1989 and noted several data comparisons which showed a discrepancy greater than ±25 percent which had not been reviewed and evaluated. The procedure did not establish a time limit for these evaluations. This matter was discussed with the licensee during the inspection and at the exit interview on September 1, 1989. The licensee agreed to investigate these discrepancies and improve the timeliness of their evaluations and documentations. These findings are considered an open item pending licensee action to upgrade the evaluation protocols for personnel dosimetry quality control tests. (482/8920-01)

The inspectors reviewed the high radiation area control training included in the GET and Radiation Worker II training and determined that it met the requirements in Sections 6.11 and 6.12 of the TS.

The inspectors examined the licensee's procedures for RCA access and the issuance and use of personnel dosimetry, including multiple TLDs in nonuniform radiation fields. The inspectors examined the licensee's controls for monitoring and control of radiation exposures for minors and fertile women to determine compliance and agreement with 10 CFR Part 20.104 and RG 8.13, respectively. Licensee documentation on the use of multiple dosimetry for several jobs during the last RO was examined and found to have been conducted in accordance with licensee's procedures and applicable recommendations.

The inspectors provided the HPS-Dosimetry with written NRC guidance on the proper interpretation of extremities (10 CFR Part 20.101) and clarification of the material discussed in NRC IE Information Notice (IEIN) 81-26, Part 3, Supplement No. 1, "Clarification of Placement of Personnel Monitoring Devices for External Radiation," which was issued July 19, 1982. The inspectors pointed out to the licensee that they had misinterpreted the IEIN and had changed their dosimetry procedure (HPH 01-035) to reflect that the lower leg was to be monitored as an extremity. This is considered an open item pending licensee review of all personnel extremity exposures for reporting anomalies and correction of dosimetry procedures regarding extremity monitoring. (482/8920-02)

The licensee's procedures and controls for High Radiation Areas and locked high high radiation areas (HHRAs) were examined. HHRAs are defined as radiation levels greater than 1000 mR/hr.

Selected RWPs for HHRA entries from March 16 through August 25, 1989, were examined. A specific type RWP is used to control access to HHRAs. The inspectors had the following observations:

In review of 18 uses of RWP-890015, it was noted that no changes had been made to the location, job description, or other generic information/instructions. It could not be determined from the used RWP file which specific HHRA was being accessed, the actual work that was planned, whether an area was entered or not, or if a survey was required. However, with great difficulty such information was obtained from the HP shift turnover log (HP-STL) and verbal HP personnel verification. Examples included:

- On August 12, 1989, RWP-890015 was initiated. According to the HP-STL at 1451 hours the HHRA key was issued to access the crane hoist in the radwaste filter alley. According to the HPS-Operations no entry was made into the HHRA and the key was issued if the crane was required for other non-HHRA activities.

- On July 31, 1989, RWP-890015 was initiated. According to the HP-STL at 0500 hours the HHRA key was issued for a security door check.

- On July 31, 1989, RWP-890015 was initiated. According to the HP-STL at 1231 hours the HHRA key was issued for an entry into

the "Hot Pipe Tunnel" to change lights. No documented survey could be located. According to cognizant RP personnel, no entry was made past the entrance to the HHRA since the light just behind the HHRA door was changed.

- On June 15, 1989, RWP-890015 was initiated. According to the HP-STL at 1250 hours the HHRA key was issued for an entry into the 1988-foot elevation pipe chase to inspect sprinkler heads. No documented survey could be located.

ADM 03-101, "Radiation Work Permit Program," permits the use of RWP-890015 in the manner it was being used. However, it was the inspectors perception that this RWP was being used in too general a nature and just marginally met regulatory requirements. The licensee was encouraged to evaluate HHRA RWP usage for the inclusion of the following attributes:

- Unique RWP numbering with respect to entries into specific HHRAs.

- Unique RWP instructions for specific tasks that are considered not to involve work within an HHRA, i.e., light changing, door checks, tours and surveillances, etc.

- Provide specific job description and special instructions for each work type entry (disturbing of radiological conditions, contaminated system breaching, shielding activities, decontamination, equipment calibration, etc.) planned.

- Providing specific instructions on the expected comprehensiveness of radiation surveys and methods of documenting radiological surveys during typical HHRA entries (either in the HP-STL or creation of a specific survey for file).

The inspectors' concerns were acknowledged by the licensee. These concerns were discussed at the exit interview on September 1, 1989. This is considered an open item pending licensee evaluation of RWPs used for HHRA control. (482/8920-03)

During facility inspections, the inspectors observed that posting and access controls to high radiation areas were consistent with the requirements of TS Section 6.12 and licensee procedures. The inspectors participated in and observed portions of the licensee's entry into the reactor containment building, while the reactor was at 100 percent power. RP controls, briefings, surveys, personnel neutron monitoring, and documentation of the entry were performed in accordance with appropriate RP procedures.

The inspectors noted during the examination of the radiological occurrence report (ROR) tracking log that Tracking Nos. 89-5, "Loss of Positive

Access Control to a High High Radiation Area," dated February 23, 1989, and 89-9, "Failure to Maintain a Locked Status to a High High Radiation Area," dated April 3, 1989, identified licensee violations of TS 6.12.2. The inspectors discussed this item with licensee representatives during the inspection, at the exit interview on September 1, 1989, and during a telephone conference call between the Region IV inspector (Team Leader) and the licensee on September 7, 1989. The apparent NRC's position is that HHRA control violations (TS 6.12.2) should be reported under the requirements of 10 CFR Part 50.73, "Licensee Event Report System," due to their radiological safety significance. The licensee disagreed with this interpretation. The licensee stated that the guidance provided in NUREG-1022, Supplement 1, "LER System - Description of System and Guidelines for Reporting," exempts the licensee from formally reporting to the NRC "administrative type" (Section 6.0) TS violations. The inspectors stated that a formal NRC position would be obtained on this matter. This is considered an unresolved item pending further NRC review and evaluation. (482/8920-07)

No violations or deviations were identified.

9. Internal Radiation Exposure Controls

The licensee's program for control of internal radiation exposure was examined to determine agreement with the licensee's commitments contained in Chapter 12 of the USAR; compliance with the requirements of 10 CFR Part 20.103; and agreement with the recommendations of RGs 8.15 and 8.26, ANSI N343-1978, IEINS 84-24 and 86-46, NUREG-0041, and NUREG-0938.

The licensee's operation, quality control, and calibration activities associated with the WBC system were reviewed. The inspectors noted while reviewing the WBC system quality control charts that Detector No. 1, for the thyroid, was indicating a low data bias during the period April 4 through August 30, 1989. This observation was discussed with the licensee during the inspection and at the exit interview on September 1, 1989. The licensee agreed to evaluate the quality control data for Detector No. 1 and take corrective action as necessary to eliminate the data bias.

The licensee does not currently have a contract with a vendor laboratory to perform in-vitro bioassays. The licensee does have a procedure (HPH 03-006) for collection of bioassay samples and informed the inspectors that they could make arrangements for analyses of bioassay samples at a vendor laboratory within 24 hours. The inspectors noted that the licensee has detected tritium in the secondary system of the plant. The average tritium concentration in the steam generators has been approximately 2.0×10^{-5} microcuries per milliliter (uCi/ml). Tritium concentration in the reactor coolant system has been averaging approximately 9.5×10^{-1} uCi/ml. The 10 CFR Part 20, Appendix B, MPC occupational limit for inhalation of tritium in a restricted area is 5×10^{-4} uCi/ml based on an exposure of 40 hours per week during 13 consecutive weeks. Even though system leakage is small, workers do

come into contact with secondary system liquids on a routine basis and absorption as well as inhalation should be considered. The inspectors discussed with licensee representatives the need to establish a tritium bioassay program for workers involved with the secondary and reactor coolant systems. This is considered an open item pending licensee evaluation of the inspectors' concerns in this area. (482/8920-04)

The inspectors reviewed the licensee's program for investigation of positive whole body counts and the back calculation of airborne radioactivity exposures (HPH 01-012, "Internal Exposure Calculations and Evaluations"). It was determined that the licensee had not experienced any elevated whole body analysis results which would require investigation and the implementation of a bioassay analysis program of urine and fecal material. The licensee's RAM intake assessment program agreed with the recommendations contained in IEIN 82-18.

The inspectors reviewed the licensee's airborne radioactivity respiratory protection program policies, directives, implementing procedures, and respiratory protection equipment (RPE). RPE inventories and training for individuals involved with maintenance and repair of RPE were reviewed and found satisfactory. The inspectors determined that the licensee had available an adequate supply of RPE for both routine and unexpected use. Individuals performing maintenance and/or repairs on RPE had received specialized training for the tasks being performed. The licensee's facilities for issuance, collection, decontamination, repair, and storage of spare parts were inspected. The licensee's facilities appeared adequate for current operations and routine outage activities. Good housekeeping practices were apparent. The licensee had implemented a well documented quality control program for RPE and RPE was being kept in a high state of readiness.

Policies and personnel assignments agreed with the recommendations of RG 8.15 and NUREG-0041.

Air sample data and MPC work sheets from selected tasks were examined. The licensee's airborne radioactivity assessment program met the requirements detailed in 10 CFR Part 20.103. Based on discussions with cognizant licensee staff and review of MPC work sheets and air sample data, no worker had been exposed to an intake of RAM which would exceed the 40 MPC-hour control measure requiring an evaluation pursuant to 10 CFR Part 20.103(b)(2).

During facility inspections, the inspectors observed an adequate supply of currently calibrated portable air samplers available for use in sampling particulates and iodines. Noble gas sampling equipment was also available. The licensee's CAMs were noted to be strategically placed throughout the RCA and each was in a good state of maintenance. The licensee's CAM program has been the focus of much NRC discussion and enforcement in previous NRC Inspection Reports 50-482/85-42, 86-30, 87-12, 87-28, and 88-25. The licensee's QA department has also expended significant time and effort on surveillances and tracking of corrective

actions in this area. The licensee is still experiencing problems in procedural compliance due to the lack of detailed procedures associated with maintenance and daily operation of the CAMs. The current problems identified by QA audit TE:50140-K2?9, "Radiation Protection," conducted in May and June 1989, involved the finding of CAM alarms set higher than required by HPH 04-077 "Operation and Calibration of the Eberline AMS-3." The QA department has rejected the RP group's corrective action associated with a previous NRC violation (482/8825-01) that cited the same problem, which has not been closed by the NRC. The licensee had informed the Chief of FRPS, Region IV, on April 7, 1989, of a change in WCNOC's corrective action to the NRC violation (dated November 21, 1988) concerning use of an initial 500 count per minute (cpm) alarm set point for area CAMs and requested approval to use a 2000 cpm alarm set point, approximately 1 MPC of unknown beta/gamma radioactivity, for area CAMs. Following this agreement between the licensee and NRC Region IV, the licensee's QA department found that CAM alarms were still being adjusted higher than the agreed to setpoint (2000 cpm initially or 500 cpm following response to an alarm) during the aforementioned QA audit. The MRP disagreed with the QA findings and attributed the setpoint problem to auditor setpoint interpretation error.

The inspectors examined eight area CAMs several times during the inspection period and did not identify any discrepancies with their operation or alarm set points. The licensee is actively trying to resolve this problem and current planned corrective actions appear to be suitable. The NRC violation (482/8825-01) associated with the licensee's CAMs will be followed up during a future inspection by review of QA corrective actions for Programmatic Deficiency Report DP 89-084 and QPV 2/89-020A.

The inspectors determined that the licensee is erroneously expecting the CAMs (fixed filter type) to provide quantitative airborne radioactivity data throughout an airborne incident. However, in actuality the CAMs should be used only for early identification of potential airborne problems. Quantitative data should be provided by a comprehensive air sampling and laboratory analysis program.

The licensee maintained a dedicated breathing air system designed to supply Grade D breathing air throughout the plant. The system was observed to be equipped with the appropriate air quality monitoring and alarm devices. Prior to each use the system was checked for proper breathing air quality. Based on review of licensee's procedures and discussions with cognizant licensee representatives, the inspectors observed that the licensee did not have a program for sampling and analysis of the breathing air system for intrusion of radioactivity. Although the system was dedicated and marked for breathing air only, the inspectors explained the advantages for such sampling and analysis (elimination of accidental cross ties with and intrusion from contaminated systems that would be expected to be clean). The inspectors discussed with the licensee the information concerning this type of incident discussed in NRC IEINs 79-08 and 85-06. This matter was also discussed at the exit interview on September 1, 1989.

The inspectors observed on August 28, 1989, the GET respiratory protection training class, reviewed the student hand out (GT-12-453-01, "Respiratory Protection"), and interviewed the class instructor. The inspectors determined that adequate training was being provided to users of RPE and the subject matter was presented by a qualified instructor. Respirator fit testing was observed on August 31, 1989. Quantitative fit tests were conducted in a commercial type fit test booth. Initial and annual "Respiratory Physicals" are required prior to personnel starting RPE training and qualification.

No violations or deviations were identified

10. Control of Radioactive Materials and Contamination, Surveys, and Monitoring

The licensee's program for the control of RAM and contamination, and radiological surveys and monitoring were examined to determine agreement with the commitments contained in Chapters 11.4 and 12 of the USAR; compliance with the requirements contained in TS 3.7.9 and 6.11, and 10 CFR Parts 19.12, 20.4, 20.5, 20.201, 20.203, 20.207, 20.301, 20.401, 20.402, and 30.51; and the recommendations of RGs 7.3 and 8.25, ANSI N323-1978, IE Circular 81-07, and IEINs 80-22, 84-82, 85-92, 86-23, 86-43, 86-44, 86-107, and 87-39.

The inspectors examined routine and special radiological surveys; observed posting of radiological areas and use of various RP survey equipment; examined area radiation monitors, effluent monitors, and process monitors; and reviewed RAM accountability and licensed source inventory activities. Licensee QA audits and surveillances also have comprehensively covered these areas (see Attachment 1).

Due to recent QA audit and surveillance findings and past NRC findings concerning RAM accountability and licensed source inventory and swipe testing, the licensee had implemented significant changes in the RAM accountability and documentation procedures.

The inspectors accompanied the licensee during radiation surveys and also conducted independent radiation surveys of plant work areas. The licensee's listing of areas to be routinely surveyed and the frequency of such surveys was comprehensive. Radiological surveys were well detailed and provided adequate cross referencing to RWPs and disposition information.

Personnel contamination reports for the period January through April 1989, were examined. Skin and clothing contaminations had been adequately evaluated. Follow-up surveys and investigations were performed in accordance with procedures. The licensee had adopted the use of the NRC recommended program, VARSKIN, for skin dose calculations resulting from hot particles. Skin contamination incidents at less than 200 for 1988 and less than 12 for 1989 were noted by the inspectors.

The inspectors observed that hot particle control zones were established where hot particles were known or expected to exist. Records of routine and job specific surveys indicated that adequate radiation and contamination surveys were being conducted in accordance with the licensee's procedures. A review of the documented RP controls and surveys taken during diving operations in the reactor refueling cavity, near the open reactor vessel with fuel installed, indicated that the guidance contained in IEIN 84-61 was closely followed and implemented.

During facility inspections, the inspectors observed the proper use of friskers and personnel contamination monitors by workers exiting posted loose surface contamination control zones, the RCA, and the site physical security access/egress control point. The inspectors made the observation that even though personnel were randomly observed during their use of full body contamination monitors, no guidance was provided in training or at the exit from the auxiliary building RCA for maintaining the proper face and hand geometry during frisking by the automated machine. The inspectors acknowledged that this is a common problem with whole body friskers and indicated to the licensee that training and observations need to be increased in order to correct the problem.

The inspectors reviewed the licensee's program for RP counting room instrumentation and portal monitor calibration and quality control. The inspectors reviewed the calibration and quality control data for the instruments currently located in the RP counting room, the portal monitors located at the exit from the auxiliary building RCA, and the two portal monitors located at the exit from the security building.

The inspectors noted, during their review of the calibration data for the Tennelec Alpha/Beta Counting System located in the RP counting room, that the thorium-230 alpha calibration source was a 1-inch diameter disc. The samples analyzed by this system are primarily 47 millimeter (approximately 2") diameter swipes and air sample filters. It was discussed with the HPS-Calibration/Training that it is a common industry practice to use a calibration standard which approximates the sample configuration and geometry as closely as possible. This concern was discussed with the licensee at the exit interview on September 1, 1989, and the licensee agreed to evaluate possible replacement of the current alpha calibration standard. This is considered an open item pending inspector followup during a future inspection. (482/8920-05)

The inspectors examined the licensee's portable survey instrument calibration, preoperational quality control checks, and accountability program. The licensee's applicable procedures and schedule for instrument calibration were also reviewed. The inspectors reviewed calibration records and source check records for selected RP portable survey instruments and determined that instrument calibrations and quality control checks were being performed and documented according to procedures and industry recommendations. The inspectors noted that even though a central RP instrument supply facility is located within the power block, technicians do not always return instruments to this location for reuse,

but leave them in various RCAs. This makes the instruments unavailable without someone entering the RCA to find them.

Radiological warning postings were examined during facility inspection tours and were noted to be clearly visible and well maintained.

The licensee's potentially RAM release program had been placed on hold by the plant manager due to recent deficiencies in control and documentation of released material that were identified in QA audits and surveillances. The licensee's program appeared to satisfy the NRC guidance contained in IEIN 85-95.

No violations or deviations were identified.

11. Radiation Protection Facilities and Equipment

The licensee's facilities for conducting RP activities during routine and emergency situations were examined to determine agreement with commitments contained in Chapters 11.4 and 12.5.2 of the USAR and the WCGS Radiological Emergency Response Plan, Table 4.3.1; and the recommendations of RGs 8.8 and 8.25, NUREG-0041, and NUREG-0654/FEMA-REP-1.

The inspectors reviewed the licensee's program for maintaining and inventorying emergency RP equipment and expendable supplies. The inspectors accompanied the licensee while emergency equipment cabinets in the control room (CR) and operations support center (OSC) were undergoing the routine quarterly inspection and inventory. It was noted that the CR equipment inventory was short several pairs of cotton gloves, and the OSC equipment was short several cloth hoods. The licensee took immediate action to bring the equipment inventories in these cabinets to the required minimum quantity during the inspection.

The inspectors reviewed the licensee's inventory of RP survey instruments and found the quality and quantity to be adequate for routine and emergency operation. However, it was noted that there were many radiation survey instruments out of service and waiting repair prior to recalibration at the time of the inspection.

The inspectors evaluated the RP instrument calibration facility and found it adequate to perform the required radiation survey instrument calibrations.

Self-contained breathing apparatus equipment is adequately available for emergency use and is inspected and inventoried monthly.

The inspector examined facilities and equipment and found the licensee maintains an adequate supply of expendable RP supplies (gloves, plastic sheeting and bags, swipes, air sample filters/cartridges, decontamination solutions, radiological symbolic rope and tape, plastic suits, and airfed hoods) and special equipment, such as, portable high pressure decontamination equipment, portable ventilation units, filtered portable

vacuums, temporary shielding, and breathing air filter stations. The licensee had expended significant resources to build a mock up training facility for radiation worker training and RP testing of practical factors. The RP access facility to the RCA contains adequate space for displaying plant orientation maps, RWPs, log-in and log-out computer terminals and is located adjacent to the in-plant HP office.

The licensee's solid radwaste storage facilities agree with the descriptions contained in Chapter 11.4 of the USAR. The licensee does not store solid radwaste on a long term basis and ships it offsite routinely.

The inspectors discussed with the licensee the inspectors' observation that the current single office (approximately 100 square feet or less of space) occupied by the HPS-Operations and HPS-Radwaste is not befitting their positions of responsibility and is not conducive to efficient conduct of personnel matters or supervisory RP related activities. HP technicians appear to have adequate working space available to them for RP related activities.

The licensee's facilities agree with USAR descriptions.

No violations or deviations were identified.

12. Maintaining Occupational Radiation Exposures ALARA

The licensee's ALARA program was reviewed to determine agreement with the commitments in Chapters 12.1 and 12.5 of the USAR; requirements of TS 6.11 and 10 CFR Part 20.1(c); and the recommendations of RGs 8.8, 8.10, and 8.27, and IEINs 83-59, 84-61, 86-23, 86-44, 86-107, and 87-39.

The licensee's ALARA program is well defined in the RPM, WCNOC policies, and plant administrative and implementing procedures. An ALARA committee only exists at the offsite corporate level, but a majority of the participating personnel are plant managers and supervisors. The HPS-ALARA/ALARA coordinator is responsible for the site ALARA activities. Corporate RSS support is provided as needed and RSS reviews certain plant modifications.

The licensee's ALARA program was discussed in NRC Inspection Reports 50-482/89-25, 88-27, and 88-32. The licensee has taken action to resolve NRC concerns and observations regarding ALARA program support, staffing, and a lack of lead time in identifying work activities that require ALARA planning. The licensee has a full time HP technician to support the ALARA coordinator and a team representing various site work groups. These personnel have the title "Department ALARA Representative" and are being provided indoctrination and training in ALARA concepts so that they can be a work group focus point for ALARA activities.

All major work groups at the site, except for the Operations Department, were represented at the initial group meeting on August 31, 1989. The inspectors noted to the licensee at the exit interview on September 1,

1989, that the Operations Department appeared to provide very little support for ALARA planning activities.

The licensee had provided the ALARA coordinator with plant systems training in response to a previous NRC observation. Corporate and site ALARA activities are well documented and implemented by procedures. ALARA reports and trends are reviewed by WCNOC management. The ALARA program is very proactive, visible, and effective. The inspectors found the ALARA staff to possess sufficient experience and training for their assignments. The staff also exhibited a high degree of enthusiasm for implementing a model ALARA program. The ALARA program had been audited by the QA department and only minor programmatic deficiencies were identified.

The inspectors examined documentation involving several completed jobs that involved significant radiological controls. RWP 88-6001 involved the use of an underwater diver to retrieve reactor vessel sample canisters. The ALARA performance achieved in this diving operation was very good. ALARA reviews, RWP preparation, pre-job and post-job briefings, and historical summaries were well documented. The NRC inspectors attended two pre-job briefings for jobs with potentially high exposures. Worker interaction with RP personnel was very good and work procedures were used and followed.

The inspectors reviewed the licensee's temporary shielding program. The licensee has implemented a good temporary shielding program that has reduced exposures on several jobs by significant amounts (conoseal removal, steam generator primary bowl flushing, reactor coolant letdown system, and reactor coolant pump preventative maintenance activities). An exposure savings of approximately 97 Man-REM during RO-III was attributed to the temporary shielding packages installed. Temporary shielding is designed, structural evaluations performed, installed, and removed per Procedure ADM 03-960 which appears to satisfy the recommendations of IEIN 83-64.

The inspectors noted that the licensee's ALARA suggestion program is used very little by plant personnel and is not adequately used to track ALARA problems and corrective actions. This matter is also addressed in QA Audit TE: 50146-K249. The QA department has also identified a lack of plant support for the ALARA program in periodic surveillances. This deficiency is expected to be corrected with the inception of the Department ALARA Representatives. Due to recent QA audit findings concerning worker ALARA knowledge, the licensee is upgrading their emphasis on the training workers receive in GET and in their work groups.

The inspectors found that the licensee's ALARA program followed the attributes described in RGs 8.8 and 8.10, and that radiological work operations were normally accomplished in an ALARA manner.

No violations or deviations were identified.

13. Liquid and Gaseous Waste Systems

The inspectors reviewed the licensee's liquid and gaseous radioactive effluent programs including: waste system changes, waste sampling, process and effluent monitors, procedures for waste and effluent systems, and air cleaning systems to determine agreement with commitments in Chapters 9 and 11 of the USAR; compliance with the requirements in Sections 3/4.3.3.10, 3/4.3.3.11, 3/4.7.6, 3/4.7.7, 3/4.11.1, 3/4.11.2, 6.5, and 6.8 of the TS; and agreement with the recommendations of RG 4.15.

The inspectors reviewed the licensee's implementation of the Radiological Effluent Technical Specifications (RETS) and Offsite Dose Calculation Manual (ODCM) to ensure agreement with analysis sensitivities, reporting limits, analytical results, sampling requirements, surveillance tests, radioactive waste effluent program (RWEP) operating procedures, offsite dose results from effluents, and functional checks and calibrations of equipment associated with the RWEP.

The inspectors reviewed current approved revisions of WCGS procedures used to conduct batch liquid waste releases and containment purges. These effluent release procedures provided for the representative sampling of the radioactive waste system; radionuclide analysis prior to release; calculation of effluent release rate, projected offsite radionuclide concentrations, and offsite doses prior to release; verification of effluent radiation monitor setpoints and testing of effluent isolation valves prior to release; and verifying discharge flow rates and effluent volume discharged.

The inspectors observed the sampling of a waste monitor tank on August 30, 1989, the radionuclide analysis and chemical analyses performed prior to release, and the preparation of the batch liquid release Permit 89068. The inspectors also examined the calculation of the effluent release rate, projected offsite radionuclide concentrations, and offsite doses. The inspectors witnessed the CR operator's verification of the liquid effluent monitor setpoints and the surveillance testing of the liquid effluent discharge isolation valve prior to initiating the release. The inspectors watched the radwaste operator perform the appropriate valve lineup to release the sampled waste monitor tank and initiate the release. The inspectors also reviewed the sampling of containment atmosphere, radionuclide analysis, and the preparation of containment purge release Permit 89040 for a containment purge performed on August 31, 1989. It was determined that the quantities of radioactive nuclides released in the liquid and gaseous effluents were within the limits specified in the RETS. Offsite doses were calculated according to the ODCM and were within the TS limits. The inspectors determined that processing, sampling and analyses, and approval and performance of the radioactive effluent releases were conducted in accordance with WCGS procedures including the performance and documentation of the respective process radiation monitor source checks and isolation discharge valve stroke checks associated with the liquid effluent batch releases and containment purges.

The inspectors determined that no design changes had been made to the liquid and gaseous radioactive waste systems since the previous NRC inspection of this area conducted in March 1989.

The licensee's gaseous and liquid radioactive waste effluent monitors' functional checks, calibrations, and setpoint procedures and records were reviewed during an NRC inspection conducted in March 1989. These records showed that the frequency of monitor functional channel checks and calibrations met applicable TS requirements. The monitor calibrations and setpoint determinations were verified to have been performed according to approved procedures (see Attachment 1).

During a routine NRC inspection conducted in March 1989, the licensee's procedures, surveillance tests, and selected records and test results for maintenance and testing of air cleaning systems containing high efficiency particulate air (HEPA) filters and activated charcoal adsorbers were reviewed. It was verified that the licensee's procedures and surveillance tests provided for the required periodic functional checking of ventilation system components, evaluation of HEPA filters and activated charcoal adsorbers, and replacement and in-place filter testing of air cleaning systems. Selected records and test results for the period May 1986 through March 1989 for the control room emergency ventilation and the auxiliary building emergency exhaust air cleaning systems were reviewed. The in-place filter testing and activated charcoal laboratory tests had been performed in accordance with approved procedures and all test results were verified to be within TS limits.

The inspectors reviewed the licensee's reports concerning radwaste systems and effluent releases to determine compliance with the requirements of 10 CFR Part 50.36(a)(2) and Sections 6.9.1.7, 6.14, and 6.15 of the TS.

The licensee's semiannual effluent release report for the period January 1 through June 30, 1989, was reviewed. The report was written in the format described in NRC RG 1.21 and contained the information required by TS.

No violations or deviations were identified.

14. Radioactive Waste Management

The licensee's program for processing, control, and onsite storage of solid radioactive waste was examined for agreement with the commitments contained in Chapter 11.4 of the USAR; compliance with the requirements of TS 3/4.11.3 and 4.11.3, 10 CFR Parts 20.301, 20.311, 61.55, and 61.56; and the recommendations of NRC Branch Technical Position papers on LLRW classification and waste form characterization and IEINs 87-03 and 87-07.

Management policies, RPM, and plant administrative and implementing procedures adequately defined personnel responsibilities and authority. Staffing and training is described in paragraphs 6 and 7 of this report.

There had been no major changes in the licensee's NRC approved Process Control Program (ADM 03-010) or other waste handling operations since the last inspection in this area (March 1988; NRC Inspection Report 50-482/88-09). The licensee's facilities agree with the description contained in Chapter 11.4 of the USAR. The licensee does not utilize the original solidification system built into the plant but utilizes a leased solidification system that agrees with the guidance contained in IEIN 87-03. The licensee installed a leased liquid waste demineralization system in September 1987. The licensee performed a safety analysis on this system following an incident. The corrective actions to the incident were discussed in NRC Inspection Report 50-482/87-27.

The NRC inspectors noted that on June 6, 1989, the licensee had completed their validation and verification of the vendor supplied computer program, RADMAN, for waste classification and Department of Transportation waste type packaging requirements. This program had previously been used under the vendors approved program through the licensee's QA vendor audits.

QA Audit TE: 50140-K258, "Radioactive Waste Management," dated August 7, 1989, was examined. The QA audit was conducted during July 10-28, 1989, to evaluate the development and implementation of management controls associated with radioactive waste to ensure that regulatory and QA program requirements were being met. The audit appeared to be broad in scope, performance based, and the report was well detailed. The audit identified two QPVs and three quality program deviations (QPDs). The QPVs involved the failure of the HP department to follow procedures for releasing clean trash from the RCA and for previous NRC and QA findings regarding the HP department's failure to follow established procedures. The QPDs involved inadequate documentation and/or verification of changes to the RADMAN program, failure to perform contamination surveys and sorting of used protective clothing in accordance with established procedures, and the HP department's use of several forms that were not of the most current revision. Corrective actions taken and those proposed were discussed with cognizant licensee staff and appeared appropriate. With respect to the QPV involving the release of trash from the RCA, the licensee's immediate corrective actions included verifying that no trash from the RCA had left the site without a survey.

The inspectors also reviewed QA Surveillances: S-1687, "Duratek Operation of EVR System," performed on November 7, 1988; and S-1723, "Processing of Liquid Waste," performed on March 6, 1989. No deficiencies were identified during these surveillances.

Based on the review of licensee procedures and documents listed in Attachment 1 to this report, the inspectors determined that the licensee classified waste pursuant to 10 CFR Part 61.55; that waste met the characteristics of 10 CFR Part 61.56; and that the prepared waste manifest and marking of packages were in accordance with 10 CFR Part 20.311. Licensee inspections of waste handling and packaging were conducted in accordance with 10 CFR Part 20.311(d)(3).

On August 29, 1989, one of the inspectors observed the sluicing of spent resins from Vessels 2 and 4 of the licensee's vendor supplied liquid waste processing system to the inplant spent resin storage tank. The operation involved the vendor representative (VR) that operates the Duratek system, the radwaste HP technician, and operations radwaste personnel working under RWP-890028, "Duratek Waste Processing System - Sluice Duratek Ion Exchange Resin to THCO8." The following observations were made:

- Just prior to the resin transfer the inspector noted that the VR was using vendor Procedure 10-3, "Sluicing Media." The procedure had been reviewed and approved by the PSRC on November 18, 1987. The inspector also noted that a valve lineup checklist was included as an attachment to the procedure, which listed about 33 valves for position verification. The check list also provided spaces for marking each valve's position, a line for the initials of the individual checking the valves, and a line for the signature of the individual that performed the task and date when performed. Since the valve check list had not been marked or initialed, the inspector questioned the VR as to the status of the valve lineup. The VR informed the inspector that he had already verified the valve lineup in accordance with the checklist, but that he had not marked the checklist to so indicate. The VR also informed the inspector that Valve DT34, Instrument Isolation Valve, indicated on the checklist and attached system drawing to Procedure 10-3, was in other Duratek processing systems used at other facilities, but it was not in the system used at WCGS. This matter was brought to the attention of the operations radwaste supervisor (RWS) that was providing oversight of the task. The RWS informed the inspector that it was normal policy to initial the checklist as the valve lineup was being verified. The resin transfer operation took place without the sign offs on the checklist being completed. No operating problems occurred during the resin transfers.

  The inspectors noted during the review of QA Surveillances S-1687 and S-1723 that the QA members observed the VR marking the valve checklist during previous resin transfers.

  The inspectors noted that Procedure 10-3, Section 5, "Instructions," Item 5.1 stated:

  > "Verify valve positions with Valve Checklist."

  Section 6 "Records," item 6.1.2 stated:

  > "Valve Checklist is used for reference before and after use of this procedure. Unless required by the utility, no written record need be retained."

The inspectors discussed at the exit interview on September 1, 1989, the ambivalence of the procedure requirements for: (1) using the valve checklist, and (2) the use of a procedure and drawing that indicated a

valve that was not in the system. The inspectors' observations were acknowledged by the licensee. This matter is considered an open item pending further NRC review. (50-482/8920-06)

The licensee's performance in this area appeared adequate. Open Item 50-482/8920-06 appeared to be an isolated incident involving deficiencies in procedures and a lack of attention to detail.

The licensee had consistently reduced solid radwaste by segregation and radiological surveying of LLRW since plant startup. The licensee's material release program for potentially LLRW had been shut down temporarily due to problems in the documentation and control of materials surveyed for release. The licensee's program appeared to meet the recommendations of IEINs 85-92 and 87-03.

No violations or deviations were identified.

15. Inspection of Transportation Activities

The inspectors examined the licensee's RAM transportation program for agreement with the commitments contained in Chapter 11.4 of the USAR; compliance with the requirements of 10 CFR Parts 20, 30, 71, and 49 CFR Parts 171 through 189; and the recommendations contained in IE Bulletin 79-19, IEINs 79-21, 80-32, 83-10, 84-14, 84-50, 85-46, and 87-31.

The HPS-Radwaste maintained current copies of Title 10 and Title 49 of the CFRs. The inspectors determined that the licensee's procedures had been appropriately updated to incorporate the revisions to federal regulations, changes to burial site acceptance criteria, and applicable items from IE Bulletins and IEINs.

Management policies, plant administrative procedures, and RP implementing procedures adequately defined personnel responsibilities and authorities in this area.

The MRP was assigned as the primary person responsible for transportation of RAM. The HPS-Radwaste is assigned responsibility for implementation of the RAM transportation program. The HPS-Radwaste staff was comprised of two HP technicians and 11 radwaste workers. Technical assistance for transportation and solid waste activities was provided by a radiological engineer from the corporate RSS. Although the HPS-Radwaste was provided periodic technical assistance, it appeared that most of the HPS-Radwaste's time was taken up with the administrative and technical aspects of implementing the licensee's transportation and solid waste programs, which reduced the effectiveness of his ability to provide direct supervisory oversight in the field. In addition, the office the HPS-Radwaste shared with the HPS-Operations appeared not to be suitable or conducive for carrying out of either individual's responsibilities.

QA Audit TE: 50140-K236, "Special Nuclear Materials," dated January 9, 1989, was examined. The audit appeared to be comprehensive and the report

was well detailed. One program deviation was identified and closed during the audit, and a performance improvement recommendation was initiated for consideration and evaluation. The deviation and recommendation were administrative in nature and did not represent a safety problem.

Based on the review of Procedures ADM 03-201 and HPH 02-001, completed shipping and receipt documentation, and discussions with cognizant licensee representatives, the inspectors determined that the licensee had performed receipt surveys pursuant to 10 CFR Part 20.205, had maintained documentation to certify that recipients were authorized to receive the RAM shipped to them as required by 10 CFR Part 30.41(c), and that the regulatory requirements for transporting RAM contained in 10 CFR Part 71 and 49 CFR Parts 171 through 189 were being met.

During an examination of RAM shipment manifests, the inspectors noted that the shipping papers for Waste Shipment 89-13, page 1 of 34, Item 17, had the following statement:

> "This Vehicle is Consigned Exclusive Use. Loading and Unloading Must be Accomplished by Consignor or Consignee, or His/Her Designated Agent."

However, the inspectors noted that the manifests had not been marked "Yes" or "No" by the individual signing the shipper's certification. Based on a discussion with this individual, it appeared that Item 17 had apparently been missed when the the papers were reviewed and signed. The inspectors noted that other documents contained in the shipping documentation package identified the shipment as being an exclusive use shipment and that the special instructions had been acknowledged by the driver. Since other documents in the shipping documentation package indicated independent verifications and/or reviews had been performed, the inspectors discussed the need for the licensee to evaluate the independent review of the shipping papers to assure that all appropriate information was addressed and acknowledged. The HPS-Radwaste acknowledged the NRC observation and agreed to evaluate the need to perform a more independent review prior to RAM shipments leaving the site.

The licensee's performance in this area has improved from previous inspections.

No violations or deviations were identified.

16. Exit Interview

The inspectors met with the resident inspectors and the licensee representatives identified in paragraph 1 and Attachment 1 of this report at the conclusion of the inspection on September 1, 1989. The inspectors summarized the scope of the inspection and discussed the inspection findings as presented in this report. The licensee representatives stated at the exit interview that they would evaluate the inspectors' concerns.

The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspectors during the inspection.

ATTACHMENT 1

TO
NRC INSPECTION REPORT
50-482/89-20

DOCUMENTS REVIEWED

TITLE	REVISION	DATE
WCNOC Directives and Policies		
II.15.0, Engineering and Technical Services	01	05/38
II.17.0, As Low As Reasonably Achievable (ALARA)	01	12/87
III.21E.0, Special Scope Quality Requirements Operations Phase Radiation Protection	01	08/86
III.21G.0, Special Scope Quality Requirements Radiological/Environmental Monitoring	01	04/87
III.21I.0, Special Scope Quality Requirements Packaging for Transporting Type B and Fissile Quantities of Radioactive Materials	00	12/86
III.21L.0, Special Scope Quality Requirements for Low-Level Radioactive Waste Activities	00	12/87
III.26.0, Corrective Action Program	05	11/87
III.30.0, Low-Level Radioactive Waste Management and Minimization	02	02/88
WCNOC Implementing Procedures		
KGP-1210, Corrective Action	02	11/88
KGP-1260, Hazardous Waste Management	01	01/87
KGP-1851, Professional and Supervisory Training Program	01	08/87
Corporate Nuclear Services Division (NSD) Procedures		
KP-CC210, ALARA Committee Charter	00	05/89
KP-C205, Nuclear Services Training Program	04	01/88

TITLE	REVISION	DATE
NSD Radiological Services Section (RSS) Procedures		
KP-R200, Statement of Responsibilities, RSS	04	11/88
KP-RA210, Radiological Environmental Monitoring Program Administration	03	05/89
KP-RA260, Radiation Shielding Evaluation	01	04/89
KP-RP201, Wichita Office ALARA Program	02	06/88
KI-RP201.1, Cost Benefit Evaluation for ALARA Occupational Radiation Exposure	02	03/88
KI-RP201.4, Occupational Exposure Tracking and Trending	01	02/87
KI-RP201.5, ALARA Review of Plant Modification Requests	04	11/88
KP-RP202, Regulatory Surveillance, Interpretation and Comment	02	06/88
KP-RP203, Radwaste Generation and Systems Performance Evaluations	02	02/88
KP-RP204, Establishment of Low Level Radioactive Waste Disposal Contracts	03	02/88
KP-RP205, Establishment of Unshielded and Shielded Transportation Service Contracts for WCGS	03	02/88
KP-RP213, Radioactive Waste Manifest Tracking	02	06/88
WCGS Administrative Procedures		
ADM 01-003, Plant Manager WCGS Duties & Responsibilities	06	02/07/89
ADM 01-006, Manager Technical Support Duties and Responsibilities	06	07/26/88
ADM 01-009, Site HP Duties and Responsibilities	05	09/22/87
ADM 01-023, Guidelines for WCGS Staff Working Hours	05	12/29/87
ADM 01-032, Semiannual Radioactive Effluent Release Report Instructions	05	10/11/88
ADM 01-033, Instructions Describing Reportability, Review and Documentation of Licensee Event Reports (LERS) and Defect/Defic.	18	02/14/89

TITLE	REVISION	DATE
ADM 01-042, Plant Modification Request Implementation	14	08/29/89
ADM 01-043, Control of Site Vendor Services	05	10/13/88
ADM 01-051, Operational Response to Irregular Events	02	08/02/88
ADM 01-059, Conditional Release	07	05/09/89
ADM 01-067, Confined Space Entry	03	01/31/89
ADM 01-085, 10 CFR Posting Requirements	03	01/23/88
ADM 01-090, Guidelines for Heat Stress Control	05	04/17/89
ADM 01-092, Industrial Respiratory Protection Program	02	04/28/88
ADM 01-094, Evaluation of Air Contaminants and Respiratory Selection	02	04/28/88
ADM 01-098, Respiratory Protection Program Beard Policy	00	07/14/87
ADM 01-108, Outage Planning	05	09/13/88
ADM 01-207, Refueling Outage Health Physics Program	03	05/16/89
ADM 02-013, Supervisor Radwaste	02	04/05/88
ADM 03-001, Numbering of Health Physics Procedures	04	07/05/89
ADM 03-002, Radiation Worker Guidelines	04	03/21/89
ADM 03-003, Radiography Guidelines	02	03/01/88
ADM 03-004, Containment Entry	05	08/03/89
ADM 03-006, Notice of RAD Work Practice Violation	06	07/28/89
ADM 03-007, Duties and Responsibilities of Health Physics Supervisors and Technicians	07	04/26/88
ADM 03-010, Radiation Protection Manual and Process Control Program	02	10/12/88
ADM 03-011, Radiological Occurrence Reporting Program	01	07/21/89
ADM 03-012, Contaminated Area Reduction Program	00	08/09/88
ADM 03-050, ALARA Program	07	DRAFT
ADM 03-100, Health Physics Dosimetry Program	07	05/02/89
ADM 03-101, Radiation Work Permit Program	11	08/30/88

TITLE	REVISION	DATE
ADM 03-104, Control of High High Radiation Areas	04	05/23/89
ADM 03-105, Radiation Work Permit Request Program	00	DRAFT
ADM 03-202, Radiological Control and Unconditional Release of Tools and Equipment	06	11/08/88
ADM 03-203, Administrative Procedure for Radioactive Material	09	01/31/89
ADM 03-204, Hot Particle Contamination Control	01	11/08/88
ADM 03-400, Operation and Calibration of Health Physics Equipment	06	07/11/89
ADM 03-600, Respiratory Protection Program	08	05/23/89
ADM 03-801, Health Physics Technician Training Program	02	01/15/88
ADM 03-950, Radioactive Waste Program	05	08/30/88
ADM 03-960, Use of Temporary Lead Shielding	03	04/25/89
ADM 04-006, Preparation of the Monthly Preliminary Report on Radioactive Releases and the Radioactive Effluent Releases Portion of the Semi-Annual Operating Report	03	01/31/89
ADM 04-023, Radioactive Releases	12	03/28/89
ADM 06-200, General Employee Training Program	10	07/26/88
Health Physics Procedures		
HPH 01-002, External Overexposure Evaluation	01	03/03/89
HPH 01-004, Acceptance Criteria for Panasonic TLDs	02	03/07/89
HPH 01-005, Developing Element Correction Factor (ECF) for Panasonic TLD's	07	03/22/89
HPH 01-006, TLD Processing	06	03/07/89
HPH 01-008, MPC - Hour Tracking	10	04/03/89
HPH 01-012, Internal Exposure Calculations and Evaluations	06	09/14/89
HPH 01-016, Evaluation of Exposure for Lost, Suspect, Damaged or Offscale Dosimetry	04	07/12/88

TITLE	REVISION	DATE
HPH 01-017, Evaluation of Personnel TLD Monitoring Devices	03	07/28/86
HPH 01-019, Exposure History Files	07	06/07/89
HPH 01-020, Neutron Dose Calculations	04	03/07/89
HPH 01-028, Drift Check for the Panasonic TLD Reader	01	08/28/87
HPH 01-035, Dosimetry in Non-Uniform Radiation Fields	06	10/18/88
HPH 01-036, National Voluntary Laboratory Accreditation Program	00	05/09/89
HPH 02-001, Receipt, Accountability, and Inventory of Radioactive Materials	08	01/11/89
HPH 02-006, Receipt of New Fuel	03	05/29/85
HPH 02-007, Loss of a Radioactive Source	03	08/01/88
HPH 03-002, Radiation Survey Methods	08	03/31/89
HPH 03-003, Airborne Radioactivity Survey Methods	10	03/22/89
HPH 03-006, Collection of Bioassay Samples	03	06/07/89
HPH 03-011, Contamination Survey Methods	07	10/12/88
HPH 03-012, Schedule of Routine Radiological Surveys	06	06/12/89
HPH 03-013, Health Physics Shift Logs and Shift Turnover	04	04/17/89
HPH 03-014, Personnel Decontamination	07	04/07/89
HPH 03-015, Posting for Radiological Controls	07	04/21/89
HPH 03-020, Health Physics Coverage of Steam Generator Entry	01	01/22/88
HPH 03-025, Radiological Trending	04	08/24/88
HPH 03-026, Underwater Dive Operations	01	08/26/88
HPH 03-027, Skin Dose Calculations	02	12/12/88
HPH 03-028, Free Release of Trash	04	04/06/89
HPH 04-001, Counting Blind Samples for WBC Quality Control	02	07/22/88

TITLE	REVISION	DATE
HPH 04-002, Operation of the Whole Body Counting System	03	07/22/88
HPH 04-005, Operation of the Panasonic UD-710A TLD Reader	02	03/15/88
HPH 04-007, Operation and Calibration of the Eberline RO-2 and RO-2A	06	08/17/89
HPH 04-009, Operation and Calibration of the MS-3 Mini-Scaler	06	06/16/89
HPH 04-013, Operation and Calibration of RADECO Model H809-V1 or H809-V2 Air Samplers	08	06/27/89
HPH 04-015, Operation and Calibration of the Eberline SAC-4	03	06/19/89
HPH 04-017, Operation of Model PRM-110 Portal Monitor	01	09/11/86
HPH 04-021, Operation and Calibration of the Xetex Model 420B Alarming Dosimeter	02	06/16/89
HPH 04-022, Preparation and Operation of the Tennelec LB 5100 Alpha/Beta Counter	02	06/16/89
HPH 04-023, Respirator Fit Booth & Dynatech Model 260 Operating Procedure	06	11/10/88
HPH 04-024, Operation and Calibration of the Nuclear Data WBC-8000 People Mover System	01	04/17/89
HPH 04-026, Operation of the "RASCAL" PRS-1 With a Neutron Rate Detector	04	06/27/89
HPH 04-037, Operation and Calibration of the Teletector 6112B Survey Meter	04	06/21/89
HPH 04-039, Operation and Calibration of the PRM-6 Pulse Rate Meter	03	06/05/89
HPH 04-040, Operation of the Eberline RO-7	03	8/17/89
HPH 04-044, Startup and Shutdown of the WBC System	01	08/13/84
HPH 04-045, Selection and Use of Protective Clothing	05	04/24/89
HPH 04-054, Operation and Calibration of the "Snoopy" NP-2 Neutron Survey Meter	04	06/21/89
HPH 04-055, Quality Control Program for WBC	04	08/26/88

TITLE	REVISION	DATE
HPH 04-060, Operation and Calibration of the Ludlum Model 19 Micro R/hr Meter	02	06/21/89
HPH 04-061, Operation and Calibration of the Eberline RM-21 Radiation Monitor	03	06/27/89
HPH 04-062, Operation and Calibration of the MSA Lapel Air Sampler	03	06/27/89
HPH 04-066, Operation and Calibration of the Eberline Rad Survey Meter Model E-130A	0?	06/21/89
HPH 04-067, Operation and Calibration of the Eberline Model PRM-7 Micro R/Hr Meter	03	06/21/89
HPH 04-068, Operation and Calibration of the RADECO Model HD-29 and HD-29A Air Samplers	05	06/20/89
HPH 04-074, Operation and Calibration of the NMC Gamma-10 Portal Monitor	04	06/16/89
HPH 04-077A, Operating Instructions for the Eberline AMS-3	00	DRAFT
HPH 04-078, Operation and Calibration of the NMC Betamax Friskall	02	06/16/89
HPH 04-080, Operation and Maintenance of the RM-1 Cavity Decontamination System	01	04/26/89
HPH 04-083, Operation and Calibration of the Eberline Model E0520 Radiation Survey Meter	01	05/21/89
HPH 05-001, Calibration of the WBC System	03	03/07/89
HPH 05-011, Calibration and Leak Test of Pocket Dosimeters	06	03/24/89
HPH 05-012, Calibration and Sensitivity Adjustment of Model PRM-110 Portal Monitors	03	07/27/83
HPH 05-053, Energy Calibration of the WBC System	02	07/11/88
HPH 06-004, Selection of Respiratory Protection Equipment	03	08/03/88
HPH 06-005, Use of Full Face With Canister/Filter	01	01/09/86
HPH 06-008, Operation and Use of Self Contained Breathing Apparatus (SCBA)	02	07/22/88

TITLE	REVISION	DATE
HPH 06-011, Quality Control of Respiratory Protection Equipment	07	05/18/89
HPH 06-015, Donning and Use of an Air Supplied Hood	02	10/06/88
HPH 06-019, Procurement, Issue and Sue of GMR-I Iodine Canisters	02	05/24/89
HPH 07-001, Pre and Post Job ALARA Reviews	02	03/03/88
HPH 07-002, ALARA Reviews	01	09/14/88
HPH 09-501, Classification of Waste	05	08/08/88
HPH 09-503, Collection and Transfer of Radioactive Waste	05	03/03/89
HPH 09-504, Packaging of Compactable Solid Waste	05	06/05/89
HPH 09-507, Packaging of Wet Solid Waste	03	01/21/88
HPH 09-509, Marking, Labeling and Storage of Radioactive Waste	03	05/17/89
HPH 09-510, Handling of Cartridge Filters	08	02/07/89
HPH 09-512, Incoming Vehicle Surveys	02	03/09/86
HPH 09-513, Outgoing Vehicle Surveys	04	02/28/89
HPH 09-514, Transport Vehicle Loading and Inspection	09	04/17/89
HPH 09-520, Determination of Shipment Type	03	08/08/88
HPH 09-521, Shipment of Limited Quantity Materials	01	02/06/86
HPH 09-522, Shipment of LSA Materials	02	01/28/86
HPH 09-523, Shipment of Type A Materials	01	01/28/86
HPH 09-524, Exclusive Use Shipment of Type B or HRC Material	02	03/17/89
HPH 09-525, Shipment of Empty Packages	01	12/13/85
HPH 09-530, Radioactive Materials Shipping Documents	04	06/12/89
HPH 09-531, Advanced Notifications	02	02/19/88

TITLE	REVISION	DATE
HPH 09-534, Waste Sampling Procedure	02	05/05/89
HPH 09-535, Use and Outline of The RADMAN Operating Program	02	04/18/89
HPH 09-541, Bead Resins and Activated Carbon Dewatering Procedure for CNSI 14-215 or Smaller Liners	02	05/16/89
HPH 09-544, Use and Outline of the FILTRK Operating Program	00	05/09/89
Chemistry Procedures		
CHM 01-002, Sampling of the Liquid Release Batch Tanks	04	05/02/88
CHM 01-004, Sampling Containment Atmosphere for Radioactive Gases and Tritium	07	07/06/88
CHM 01-006, Sampling Containment Atmosphere for Particulate and Iodine Concentration	03	09/02/87
CHM 02-271, Determination of Total Suspended Solids	07	12/07/88
CHM 03-140, Preparation of Radioactive Liquid Release Permit	07	04/24/89
CHM 03-145, Composite Preparation of Liquid Releases	04	01/16/89
CHM 03-150, Use of the ND6700 LRW/GRW System for Liquid Radioactive Releases	08	04/24/89
CHM 03-152, Use of the ND6700 LRW/GRW System for Containment Purges	11	04/28/89
CHM 03-161, Preparation of Radioactive Gas Release Permit for Containment Purges	06	04/17/89
System Operating Instructions		
SYS HB-125, Waste Monitor Tank Operation	05	04/26/89
SYS GT-120, Containment Mini-Purge System Operation	08	11/08/88
STS SP-001, Process Radiation Monitoring System Source Check and Valve Stroke	09	05/11/89

Miscellaneous Documents

Surveillance Test Procedure STS HP-001, Sealed Source Contamination Test	02	10/12/88
Surveillance Test Procedure STS HP-001, Sealed Source Contamination Test	03	08/03/89
Radiological Occurrence Report Tracking Log for 1988 and 1989		
Organization Charts for WCNOC and WCGS	02	08/89
KP-844, Training IMPACT System	03	08/11/88
Personnel Staffing and Shift Assignment Roster for RP Group		
EPP 02-1.5, Maintenance of Emergency Facilities and Equipment	10	06/22/89

Quality Assurance Activities

Audits

QA Audit Report TE:50140-K227, "Indoctrination and Training - Health Physics and Maintenance," performed September 8 - October 14, 1988

QA Audit Report TE:50140-K236, "Special Nuclear Material," performed November 30 through December 21, 1988

QA Audit Report TE:50140-K240, "Review Requirements for Onsite Operating Organization," performed January 10 through 18, 1989

QA Audit Report TE:50140-K243, "Technical Specifications and License Condition Adherence," performed February 6 through 27, 1989

QA Audit Report TE:50140-K249, "Radiation Protection Program," performed May 8 through June 9, 1989

QA Audit Report TE:50140-K255, "Emergency Preparedness Program," performed June 12 through July 31, 1989

QA Audit Report TE:50140-K253, "Corrective Action and Nonconformance Items, performed June 1 through 30, 1989

QA Audit Report TE:50140-K258, "Radioactive Waste Management, performed July 10 through 28, 1989

Surveillances

S-1678, High Radiation Area Control, dated 11/03/88

S-1879, Radiography Radiological Practices, dated 11/02/88

S-1682, RHR Heat Exchanger "A" Gasket Replacement, dated 11/09/88

S-1685, Fuel Reconstitution, dated 11/11/88

S-1687, Duratek Operation, dated 11/11/88

S-1697, Hot Particle Control, dated 12/07/88

S-1698, Steam Generator Dam Removal, dated 12/05/88

S-1699, Contamination Control, dated 12/06/88

S-1703, Reactor Closure Head O-Ring Installation, dated 12/14/88

S-1706, ALARA, dated 12/23/88

S-1707, Reactor Closure Head Installation, dated 1/12/89

S-1715, Liquid/Gaseous Effluents, dated 02/09/89

S-1723, Process of Liquid Radwaste, dated 03/10/89

S-1731, Control of Licensed Sources, dated 04/24/89

S-1738, Health Physics Calibration, dated 06/01/89

S-1745, Chemical Use of Disposal, dated 08/89

Radioactive Waste and Other Activities

Duratek Corp. Operating Procedure 10-3, Sluicing Media (EVR^{TM} System) Revision 3, dated 11/18/87

RADMAN Program Validation and Verification, June 1989.

Radioactive waste shipment No. 89-13, 84 drums of compacted Low Specific Activity (LSA) material.

Waste Burial Permit, No. 0223-15-X, expiration date December, 31, 1989, from the State of South Carolina.

Burial site License, No. 097, Chem-Nuclear Systems Inc. Barnwell Waste Management Facility.

Limited Quantity shipments of various radioactive samples Nos. 89-R-19, 18, 16, and 02.

Radioactive waste shipment No. 89-13 of 84 drums of compacted Low Specific Activity (LSA) material.

LSA shipments of used protective clothing and fuel inspection equipment Nos. 89-R-01 and 05, respectively.

NRC Quality Assurance Program Approval, No. 0598, for the licensee's procurement, maintenance, repair, and use of transportation packages.

Selected receipt surveys of incoming radioactive materials 1988 and 1989.

ATTACHMENT 2

TO
NRC INSPECTION REPORT
50-482/89-20

LICENSEE PERSONNEL CONTACTED

NAME/TITLE

J. Augustyn - Chemistry Technician
R. Blecha - Maintenance Engineering
F. Breshears - Health Physics (HP) Supervisor (Dosimetry)
*S. Burkdall - Nuclear Training Department (NTD) Instructor (HP)
T. Conley - HP Supervisor (Training/Calibration)
C. Criqui - Junior HP Technician
*G. Downing - NTD Program Coordinator (HP)
S. Fenton - HP Technician
*R. Flannigan - Manager, Nuclear Safety Engineering
*C. Fowler - Manager, Instrumentation and Controls
T. Fraker - Radwaste Operator
J. Freeman - Operations Group Radwaste Supervisor
B. Goddard - Mechanical Maintenance
*K. Craighead - Site Emergency Planner
J. Harris - HP Technician (Dosimetry)
M. Hawkesworth - Maintenance
E. Holman - HP Supervisor (Operations)
*R. Holloway - Manager Maintenance and Modifications
R. Hoyt - HP Clerk
M. Kerving - HP Technician
*R. Logsdon, Manager, Chemistry
*G. McClelland - QA Auditor
C. Medenciy - HP Supervisor (Radwaste)
*T. Moore - Nuclear Services (Corporate) Radwaste Engineer
*D. Morebey, Supervisor Operations
T. Nabb - Technician, Radwaste Processing Vendor Representative
C. Palmer - Supervisor Chemistry
T. Patten - HP Technician
D. Parks - Nuclear Training Department (NTD) Supervisor, General Training
G. Perkins - Senior Nuclear Station Operator (Radwaste)
M. Reed - HP Technician
C. Reekie - Emergency Planning Specialist
L. Rice - HP Technician
B. Romine - Operator
J. Schepers - HP Technician
J. Shoemark - Maintenance
C. Stone - HP Technician
H. Stubby - NTD Supervisor, Technical Training
R. Taylor - HP Supervisor (ALARA)
G. Vinklarek - Junior HP Technician
D. Williams - Electrical Maintenance
*R. Wright - Supervisor, QA Audits
M. Youngblood - Operator
*J. Zell - Manager, Nuclear Training Department

*Denotes those that also attended the Exit Meeting on September 1, 1989.

ATTACHMENT 3

TO
NRC INSPECTION REPORT
50-482/89-20

(1) WOLF CREEK GENERATING STATION COMPARISON WITH THE AVERAGE NATIONAL PRESSURIZED WATER REACTOR RADIATION EXPOSURE EXPENDITURE PERFORMANCE
AND
(2) SELECTED THIRD REFUELING OUTAGE WORK OPERATIONS RADIATION EXPOSURE EXPENDITURES
AND
(3) FIVE YEAR SUMMARY OF LOW-LEVEL RADIOACTIVE WASTE SHIPPED FOR DISPOSAL

TABLE 1

PERSON-REM EXPENDITURE
(FIVE YEAR PERIOD)

	1985	1986	1987	1988	1989
WCGS Goal	low*	150.0	150.0	190.0	35.3
WCGS Expenditure (TLD)	7.2	134.0	124.0	296.5	6.8**
National PWR Average	416.0	392.0	371.0	336.0	unk

* WCGS Operating License issued June 4, 1985
** As of July 31, 1989

TABLE 2

SELECTED PERSON-REM EXPENDITURES FOR REFUELING OUTAGE III 1988)

GENERAL:

(All exposure expenditures are rounded to nearest tenth of a person-rem)

Duration of the Outage (days):	88
Total Outage Exposure (Person-rem per TLD):	228.8

GENERAL: Cont'd

Total Man-hours in Radiologically Controlled Areas:	180,554
Highest individual exposure (rem):	1.4
Number of personnel skin contaminations:	81
Number of personnel clothing contaminations:	83
Number of Hot Particle Incidents:	40
Number of personnel with calculated skin exposure:	28
Highest individual skin exposure (rem):	12.5*
Highest individual MPC-hour assignment:	6.9

* See NRC Inspection Report 50-482/89-09

COLLECTIVE EXPENDITURES OF VARIOUS WORK GROUPS

Plant Management (First Line and above)	3.9
NRC	0.1
Health Physics	32.8
I&C Computers	4.9
Results Engineering	30.8
Decontamination Personnel	9.5
Maintenance Engineering	13.7
Mechanical Maintenance	69.3
Electrical Maintenance	2.4
Insulators	12.2
Welders/Pipefitters	11.1
Carpenters/Painters	13.3
Quality Control	12.1
Quality Assurance	0.3
Operations Support	7.8
Security	0.6
Outage Coordinators	0.7

NRC REGULATORY GUIDE 1.16 EXPOSURE TASK BREAKDOWN

Routine Operations Surveillance	18.0
Routine Plant Maintenance	21.0
Inservice Inspection (ISI)	41.0
Waste Processing	5.0
Refueling Operations	11.0

SELECTED OUTAGE TASKS

JOB DESCRIPTION	PERSON-REM
QC/Results Eng. ISI in containment	24.9
- UT/PT on Reactor Coolant (BB) and Accumulator Safety Injection (EP) Piping Inside of the Bioshield	9.6
- Spuncast Automated UT on BB Piping Inside Bioshield	5.3
- Spuncast UT on Reactor Vessel BB Outlet Piping	3.1
- UT of BB Piping Inside of Bioshield	5.7
QC/Results Eng. ISI in other areas	0.5

Steam Generator (SG) Eddy Current/Support (Four SGs)	59.2
- HP Surveillance SG A/D Platform Work	8.8
- Remove and Reinstall SG A/D Manways	6.3
- Remove and Reinstall SG B/C Manways	4.9
- Perform SG A/D Eddy Current Testing	6.5
- Perform SG B/C Eddy Current Testing	5.5
- Install/Remove SG "A" Nozzle Dams (Hot & Cold Legs)	3.9
- Install/Remove SG "B" Nozzle Dams (Hot & Cold Legs)	4.5
- Install/Remove SG "C" Nozzle Dams (Hot & Cold Legs)	3.0
- Install/Remove SG "D" Nozzle Dams (Hot & Cold Legs)	4.9
Manway Bolt Hole Repair SG "C"	3.1
Manway Bolt Hole Repair SG "D"	5.2
Sludge Lance Work on SG A/D	3.9
Sludge Lance Work on SG B/C	2.0
Replacement of Mechanical Seals on RCPs A & D	3.9
Chesterton Live-Load Valve Packing in High Radiation Areas	9.6
Functional Testing of Mechanical Snubbers in Containment	5.7
Install/Remove Temporary Radiation Shielding Inside Containment	2.3
Decontamination Inside of Containment at Shutdown (Modes 3-6)	10.7
Reactor Head Stripping and Redressing	5.5
Reactor Head Removal and Installation	26.0
Reactor Head O-Ring Replacement (special)	4.8
CRDM Unlatching and Fuel Shuffle in Containment	2.1
Fuel Shuffle in Spent Fuel Building	0.9

TABLE 3

TOTAL VOLUME OF LOW-LEVEL RADIOACTIVE WASTE SHIPPED FOR DISPOSAL
(Since Startup)

YEAR	1985	1986	1987	1988	1989
Cubic Feet	None*	6100	4501	4460	3221**

* WCGS Operating License issued June 4, 1985
** As off May 5, 1989