UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

NOV 30 1990

Report No.: 50-261/90-25

Licensee: Carolina Power and Light Company
P.O. Box 1551
Raleigh, NC 27602

Docket No.: 50-261 License No.: DPR-23

Facility Name: H. B. Robinson

Inspection Conducted: November 5-8, 1990

Inspectors: _____ 23 November 1990
W.B. Gloersen Date Signed

_____ 23 November 1990
G. B. Kuzo Date Signed

Accompanying Personnel: E. B. Pharr

Approved by: _____ 11-29-90
for J. P. Potter, Chief Date Signed
Facilities Radiation Protection Section
Radiological Protection and Emergency
Preparedness Branch
Division of Radiation Safety and Safeguards

SUMMARY

Scope:

This routine, unannounced inspection was conducted in the area of occupational radiation safety during extended outages and included an examination of: audits and appraisals, planning and preparation, training and qualification, external exposure control, internal exposure control, control of radioactive materials and contamination, surveys and monitoring, and maintaining occupational exposures ALARA. In addition, Information Notices and the licensee response to a previously identified inspection finding were reviewed.

Results:

In the areas inspected, three non-cited violations and one unresolved item were identified. Based on interviews with licensee management, supervision, technicians, and records review, the inspectors found the radiation protection program to be managed adequately. The licensee's programs for external and internal radiation exposure controls were effective and functioning adequately to protect the health and safety of occupational radiation workers. Contractor

health physics employee training and qualifications met applicable requirements. However, weaknesses were noted and were identified as non-cited violations in the following areas: (1) failure to barricade an entrance to a high radiation area (licensee-identified) (Paragraph 3); (2) failure to follow procedures (Paragraph 7.c); and (3) failure to label properly storage containers for radioactive materials (Paragraph 9.b). Additionally, an unresolved item concerning the adequacy of verification of Grade D quality for the supplied-air system was identified (Paragraph 6.b).

REPORT DETAILS

1. Persons Contacted

Licensee Employees

S. Billings, Technical Aid- Regulatory Compliance
M. Burch, Radiation Control Foreman - Environmental and Radiological Control (E&RC)
C. Coffman, Project Engineer - Onsite Nuclear Safety
R. Crook, Senior Specialist - Regulatory Compliance
*J. Curley, Manager - E&RC
*C. Dietz, Manager - RNPD
*A. Eaddy, Support Supervisor - E&RC
*K. Kirkland, Senior Specialist - E&RC
*J. Kloosterman, Director - Regulatory Compliance
T. Pilo, ALARA Specialist - E&RC
*W. Ritchie, Senior Specialist - E&RC
*J. Sheppard, Plant General Manager

Other licensee employees contacted included radiation control foremen, technicians, supervisors, and office personnel.

Nuclear Regulatory Commission

L. Garner, Senior Resident Inspector
*K. Jury, Resident Inspector

*Attended exit interview

2. Organization and Management Controls (83750)

The inspectors reviewed changes made to the licensee's organization, staffing levels, and lines of authority as they related to radiation protection, and verified that there were no significant changes made to the licensee's organization or program since the last inspection.

The inspectors discussed with the radiation protection supervisor the type, methods of, and degree of interaction between plant groups. The inspector reviewed the licensee's program for self-identification of weaknesses related to the radiation protection program and the appropriateness of corrective action taken. This subject is discussed further in Paragraph 3.

No violations or deviations were identified.

3. Audits and Appraisals (83750)

Technical Specification (TS) 6.5.3.2.d requires that audits of plant activities be performed under the cognizance of the Quality Assurance (QA) Services Section of the Corporate QA Department and that the audits shall

encompass, in part, the following: (a) the conformance of facility operation to all provisions contained within the TSs and applicable license conditions at least once per 12 months; and (b) the Process Control Program (PCP) and implementing procedures for solidification of radioactive wastes at least once per 24 months.

The inspectors reviewed the following audits of the Environmental and Radiation Control Program:

Audit Report No.: QAA/0020-89-01 (conducted February 20-March 3, 1989)

Audit Report No.: QAA/0020-90-02 (conducted February 5-16, 1990)

In general, the audits were found to be well planned and documented and contained items of substance relating to the radwaste, radiological protection, monitoring, dosimetry, control, testing, and ALARA programs. The reports of audit findings to management also were reviewed and were found to contain responsive commitments by management to effect corrective actions for the deficiencies noted.

The inspectors also reviewed the experience of the licensee in identifying and correcting deficiencies or weaknesses related to the control of radiation or radioactive material. The licensee used the following vehicles to identify and document radiological control weaknesses: radiation safety violations (RSVs), significant condition reports (SCRs), nonconformance reports (NCRs), and QA field reports.

The inspectors reviewed RSVs for 1990 and observed that RSVs were neither sequenced nor tracked by severity level or root cause. The RSVs were apparently tracked by Department and the information was supplied in the monthly E&RC reports to management. If the licensee noted several similar RSVs, then an SCR normally would be written. The inspectors discussed this type of tracking system for RSVs. Licensee representatives stated that they would evaluate the tracking system for changes that might enhance the program for self-identification and correction.

One apparent problem area was identified by the licensee involving two examples for failure to barricade an entrance to a high radiation area located at the Pipe Alley in the Auxiliary Building in accordance with TS 6.13.1. The first event occurred on November 25, 1989, and involved both a posting and barricading problem while the second event occurred on August 17, 1990, and involved only a barricading problem. Both cases involved the physical barrier to the Pipe Alley being left down. As part of the corrective action to prevent recurrence of the first event, the licensee submitted a request to install a door to control access to the Pipe Alley. After an engineering evaluation was performed, the door proposal was unacceptable due to fire protection concerns. The licensee then submitted a request to install a swing gate. The ensuing engineering evaluation required a significant amount of time since the swing gate was to be installed into a seismic wall. Before the swing gate was installed, the second event occurred on August 17, 1990 (as noted above). The inspectors

informed the licensee that this problem area would be identified as a violation of TS 6.13.1, however this licensee-identified violation would not be cited because the criteria specified in Section V.G.1 of the NRC Enforcement Policy were satisfied. This violation was considered to be a non-cited violation (NCV) since the licensee's corrective action to prevent recurrence of the first event had not been implemented before the second event occurred due to engineering evaluation delays (NCV: 50-261/90-25-01).

One NCV for failure to barricade a high radiation area in accordance with TS 6.13.1 was identified.

4. Planning and Preparation (83750)

The inspectors reviewed the licensee's augmentation of the health physics (HP) staff to support the H. B. Robinson thirteenth refueling (RF13) outage. The licensee had requested and ultimately hired 83 contractor health physics technicians (HPTs) to supplement the permanent staff of 31 Radiation Control Technicians (RCTs). The contractor HP staff consisted of 55 senior technicians, 25 junior technicians, and 3 supervisors. The licensee assigned a permanent HP Foreman with each contract supervisor to work as a team during the entire outage. During the RF13 outage, the licensee estimated a ratio of one HPT to 16 outage workers.

The inspectors also examined indicators of management support for the radiation protection program. The following approvals of budgeted items needed for radiation protection during the outage and future outages were noted:

- Authorization of an additional 25 HPTs to support RF13
- Authorization for additional temporary shielding purchases
- Approval to decontaminate the RHR system
- Authorization to order three tool monitors
- Authorization to order approximately 100 digital alarming dosimeters

No violations or deviations were identified.

5. Training and Qualifications (83750)

10 CFR 19.12 requires the licensee to instruct all individuals working or frequenting any portions of the restricted areas in the health protection aspects associated with exposure to radioactive material or radiation, in precautions or procedures to minimize exposure, and in the purpose and function of protection devices employed, applicable provisions of the Commission Regulations, individuals responsibilities and the availability of radiation exposure data.

General Employee Training (GET) provided to craftsmen as well as to licensee and contract HP technicians was reviewed and discussed with licensee representatives.

a. General Employee Training (GET)

Training Instruction-300 (TI), General Employee Training and Respiratory Protection Training, Revision (Rev.) 24, dated June 26, 1990, describes a program in which facility employees were provided with general knowledge and skills for safe work in and around the plant. GET is divided into two levels with GET I providing a general plant indoctrination while GET II, is required for employees entering the Radiologically Controlled Area (RCA). GET requalification was required annually.

From review of training procedures and course outlines, and discussions with training personnel, the inspectors noted that the program met the provisions of 10 CFR 19.12. In addition the training program was thorough and well-organized. Trainees were taught exposure reduction techniques, ALARA concepts, and hazards associated with radiation exposure. Students were required to pass the GET exam with a minimum of 80 percent correct. Also a demonstration of profficiency in a full dress mock-up of entering and exiting a contaminated area was required. The mock-up exercise required complete and correct donning and removing of protective clothing, as well as demonstration of safe radiation protection practices.

The inspectors reviewed selected GET records for workers signed in on Radiation Work Permits (RWPs) R90-660, and R90-0786, both dated on November 2, 1990. The RWPs were associated with steam generator (S/G) activities. Records were reviewed using the licensee's Radiological Information Management System (RIMS). For the individuals reviewed, all GET was current.

No violations or deviations were identified.

b. HP Technician Training

TI-114, Related Technical Training and On-the-job Training for Environmental and Chemistry and Radiation Control Personnel, Rev. 12, dated May 21, 1990, provided for the initial and a continuous training program for RCTs and also for their pending qualification. Licensee technicians are provided initially with a three to four week generic HP training program and after successful completion are given site specific training. As part of their on-the-job training, technicians are required to complete selected tasks documented on qualification cards. Also within three years of their start date, technicians are required to complete a five week plant systems session. Licensee RCTs were provided with quarterly specialized training. The training department representatives stated that quarterly specific system classes are planned for the beginning of 1991.

Contract HPTs were required to complete successfully a two to three day site-specific training and to complete qualification cards as part of their on-the-job training. Both junior and senior technicians required the same initial training but advanced training was available to only senior technicians.

Selected qualification cards were reviewed for both in-house and contract technicians and all records of training activities were found to be appropriately completed or in progress.

No violations or deviations were identified.

6. Respiratory Protection Program (83750)

10 CFR 20.103(c)(2) permits the licensee to maintain and to implement a respiratory protective program that includes, at a minimum: air sampling to identify the hazard; surveys and bioassays to evaluate the actual exposures; written procedures regarding supervision and training of personnel, and issuance of records; and determination by a physician prior to initial use of respirators, and at least every 12 months thereafter, that the individual user is physically able to use respiratory protective equipment.

a. Training, Fit Testing and Medical Qualifications

The inspectors reviewed and discussed the respirator protection program training, fit-testing, and medical qualification status for selected personnel using particulate and/or supplied-air respiratory protective equipment at the facility.

TI-300, General Employee Training and Respiratory Protection Training, Rev. 24, dated June 26, 1990, provided required training to prepare workers to wear respirators for protection against radiological and nonradiological contaminants. Health Physics Procedure (HPP)-101, Administrative Control for Respirators, Rev. 12, dated July 21, 1989, required that the licensee maintain in good operating condition an adequate supply of respirators ready for issue at any time. HPP-101, Section 9.1 stated that respirators will not be issued to an individual unless he/she had been medically qualified, respirator trained or retrained, and successfully fit-tested per HPP-102, Respirator Fit Testing, within the past 15 months. The inspectors noted that the length of time between medical qualifications were contrary to the regulations of 10 CFR 20.103(c)(2) which require annual medical qualifications. Licensee representatives informed the inspectors that an exemption from the requirement was granted to H.B. Robinson by the NRC as detailed in a memo dated July 29, 1989. The exemption permitted the licensee to administer physical examinations for users of respiratory equipment at an interval of every 9 to 15 months rather than the currently schedulded 8 to 12 months, provided that the total time over any three consecutive physical exam periods did not exceed 39 months. The inspectors noted that the licensee's procedure only required that respirator users be medically examined within 15 months

of respirator use. Therefore, by following the current procedure, an employee could exceed the 39 month time interval granted by the NRC's exemption over three consecutive exam periods. Licensee representatives stated they would consider potentially revising the procedure to assure that no individual could exceed the 39 month time interval.

Review of selected records on the licensee's RIMS indicated that selected contractor and licensee employees conducting S/G work associated with RWPs R90-660 and R90-0786 were trained to use respiratory protective equipment, fit-tested, and medically qualified in accordance with procedural requirements.

No violations or deviations were identified.

b. Breathing Air Quality

30 CFR 11.121 requires that compressed, gaseous breathing air meet the applicable minimum grade requirements for Type 1 gaseous air set forth in the Compressed Gas Association (CGA) Commodity Specification for Air, G-7 (Grade D or higher quality).

HPP-110, Inspection and Maintenance of Respiratory Equipment, Rev. 10, dated November 12, 1988, provides instructions for inspection and maintenance of routine use of respiratory protective equipment. The procedure requires the breathing air to be sampled every 92±23 days to ensure air quality of Grade D or better.

The inspectors reviewed and discussed with cognizant licensee representatives methods for verifying Grade D quality for the site supplied-air system. Licensee representatives stated that air to the system was provided by one of four compressors utilized at the site, quarterly samples were collected from six separate locations, and samples were processed by a vendor laboratory. The inspectors noted and discussed the following issues regarding the licensee's sampling and Grade D verification program for the supplied-air breathing system. Criteria specifying Grade D air, sampling locations, and licensee actions to recertify and conduct followup actions regarding air samples not meeting the vendor established Grade D criteria were not specified. Additionally, the procedure did not require collection and verification of Grade D for air samples collected on a routine basis for each compressor potentially providing input to the supplied-air system. Licensee representatives stated that all sampling was conducted by a radiation control technician trained and qualified in the subject task and criteria for verification of Grade D quality for each air sample were detailed in the vendor contract specifications. Documentation supporting these licensee statements, including technician qualification review forms for the sampling task and vendor specifications for assuring Grade D air quality were provided to the inspectors for review.

The January 1, 1989, through September 30, 1990 records for supplied-air system quarterly sampling and verification of Grade D quality were reviewed. The reviewed records indicated that for each designated sample location the supplied-air system was sampled and verified on a quarterly basis. From review of vendor results, applicable Plant Improvement Requests (PIRs), and discussion with cognizant licensee representatives, the inspector noted that samples from supplied-air lines not meeting Grade D quality were removed from service. In addition, the inspectors noted that the vendor's Grade D quality specifications were upgraded to reduce the Carbon Monoxide (CO) limit from 20 to 10 parts per million (ppm) following the second quarter 1989, and thus met the most current CO limits specified in the compressed Gas Association, Inc. Standard, ANSI/CGA G7.1-1989. However, by the end of the onsite inspection licensee representatives were unable to provide documentation indicating that each of the compressor systems potentially supplying input to the supplied-air system were sampled and Grade D air verified on a routine basis. The inspector informed licensee representatives that pending their proposed review of operational records, this issue regarding the adequacy of their sampling to meet Grade D air criteria for all compressor systems would be considered an unresolved item (URI)* (50-261/90-25-02).

One URI pending the licensee's evalution to determine verification of Grade D quality air for all supplied-air breathing system compressors was identified.

7. Internal Exposure (83750)

10 CFR 20.103(a)(1) states that no licensee shall possess, use, or transfer licensed material in such a manner as to permit any individual in a restricted area to inhale a quantity of radioactive material in any period of one calendar quarter greater than the quantity which would result from inhalation for 40 hours per week for 13 weeks at uniform concentrations of radioactive material in air specified in 10 CFR Part 20 Appendix B, Table 1, Column 1.

10 CFR 20.103(a)(3) requires for purposes of determining compliance with the requirements of this section, the licensee shall use measurements of radioactivity in the body, measurements of radioactivity excreted from the body, or any combination of such measurements as may be necessary for the timely detection and assessment of individual intakes of radioactivity by exposed individuals.

TS 6.11 requires procedures for personnel radiation protection to be prepared consistent with the requirements of 10 CFR Part 20 and to be approved, maintained and adhered to for all operations involving personnel radiation exposure.

*An unresolved item is an item about which more information is required to ascertain whether it is an acceptable item, a deviation, or a violation.

a. Internal Exposure Evaluation Procedures

Licensee's procedures to implement 10 CFR Part 20.103 requirements were reviewed and discussed with cognizant licensee representatives.

Dosimetry Procedure (DP)-018, Personnel Whole Body Counting, Rev. 8, dated June 20, 1989, details guidance for conducting quality control checks and maintenance for the current licensee's body burden analysis system. Additionally the procedure describes required frequency and guidance for conducting body burden analyses. Annual whole body counts are required for personnel issued thermoluminescent dosimetry. Special analysis are required for special conditions including facial contamination exceeding 1,000 disintegrations per minute (dpm) and suspect internal contamination exceeding 40 maximum permissible airborne concentration-hours (MPCa-hr). DP-011, Updating Whole Body Counts, Rev. 9, dated July 7, 1988, and DP-020, Assessment of Internal Dose, Rev. 2, dated October 15, 1988, provide guidance for updating records and calculating internal doses/MPCa-hrs based on in vivo and in vitro monitoring results. The inspectors verified that the licensee utilized acceptable methods, Internal Council of Radiation Protection II (ICRP II) methodology, for conducting internal exposure evaluations. MPCa-hrs are calculated when the maximum permissible organ burden (MPOB) equals or exceeds two percent. MPCa-hr evaluation results derived from calulations involving internally deposited radionuclides take precendence over MPCa-hrs based on air sampling. HPP-105, Grab Air Sampling and Control of MPC-hours, Rev. 13, dated September 22, 1989, establishes methods for collecting airborne radioactivity grab samples and for documenting the MPCa fraction collected for purposes of respiratory protection. The procedure requires that everytime respiratory protective equipment is utilized an air sample is collected and also that exposures to airborne materials exceeding 40 MPCa-hrs are investigated.

The inspectors noted that for the selected review conducted, licensee guidance met 10 CFR 20 requirements.

No violations or deviations were identified.

b. Program Implementation

Licensee implementation of annual and special whole body analyses and air sampling during the current outage was reviewed.

The inspectors reviewed and verified completion of the annual whole body analyses for selected RC supervisory and managerial personnel. In addition, the inspectors reviewed selected September 1, through November 6, 1990, contamination event shift logbooks and verified that for all facial contamination events, whole body count analyses were conducted in accordance with procedural guidance. In addition, the inspectors verified whole body analysis quality control checks were conducted at specified frequencies.

Licensee records of air sampling results used to evaluate the hazards associated with reactor head removal and S/G activities during September 1990 and November 1990, respectively, were reviewed. The inspectors discussed and reviewed the minimum detectable activity (MDA) based on a sample time of approximately 5 minutes with a flow rate of 2 cubic feet per minute which was noted for several sample analyses. Cognizant licensee representatives calculated a MDA of 6.13 E-11 microcuries per cubic centimeter (mCi/cc) which was less than the MPCa of 3.0E-9 uCi/cc for gross beta/gamma emitters listed in 10 CFR Part 20, Appendix B, Table 1, Column 1. The inspectors noted that for the tasks reviewed, the majority of air sampling results indicated that airborne gross beta/gamma concentrations were less than 25 percent of the MPCa.

No violations or deviations were identified.

c. Termination Whole Body Analysis Reports

DP-018, Personnel Whole Body Counting, Rev. 8, dated June 20, 1990, requires the licensee to attempt to count all personnel upon termination. If a terminated individual is not available (permanently exited the site), and every reasonable effort has been made to contact the individual, the procedure requires the immediate supervisor of the terminated individual to complete and place Attachment 11.5, Documentation of a Missing Whole Body Count, into the individual's exposure history file maintained by the onsite Dosimetry Department.

From review of selected termination reports, the inspector noted numerous persons with no record of a termination whole body count. DP-001, Dosimetry Issuance, Rev. 21, dated June 23, 1990, permits the licensee to waive the termination whole body count for individuals who never entered the RCA. For individuals who have entered the RCA, a missed whole body count requires that Attachment 11.5 of DP-018 be put into the individual's dosimetry file. The licensee was able to verify that for the files reviewed, excluding one employee, none of the selected individuals had entered the RCA. The one employee previously entered the RCA on September 7, 1990, and terminated employment on September 19, 1990. Further review of the issue indicated that the individual's supervisor did not complete Attachment 11.5 nor was any information placed in the individual's file clarifying reasons for the missed termination whole body count. The failure to follow procedures for documentation of a missed whole body count was identified as a violation of TS 6.11 (50-261/90-25-03). The licensee initiated immediate corrective action by the appropriate supervisor, including completion of the Attachment 11.5 and subsequent placement into the terminated individual's dosimetry file. The inspector informed licensee representatives this NRC-identified violation was not being cited because criteria specified in Section V.A of the enforcement policy were met.

One NRC-identified NCV for failure to complete appropriate termination whole body analysis documentation was identified.

8. External Exposure (83750)

10 CFR 20.101 requires that no licensee possess, use, or transfer licensed material in such a manner as to cause any individual in a restricted area to receive in any period of one calendar quarter a total occupational dose in excess of 1.25 rems to the whole body, head and trunk, activity blood forming organs, lens of the eyes, or gonads; 18.75 rems to the hands, forearms, feet and ankles; and 7.5 rems to the skin of the whole body.

During the onsite audit, the licensee's program for whole body and extremity monitoring was reviewed.

a. Extremity Monitoring

DP-001, Dosimetry Issuance, Rev. 21, dated June 23, 1990, details the instructions for monitoring external radiation exposure including the criteria for issuing multiple and whole body and extremity thermoluminescent dosimetry (TLD) badges. During discussion of implementation of the monitoring procedure for high dose rate outage tasks, cognizant licensee representatives stated that all extremity monitoring was conducted utilizing wrist-mounted rather than finger-mounted TLD badges. The licensee provided a previous study, Routine Hand Doses versus Monitoring Regulations, dated 1980, which indicated that monitored extremity (hand) doses were less than regulatory limits requiring use of monitoring devices. In addition, a licensee report, Multibading/Extremity Monitoring Analysis - 1988 Refueling Outage, dated August 30, 1989, was reviewed which provided supplemental information indicating that for most high dose rate tasks at the facility, extremity monitoring was not required based on the multibadging procedural requirements. The inspectors noted that the initial 1980 study of extremity monitoring requirements was conducted for routine activities and did not focus on high dose rate tasks. Furthermore, only wrist badges were used during the 1988 study without determining the ratio of wrist-mounted to finger-mounted TLD results and then calculating the maximum dose rate to the tips of the fingers.

The January 1, through September 30, 1990 quarterly extremity exposure results for individuals, as measured using wrist-mounted TLDs, were reviewed. The maximum quarterly extremity dose reported was 1,944 millirem (mrem). The inspectors informed licensee representatives that ratios exceeding a factor of two for finger-to wrist-mounted TLD extremity results for selected tasks at several power reactor facilities have been reported. The inspectors noted that there were no studies of placement of extremity monitoring for site specific tasks involving handling of high dose rate materials, to confirm the accuracy of the licensee's extremity monitoring program. Licensee representatives stated that they would conduct a study of

extremity dosimetry placement for high dose rate tasks. The inspector informed licensee representatives that NRC review of licensee results regarding this issue would be tracked as an Inspector Followup Item (IFI) (50-261/90-25-04).

No violations or deviations were identified.

b. Form NRC-4

10 CFR 20.102(b) requires, under certain circumstances, the licensee to obtain a certificate on Form NRC-4, signed by the individual showing each period of time after the individual attained the age of 18 in which an occupational dose to radiation was received. This signed and completed form shall be obtained before permitting the individual in a restricted area to receive an occupational radiation dose in excess of the standards specified in 10 CFR 20.101(a).

The inspectors reviewed selected individual's records on the licensee's RIMS for the existance of the individual's Form NRC-4. Records of workers signed on RWP's associated with potentially high dose jobs were reviewed. The inspectors noted a Form NRC-4 on file for all selected individuals.

No violations or deviations were identified.

9. Surveys, Monitoring, and Control of Radioactive Material and Contamination (83750)

a. High Radiation Area Control

TS 6.13.1 details radiological controls required in lieu of the control device or alarm signal required by 10 CFR 20.203(c) for high radiation areas where radiation exceeds 100 and 1,000 millirem per hour (mr/hr).

During tours of the Auxiliary and Containment Buildings conducted from November 5 through 9, 1990, the inspectors verified that control of activities conducted in high radiation areas was conducted in accordance with the applicable TS requirements.

No violations or deviations were identified.

b. Labeling and Posting

10 CFR 20.203(e) requires each area in which licensed material is used or stored and which contains any radioactive material in an amount exceeding ten (10) times the quantity of such material specified in Appendix C of this part to be posted with a sign or signs bearing the radiation caution symbol and the words: "Caution, Radioactive Material(s)."

10 CFR 20.203(f) requires each container of licensed material to bear a durable, clearly visible label identifying the radioactive contents and providing sufficient information to permit individuals handling or using the containers, or working in the vicinity thereof, to take precautions to avoid or minimize exposures.

HPP-007, Handling and Storage of Contaminated and Radioactive Materials, Rev. 5, dated May 2, 1989, requires that the handling and storage of contaminated/radioactive material be conducted in accordance with regulations of 10 CFR Part 20.

During tours of the licensee's RCA, the inspectors reviewed labeling used to denote radioactive material hazards on selected barrels, storage bins and containers utilized to store contaminated equipment or to place radioactive waste awaiting shipment to an offsite vendor facility for compaction. On November 7, 1990, the inspectors noted more than 10 storage boxes located in the RCA with the radioactive material information required by 10 CFR 20.203(f) written on adhesive tape affixed beneath, and not on the radioactive material label. In addition, for three storage boxes/bins the radiological information and dates differed between label/tape affixed to separate sides of the container. Licensee representatives stated that the discrepancies regarding required information noted between different sides of a box occurred, most likely, as the result of adjacent containers obscuring or preventing the RCT from noting and removing the old label information. In addition, the licensee stated that the habit of writing the required radioactive material label information on a separate piece of adhesive tape resulted from numerous survey updates required during the filling of containers with radioactive waste. However, subsequent to discussions with the inspectors and review of the regulations, cognizant licensee representatives agreed that the appropriate information should be placed on the designated radioactive material label and subsequently instructed the RC technicians to eliminate use of the adhesive tape for labeling purposes. The inspectors informed licensee individuals that the failure to label containers properly was a violation of 10 CFR 20.203(f) requirements (50-261/90-25-05). Prior to the end of the onsite inspection, licensee representatives removed improper radioactive labels as necessary, resurveyed the containers, and relabeled all containers appropriately. The inspectors verified the corrective actions and informed licensee representatives that this NRC-identified violation was not being cited because criteria specified in Section V.A of the enforcement policy were met.

One NRC-identified NCV for failure to label containers in accordance with 10 CFR 20.203(f) requirements was identified.

c. Surveys

10 CFR 20.201(b) requires each licensee to make or cause to be made such surveys as may be necessary for the licensee to comply with the regulations in 10 CFR Part 20 and are reasonable under the

circumstances to evaluate the extent of radiation hazards that may be present.

During tours of selected facility areas, the inspectors verified that personnel survey equipment in use was calibrated in accordance with the applicable procedures.

Confirmatory radiation and/or contamination surveys also were conducted to verify posted Auxiliary Building room radiation hazards and to determine compliance with contamination level limits for release of items from contaminated RCA areas. Verification radiation/ contamination surveys conducted November 6-7, 1990, for the Auxiliary Building Northside Drumming and Number 1 Auxiliary Sump rooms indicated that posted radiation surveys and controls were adequate to evaluate the extent of the radiation hazards present. In addition, supplemental contamination surveys of compressed gas bottles previously released from a contaminated area within the Auxiliary Building verified contamination levels were less than 1,000 disintegrations per minute per 100 square centimeters (dpm/100 cm^2).

No violations or deviations were identified.

d. Termination Reports

10 CFR 20.408(b) and 20.409(b) require that the licensee make a report to the Commission, and notify the individual involved, of the radiation exposure of each individual who has terminated employment. The report is to be furnished within 30 days after the individual's exposure was determined by the licensee or 90 days after the date of termination of employment or work assignment, whichever is earlier.

DP-009, Termination/Deactivation of Employees, Rev. 19, dated January 31, 1990, defines the licensee's procedure to assure complete and accurate reporting of exposures of employees as required by 10 CFR Parts 19 and 20. The dosimetry group was responsible for the tracking of monthly terminations and "normally after 10 days of the termination date" sending exposure results and other termination information to the licensee's Harris Energy and Environmental Center (HE&EC) for termination processing. The HE&EC issues termination reports to employees with the radiation exposure received while at Robinson. The inspector noted timely readings of TLDs by the onsite dosimetry group following an employee's termination, forwarding of termination information to the HE&EC normally within 10 days, and the timely issuance of letters with an exposure report to the terminated individuals by the HE&EC.

e. Personnel Contamination Events

The inspectors reviewed records of personnel contaminations for 1990 and the RF13 outage. As of October 31, 1990, the licensee experienced 122 personnel contamination events (PCEs) which was within the

cumulative goal to date of 148 PCEs. The PCE goal for 1990 was 300. The licensee experienced only 93 PCEs in 1989. The lower number was attributable to fewer outage days and less entries into the RCA.

No violations or deviations were identified.

10. Program for Maintaining Exposures As Low As Reasonably Achievable (ALARA) (83750)

10 CFR 20.1c states that persons engaged in activities under licenses issued by the NRC should make every reasonable effort to maintain radiation exposures ALARA. The recommended elements of an ALARA program are contained in Regulatory Guide 8.8, Information Relevant to Ensuring that Occupational Radiation Exposure at Nuclear Power Stations will be ALARA, and Regulatory Guide 8.10, Operating Philosophy for Maintaining Occupational Radiation Exposures ALARA.

Regulatory Guides 8.8 and 8.10 provide information relevant to attaining goals and objectives for planning and operating light water reactors and provide general philosophy acceptable to the NRC as a necessary basis for a program of maintaining occupational exposures ALARA.

10 CFR 20.1(c) states that persons engaged in activities under licenses issued by the NRC should make every reasonable effort to maintain radiation exposures ALARA.

a. Organization

The inspectors reviewed the licensee's organizational structure for ALARA responsibilities, including the delineation of authority and responsibility. During normal operations, the licensee's ALARA staff consists of two ALARA Specialists and an ALARA Technician (rotating position). During the outage, the ALARA staff was supplemented with a Corporate senior ALARA specialist and a contract ALARA technician. The ALARA staff reported to the E&RC Manager. The ALARA Committee consisted of representatives from the following departments: plant management, instrumentation and control, mechanical maintenance, E&RC, operations, technical support, modifications projects, and QA/QC. In addition, representatives from planning and scheduling, design engineering, and training were also members. The ALARA Committee Chairman was the ALARA Specialist. Monthly Committee member attendance for 1990 was generally good, however Modification Projects showed the poorest attendance record in that the member or alternate missed four out of eleven meetings. The responsibilities of the ALARA Committee were described in AP-034, ALARA Committee Activities and Responsibilities, Revision 0, June 29, 1989. Some of the accomplishments of the ALARA Committee during the last 12 months included the following: (1) use of long-life light bulbs in the plant to minimize entries for light replacement; (2) use of submicron absolute filters after the letdown demineralizers to aid in reducing source term; (3) scheduling a surrogate video tour

of the entire plant; and (4) development of a new ALARA incentive program to promote quality ALARA suggestions.

The inspectors also noted that professional development training was provided to the ALARA Specialist by attending REM Seminars and the Region II ALARA supervisor's meeting in 1990.

b. ALARA Reviews

The inspectors reviewed selected work tasks to verify that pre-job ALARA reviews were conducted. Since RF13 outage was ongoing at the time of this inspection, post-job reviews were not available. The inspectors determined that for the selected jobs reviewed, pre-job reviews adequately addressed the work to be performed and incorporated lessons learned from past post-job reviews. Pre-job ALARA review criteria were specified in Plant Program Procedure PLP-016, Radiation Work Permit Program, Revision 9, September 28, 1989. All jobs with projected collective doses greater than one person-rem received a pre-job ALARA review. All nonroutine tasks with a projected collective dose greater than 25 person-rem were subjected to review by the ALARA Committee. ALARA Specialists reviewed daily access control reports and ALARA summary review reports as necessary to perform ALARA reviews of on-going work activities. Field observations from RCTs and radiation workers also were considered. The following pre-job review packages were examined: (1) RWP 90-0788: inspect and repair S/G tube plugs; (2) RWP 90-0659: install, transport, and remove eddy current testing equipment; and (3) RWP 90-0633: Reactor head removal (ALARA Committee review included). Based upon data provided by the licensee, over 99 percent of the accumulated collective dose for RF13 as of November 7, 1990, had received a pre-job ALARA review. An analogous pre-job review percentage was observed for RF12.

c. ALARA Goals, Objectives, and Results

The inspectors discussed with licensee representatives the total annual collective dose against their goals and the industry averages. The 1990 collective dose goal was 450 person-rem. As of November 7, 1990, the actual collective dose was 242 person-rem. Approximately 65 percent of the scheduled outage work had been completed. The licensee was well below its projected accumulated station collective dose of approximately 400 person-rem.

The licensee's three year average collective dose (1987-1989) was 426 person-rem. The high three year average was partially due to the resistance temperature detector (RTD) bypass removal job performed in 1988 (103 person-rem).

No violations or deviations were identified.

11. Facility Tours (83750)

10 CFR 19.11(a) and (b) require, in part, that the licensee post current copies of Part 19, Part 20, the license, license conditions, documents incorporated into the license, license amendments and operating procedures, or that a licensee post a notice describing these documents and where they may be examined.

10 CFR 19.11(d) requires that a licensee post Form NRC-3, Notice to Employees. Sufficient copies of the required forms are to be posted to permit licensee workers to observe them on the way to or from licensed activity locations.

During the onsite audit, the inspectors verified that NRC Form 3 and notices referencing the appropriate 10 CFR Part 19 and Part 20 and licensee documents were posted in accordance with the applicable regulation. Forms were posted at the West PAP entrance to the controlled area. No visible forms were posted at the East PAP but following discussions with the licensee and tours of the facility the inspector verified that such forms were posted at the entrance to the RCA where all employees must pass to claim their dosimetry.

No violations or deviations were identified.

12. Followup Items (92701, 92702)

a. Previous Violations

(Closed) 50-261/89-22-01: Failure to perform adequate release surveys of tools and equipment leaving the plant site as required by 10 CFR 20.201(b). The inspectors reviewed the licensee's response to the Notice of Violation in a letter dated November 15, 1989, and ascertained that the response and stated corrective actions were timely, appropriate and implemented. The licensee established a special task force comprised of Radiation Control and Regulatory Compliance personnel to determine the root cause of the violation. The generic implications were addressed and the licensee's QA program practices and procedures were strengthened to prevent recurrence. Licensee management had expanded the Monthly Performance Monitoring program to three years to assess trends for similar events. This item is considered closed.

b. Information Notices

Information Notices (INs) are first reviewed at the licensee's Corporate Office in Raleigh for applicability and then are sent to each facility. Subsequently, each IN is reviewed by the Robinson Onsite Nuclear Safety (ONS) Unit. If the ONS Unit is satisfied with the corporate assessment, the IN is incorporated onsite as assessed. If additional comments are made by the ONS Unit regarding the assessment, the Notice is reviewed for applicability and then returned to the

corporate office. This review process continues until all parties concur with the IN assessment. Once the final assessment has been made, the ONS Unit is responsible for assuring that any operating information, per each IN, pertinent to plant nuclear safety is supplied to the operating and training organizations.

The inspectors determined that the following INs were still in the review process at the corporate office in Raleigh:

- IN 90-31: Update on Waste Form and High Integrity Container Topical Report Review Status, Identification of Problems With Cement Solidification, and Reporting of Waste Mishaps
- IN 90-33: Sources of Unexpected Occupational Radiation Exposures at Spent Fuel Storage Pools
- IN 90-35: Transportation of Type A Quantities of Non-Fissile Radioactive Materials
- IN 90-47: Unplanned Radiation Exposures to Personnel Extremities Due to Improper Handling of Potentially Highly Radioactive Sources
- IN 90-48: Enforcement Policy for Hot Particle Exposures

The inspectors determined that the following INs had been received by the licensee, reviewed for applicability, distributed to appropriate personnel, and that action, as appropriate was taken or scheduled:

- IN 88-79: Misuse of Flashing Lights For High Radiation Area Controls
- IN 89-13: Alternative Waste Management Procedures In Case of Denial of Access to Low-Level Waste Disposal Sites
- IN 89-27: Limitations On The Use of Waste Forms and High Integrity Containers for the Disposal of Low-Level Radioactive Waste
- IN 89-47: Potential Problems with Worn or Distorted Hose Clamps on Self-Contained Breathing Apparatus
- IN 90-08: Kr-85 Hazards from Decayed Fuel
- IN 90-44: Dose-Rate Instruments Underresponding to the True Radiation Fields

13. Exit Meeting

The inspectors met with licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection on November 8, 1990. The inspectors summarized the scope and findings of the inspection, including the URI,

NCVs, and the IFI. The inspectors also discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspector during the inspection. The licensee did not identify any such documents or processes as proprietary. Dissenting comments were not received from the licensee.

Item Number	Description and Reference
50-261/90-25-01	NCV: Failure to barricade a high radiation area in accordance with TS 6.13.1 (Paragraph 3).
50-261/90-25-02	URI: Potential failure to verify Grade D quality air for all supplied-air breathing system compressors (Paragraph 6.b).
50-261/90-25-03	NCV: Failure to complete appropriate termination documentation in accordance with DP-018, Personnel Whole Body Counting (Paragraph 7.c).
50-261/90-25-04	IFI: Evaluate the effectiveness of using ring TLDs versus wrist TLDs (Paragraph 8.a).
50-261/90-25-05	NCV: Failure to label properly containers of licensed material in accordance with 10 CFR 20.203(f)(Paragraph 9.b).

Licensee management was informed that the violation discussed in Paragraph 12 was considered closed.