

APPENDIX B

U. S. NUCLEAR REGULATORY COMMISSION  
REGION IV

NRC Inspection Report: 50-397/94-17

Operating License: NPF-21

Licensee: Washington Public Power Supply System  
P.O. Box 968  
3000 George Washington Way  
Richland, WA 99352

Facility Name: Washington Nuclear Project 2

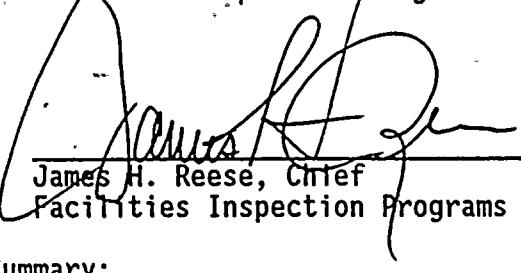
Inspection at: Benton County, Washington

Inspection Conducted: May 16-20, 1994

Inspectors: M. Cillis, Senior Radiation Specialist  
Facilities Inspection Programs Branch

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Facilities Inspection Programs Branch

Approved by:

  
James H. Reese, Chief

Facilities Inspection Programs Branch

6/8/94  
Date

Inspection Summary:

Areas Inspected: Routine, announced inspection of the licensee's radiation protection program during an extended refueling outage; changes including audits and appraisals; training and qualifications of personnel; maintaining occupational exposures ALARA; external and internal exposure control; and control of radioactive materials and contamination, surveys, and monitoring; and facility tours.

Results:

- No major changes in the Radiation Protection Program had been made since the previous inspection (Section 1.1).
- Very good surveillances of radiation protection activities were performed (Section 1.2).
- Contract radiation protection technicians were qualified and trained appropriately (Section 1.3).

- An improved ALARA program was implemented for Refueling Outage R-9 (Sections 1.4, 1.4.1, 1.4.2, and 1.4.3).
- Good external exposure controls were implemented (Section 1.5).
- Good internal exposure controls were implemented (Section 1.6).
- No respiratory equipment had been used for radiological purposes during the refueling outage (Section 1.6).
- Increases in personnel contamination events were noted during the refueling outage (Section 1.7).
- Control of radioactive materials and contamination, surveys, and monitoring were generally good (Section 1.7).
- Housekeeping with the exception of the Drywell, which needed improvement, was generally good (Section 1.8).
- Several poor ALARA practices in the Drywell and a poor safety practice regarding the use of hard hats in contaminated areas were noted (Section 1.8).
- A general weakness in the licensee's access control procedures was noted. Workers entering radiological controlled areas did not appear to be knowledgeable of the radiological control conditions (Section 1.8).
- A violation was identified for failure to adhere to procedures required by license conditions (Section 1.8).

Inspection Findings:

- Violation 50-397/9417-01 was opened (Section 1.8.1).

Attachment:

- Attachment - Persons Contacted and Exit Meeting

DETAILS

**1 OCCUPATIONAL EXPOSURES DURING EXTENDED OUTAGES (83729)**

The licensee's occupational radiation exposure program during the extended 60-day Refueling Outage R-9 which had started on April 30, 1994, was examined to determine compliance with Technical Specification requirements, industry standards, licensee procedures, and 10 CFR Part 20 requirements.

The inspectors evaluated the licensee's program by interviewing cognizant personnel, reviewing applicable procedures, logs, records, and from observations of work in progress. Tours and independent surveys of the Turbine Building, Radwaste Building, and Reactor Building were conducted by the inspectors.

**1.1 Changes**

An individual was recently hired to assume the position of Acting Supervisor, Health Physics Planning/ALARA for Refueling Outage R-9. The permanently assigned supervisor for this position had assumed the responsibility as the Drywell Coordinator during the extended Refueling Outage R-9. The inspectors noted that the qualification of both individuals appeared to be adequate for their positions.

The inspectors reviewed numerous changes in procedures that were made since the previous inspection. The changes should result in program improvements.

Other changes included the initial use of a Total Exposure System and a Remote Monitoring System during the extended refueling outage.

**1.1.1 Total Exposure System**

The Total Exposure System was an electronic system used for access control, dosimetry issue, dose records, issuing of radiation work permits, and ALARA control. Personnel entering a radiological controlled area were required to provide data at a Total Exposure System terminal located at an access control point. The Total Exposure System was designed to deny access to personnel who have reached their administrative exposure levels. A "bar code" system was developed for logging individuals in and out of the radiological controlled areas.

Additional information regarding Total Exposure System is addressed in Section 1.8.

**1.1.2 Remote Monitoring System**

The licensee implemented the use of an electronic Remote Monitoring System for the purpose of providing accurate and continuous monitoring of radiological control jobs in high radiation fields with large gradients, such as those that exist in the drywell. The Remote Monitoring System implemented for Refueling Outage R-9 includes a remote dose monitoring system, camera surveillance system, and communication equipment. The camera surveillance system provided

the health physics group visual surveillance capability along with a method to communicate with workers by using head sets or hand held radios. The Remote Monitoring System was designed to provide the ability for one radiation protection technician to monitor multiple locations simultaneously. The transmitters transmitted the dose and the dose rate data from the dosimeter on a radio frequency to three antennas that were placed in the drywell. The data was entered into the Remote Monitoring System software and manipulated to provide the radiation protection technicians information such as dose, dose rate, and percentage of the dose limit. This allowed the radiation protection technician to avoid exposure to high radiation dose rates by monitoring radiological conditions and workers' exposures from a low or a nonradiation area. The Remote Monitoring System has been used successfully at other plants.

The inspectors noted that the licensee used the system to monitor and control the exposure to workers involved in the replacement of control rod drives.

#### 1.1.3 Other Changes

The licensee had purchased 600 alarming dosimeters to augment the dwindling supply of direct reading dosimeters that was needed to support the refueling work load. The radiation protection manager informed the inspectors that the licensee was planning to replace direct reading dosimeters with alarming dosimeters by the start of the next refueling outage.

Additional changes planned for the future were the implementation of a formal source term reduction and radioactive waste minimization program.

#### 1.2 Audits and Appraisals

The inspectors reviewed licensee audit and surveillance reports issued since the last inspection.

The licensee's quality assurance audit and surveillance program covered a broad scope of licensee activities including radiation protection and management of the licensee's radwaste, shipping, and transportation of radioactive materials. Audits and surveillances were performed on day shifts and the back shifts during the outage. Improvement in documentation and communication of the audit/surveillance findings were noted. Improvements were also noted in the timely response and corrective action to audit findings.

The inspectors noted that supervisory oversight of work activities was conducted during the outage. Licensee Problem Evaluation Requests generated as a result of supervisory and foreman surveillances were reviewed. The surveillances were of good quality and generally focused on health physics work practices and procedure compliance issues. The radiation protection manager arranged to have a thorough audit of the licensee's dosimetry program conducted by an independent party associated with the National Voluntary Laboratory Accreditation Program inspection program. Corrective actions to the audit findings were in progress at the time of the inspection.

The audit/surveillance records reviewed covered a broad scope of the radiation protection activities. Each area appeared to have been examined in great detail. The inspectors concluded that the licensee's audit/surveillance program provided the licensee with a viable tool for measuring and improving performance.

### 1.3 Training and Qualifications

The qualifications and training program for contract radiation protection technicians who were hired in support of Refueling Outage R-9 was examined. Selected resumes and training records of the 108 senior radiation protection technicians and 25 junior radiation protection technicians that were hired to support the refueling outage were reviewed by the inspectors. It was determined that the contract radiation protection technicians met the qualification requirements specified in Technical Specifications 6.3, "Unit Staff Qualifications."

A standardized screening examination was used by the licensee's radiation protection staff for the selection of contract radiation protection technicians. All contract radiation protection technicians were required to demonstrate their knowledge of health physics by taking a written entrance examination. The licensee's screening process was effective in ensuring that the selection of radiation protection technicians was in compliance with Technical Specification.

Each new hire radiation protection technician and returning radiation protection technician was required to attend site-specific training. A written examination was administered at the conclusion of the site-specific training. Senior radiation protection technicians were required to demonstrate their knowledge of the licensee's procedures before being assigned to support the outage.

The inspectors interviewed the licensee's training representatives and radiation protection staff and determined that the training program for contract radiation protection technicians emphasized lessons learned and management's expectations.

### 1.4 ALARA Program

The licensee's program for maintaining personnel exposures ALARA was examined for compliance with 10 CFR Part 20. Planning and preparation for Refueling Outage R-9 was previously addressed in NRC Inspection Report 50-397/94-03.

This inspection focused on the implementation of the licensee's ALARA program. The scheduled 60-day outage started on April 30, 1994, and was approximately 3-4 days behind schedule at the conclusion of this inspection.

The inspectors noted that the ALARA program received direct attention and strong support from upper management. Similar comments were expressed to the inspectors by the licensee's staff and contract workers during the inspection. The licensee's staff and workers were encouraged by observed periodic

management tours of work activities in the radiological controlled area during the outage.

#### 1.4.1 Worker Awareness

A higher level of ALARA awareness was present among licensee's management and supervision than among the workers that were interviewed during facility tours. The inspectors noted that very few workers stopped to read the radiation and contamination surveys that were posted at the primary and alternate access control stations. It was also noted that most of the workers failed to read their radiation work permits and associated ALARA instructions daily or prior to each entry. Workers were made aware of the progress made towards achieving the ALARA goals for the outage by ALARA posters displayed at selected locations.

Craft workers hired for the outage were provided with a refueling outage handbook. The handbook contained useful information such as a list of telephone contacts, outage schedule, site layout diagram, emergency signals and responses, radwaste minimization program, and ALARA program guidelines and goals.

In an attempt to stimulate worker awareness of ALARA suggestions, monetary awards were given to those individual who submit suggestions that were adopted for implementation.

Except for the isolated observations discussed in Section 1.8, work practices observed during the inspection appeared to be consistent with the ALARA concept..

The inspectors noted that improvements in worker moral, attitudes, and communications had been achieved since the previous inspection of this program area.

#### 1.4.2 Mock-up Training

During the outage, the licensee used mock-up training as a tool to reduce person-rem. A mock-up of the Mechanical Stress Improvement Process on reactor vessel nozzles and jet pumps was used to train the work force assigned to the job for the outage. Some workers informed the inspectors that the mock-up training was good; however, most workers said that the mock-up used was not an exact replica of the actual work site. Workers stated that the work area used during the mock-up training provided a much larger work area than the actual work area in the plant. Workers stated that there were many more interferences in the plant than there were in the mock-up.

#### 1.4.3 ALARA Goals and Results

At the beginning of the outage, an ALARA goal of 650 person-rem was established for Refueling Outage R-9. As of May 19, 1994, the licensee had expended approximately 243 person-rem. This value was under their projected goal for the date by approximately 115 person-rem.

ALARA in-progress reviews for high exposure jobs had already been started. A review of the review packages disclosed that the licensee's staff were very self critical. Many comments were received for improvements in reducing person-rem the next time similar work is scheduled.

During the outage, the licensee used video cameras, shielding, and flushing to reduce person-rem. ALARA prejob briefings were a common practice used by the licensee to reduce person-rem. Discussions with the ALARA coordinator disclosed that the licensee had approved the purchasing of a surrogate tour technology program. The program has been used with great success at other nuclear power plants as a tool in reducing person-rem. By using an interactive video disc system, areas of the plant that were normally inaccessible could actually be viewed without entering the plant.

Discussions held with the ALARA staff revealed that considerable effort was expended prior to the outage in coordinating the installation and removal of temporary and permanent shielding packages needed to support the refueling outage. The inspectors noted that the licensee maintained excellent records of the temporary and permanent shielding packages that had been installed. The shielding packages included records of 10 CFR 50.59, "Changes, Tests, and Experiments," safety evaluations for the shielding installations that had been made. Coordination involving the installation and removal of shielding and scaffolding during Refueling Outage R-9 appeared to be greatly improved over Refueling Outage R-8 as discussed in NRC Inspection Reports 50-397/93-14; 50-397/93-22.

Low-dose areas were posted throughout the plant. Workers were reminded by the radiation protection staff and supervision to stay in a low-dose area when they were not actively engaged in work and could not exit the work area.

### 1.5 External Exposure Control

The inspectors evaluated the licensee's external exposure program by reviewing selected surveys and personnel exposure records, observing access control practices, and conducting independent surveys.

The inspectors toured the radiological controlled areas and reviewed area posting and performed independent radiation measurements. All postings were correct and easy to understand. It was determined that high radiation areas and locked high radiation area controls were in compliance with Technical Specification 6.12, "High Radiation Area," and 10 CFR 20.1902(c).

The inspectors reviewed personnel exposure records for the period of January 1993 through April 1994. The review disclosed that personnel combined external and internal exposure levels were well below the occupational exposure limits established in licensee procedures and 10 CFR Part 20.

The inspectors verified the licensee's radiological posting and labeling practices during the tours. For those areas observed, radioactive material labels, as well as posting of radiation, high radiation, and radioactive materials areas, were visible, accurate, and consistent with 10 CFR Part 20

requirements. Postings pursuant to 10 CFR 19.11 were also noted to be visible and current.

#### 1.6 Internal Exposure Control

- The licensee's respiratory protection program was examined for compliance with 10 CFR Part 20 requirements and consistency with the recommendations of Regulatory Guide 8.15, "Acceptable Programs for Respiratory Protection"; NUREG 0041, "Manual of Respiratory Protection Against Airborne Radioactive Materials"; and American National Standards Institute (ANSI) Z88.2, "Practices for Respiratory Protection."

The examination included a review of the training program provided to users of respiratory protection equipment, medical examination requirements, and respirator fit testing program for respiratory equipment users. Applicable respiratory protection program implementing procedures, an inspection of the respirator issuing facility, and various emergency use respirator storage locations were also reviewed.

The inspectors verified that the routine monthly inspections of several self-contained breathing apparatus had been performed within the past 31 days. The control and issue of respiratory equipment was determined to be consistent with implementing procedures and the documents referenced above. Respiratory usage during Refueling Outage R-9 had decreased by 100 percent. No respiratory equipment had been used for radiological control purposes since the start of the outage. The decrease was attributed to the implementation of the new 10 CFR Part 20 regulations on January 1, 1994.

The licensee's respiratory protection program was determined to be consistent with regulatory requirements and the other documents referenced above.

#### 1.7 Control of Radioactive Material and Contamination, Surveying, and Monitoring

The inspectors observed entrance and exit access control at the radiological controlled areas and found them to be adequate.

Selected radiation and contamination surveys for 1994 were reviewed for completeness, use of appropriate survey instruments, and timely management review. Survey results were documented properly.

Records of clothing and skin contamination events were examined for thoroughness. Timely decontamination, trending, and followup actions of the events appeared to be appropriate. As of May 19, 1994, a total of 104 clothing and skin contamination events were reported during the Refueling Outage R-9. A goal of 100 clothing and skin contaminations had been established for the entire outage period. The licensee's radiation protection staff informed the inspectors improvements in the prevention of personnel contamination event were needed. Clothing contaminations outnumbered skin contamination events by an approximate 4:1 ratio. A significant increase in the number of facial contamination events were noted. Each event receives a detailed review for possible dose assessment, probable cause, and corrective

actions. The inspectors verified that none of the personnel contamination events reported during Refueling Outage R-9 resulted in a significant internal or external exposure.

During the tours of the Radwaste Building, Turbine Building, and Reactor Building portal monitors and frisking equipment were used properly and were in current calibration. In addition, the inspectors noted that monitoring instrumentation were in good supply, were in current calibration, and had been routinely performance checked.

Individuals exiting the radiological controlled areas were required to pass through both gamma and beta sensitive personnel contamination monitors. All tools and equipment removed from the radiological controlled areas were surveyed for release by a qualified radiation protection technician. Tool monitors were also used to survey equipment. In general, surveys, monitoring, and the preclusion of the release of potentially contaminated materials to unrestricted areas was satisfactory.

The inspectors observed work practices associated with ingress and egress of workers and equipment from the licensee's radiological controlled areas and verified that radiation and contamination surveys of work areas, material, and equipment were being performed in accordance with applicable procedures. Work practices observed within the radiological controlled areas appeared to be consistent with the applicable radiation work permits, and surveys were performed at the frequencies specified in licensee procedure. All contaminated areas were adequately posted.

During facility tours, the inspectors observed that adequate personnel survey instruments were located near exits from surface contamination areas. All instruments observed were functional, within their calibration period, and had been daily performance tested.

Routine and nonroutine contamination surveys of radiological controlled areas were reviewed. Based on this review, the inspectors verified that the licensee's contamination and radiation survey program were consistent with 10 CFR Part 20 and licensee procedures.

### 1.8 Facility Tour

Tours of the licensee's facilities were conducted by the inspectors. Areas toured included the Radwaste Building, Reactor Building, and Turbine Building. Work evolutions observed included:

#### 1.8.1 Access Control

The inspectors observed workers entering and exiting from radiological controlled areas using the Total Exposure System described in Section 1.1.1. Licensee Procedure PPM 1.11.22, "Use of The Total Exposure System for Access Control," Section 7.1 states: "It is the responsibility of the individual to assure that applicable radiation work permits and ALARA Tasks are read prior to entry to radiological controlled areas and that any required prejob briefings are obtained." Section 6.3 of the procedure states: "Personnel

should check for revisions to their radiation work permits prior to entry to radiological controlled areas." Additionally, personnel are reminded in Section 7.1.6.5 of the procedure to: "Ensure that the correct revision to the radiation work permit and ALARA Task requirement have been read. The screen will display:

"F10 IF YOU HAVE READ AND WILL COMPLY WITH THE ALARA TASK REQUIREMENTS

F6 TO REFRESH IF YOU HAVE NOT."

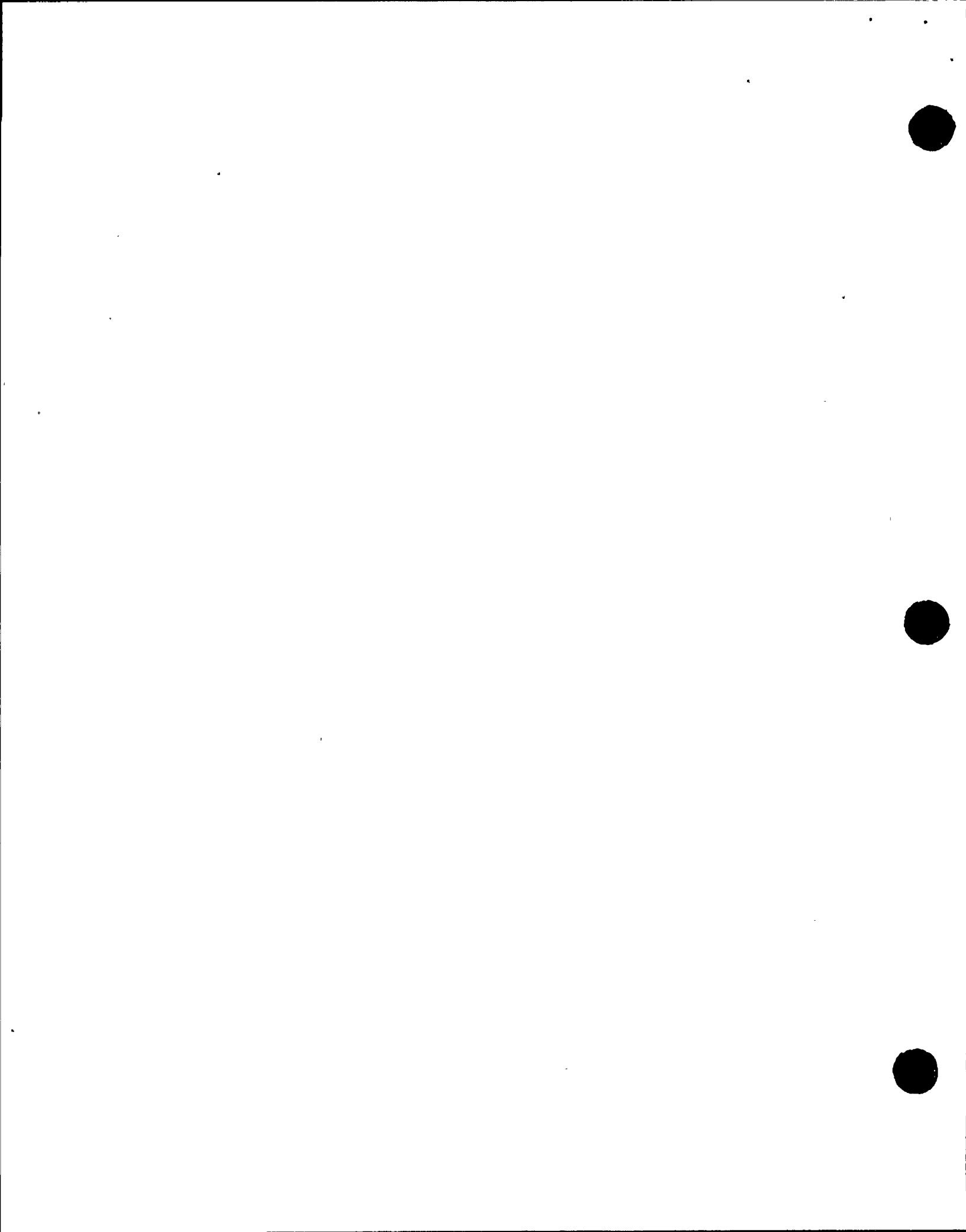
Workers were required to use the ALARA task number to log (e.g., "bar code") into and from radiological controlled areas. Each ALARA task number has an assigned radiation work permit number. One radiation work permit number could have been assigned to accommodate from 1 to more than 100 ALARA task numbers.

The licensee had to make several concessions since the use of the Total Exposure System was implemented because of problems that had been identified with the system during its initial use. These problems were documented in a licensee Problem Evaluation Request dated January 27, 1994.

Problem Evaluation Request 294-0050 dated January 27, 1994, identified a total of 21 individual problems with the system. Attempts to resolve these problems had not been totally successful. Discussions with the licensee's staff disclosed that the system may have to be replaced at some time in the future. However, the licensee's staff had made some temporary changes in their access control procedures to address some of the major problems.

One of the major changes implemented was discussed in Procedure PPM 1.11.11, "Entry Into, Conduct In, and Exit From Radiological Controlled Areas." The procedure allowed personnel to transit directly from the primary and alternate access control points to remote health physics control points located at the Drywell, 606-foot of the Reactor Building, and the 501-foot level of the Turbine Building. Personnel could transit and return directly from these remote control points without use of a radiation work permit. Individuals were required to sign in on the appropriate ALARA task number with the latest radiation work permit revision at the Total Exposure System terminal upon arrival at these remote control points. Individuals exiting from these remote areas were to sign out and proceed directly to the primary access control point and pass through a IOM-8 whole-body portal monitor before exiting the area.

The licensee placed color markers along the designated routes that personnel were authorized to use in traversing to and from the primary and alternated control points. Personnel were instructed that they could not deviate from the approved traffic routes that were used for gaining access to the remote control points. A licensee "HP TIME-OUT" meeting was held with the working staff on April 27, 1994, to discuss the designated traffic route system that was implemented.



The following inspectors' observations were made during the inspection:

- On May 16, 1994, the inspectors observed two craft workers on the 441-foot level of the Turbine Building who had deviated from the designated pathway (route) that had been established for traversing to and from the remote control point located on the 501-foot level of the Turbine Building.

When questioned by the inspectors, the two workers stated that the licensee's radiation protection staff located at the primary access control point had authorized the workers to use the Turbine Building elevator, because the normally used Radwaste Building elevator was out of service.

Discussions held with the radiation protection staff disclosed that workers were informed to use the Radwaste Building "stairwell" for traversing to the Turbine Building 501-foot level remote control point. This deviation was authorized, because it provided the most direct route to the remote control point. The radiation protection staff stated that they did not authorize workers to use the Turbine Building elevator. The location in which the workers were observed by the inspectors was far removed from the Radwaste Building "stairway" and the Turbine Building elevator.

- On May 19, 1994, the inspectors noted that workers entering the radiological controlled areas by way of the primary access control point were neither stopping to review survey data which was posted at the primary access control point nor were the workers reading the radiation work permits.

The inspectors noted that the workers had copies of the ALARA task number, "bar code," attached to their security badge or in a note book. Upon arrival at the primary access control point, the workers took the copied ALARA task number (e.g., "bar code") and logged into the radiological controlled area by "bar coding" on the proper ALARA Task Number without reading the radiation work permit. This appeared to be a common practice among most of the craft workers that were observed by the inspectors. One craft worker foreman had a small notebook which had an ALARA Task Number (e.g., "bar code") copied onto every page of the notebook. The inspectors asked workers how they knew that the radiation work permit had not been revised since their last entry. Most workers said their supervisors kept them informed of any radiation work permit revisions, some workers said they did not know, and others said they would not be able to tell without reading the radiation work permit. Some workers said that they thought the Total Exposure System would disallow entry if they had not logged-in on an ALARA Task Number which did not include the latest radiation work permit revision. The licensee's radiation protection staff at first also thought that workers would be denied access if workers had "bar coded" in on an ALARA task number with the incorrect revision of the radiation work permit. However, it was subsequently determined that workers could log in on an

ALARA task number which did not include the latest revision of a radiation work permit. The inspectors noted one individual who had signed in on Work Order Task No. DL56 01 which listed the current radiation work permit number as 94000196 00. It was subsequently determined that the radiation work permit had been revised. The revised radiation work permit number was 94000196 01, and the Total Exposure System had allowed the individual to enter.

The inspectors interviewed the workers to determine if they were aware of the radiological conditions in the work areas. Most of the workers interviewed were unaware of the specific radiological conditions that could be expected at the work site. Most workers had some general knowledge of the ranges of radiation and contamination levels but did not know or have any specific knowledge concerning the locations of the lowest radiation and contamination levels, the highest radiation and contamination levels, and/or where "hot spots" were in their respective work areas. The inspectors concluded that the licensee's access control program had weakened since the previous inspection.

The inspectors brought their observation to the attention of the licensee's radiation protection staff. Licensee's Problem Evaluation Request 294-0460 was initiated on May 23, 1994. The Problem Evaluation Request identified that plant personnel did not directly transit to a remote control point as authorized by Procedure PPM 1.11.11 and that plant personnel logged onto radiation work permits without having verified the current radiation work permit revision as required by Procedures PPM 1.11.11 and 1.11.22.

Not adhering to approved procedures is a violation of license requirements prescribed in the Technical Specifications, Section 6.8.1, which requires that written procedures shall be established, implemented, and maintained covering activities recommended in Appendix A of Regulatory Guide 1.33, Revision 2, February 1978. Regulatory Guide 1.33, Section 7.e, recommends radiation protection procedures for . . . . (1) Access Control to Radiation Areas Including a Radiation Work Permit System" (50-397/9417-01).

#### 1.8.2 Housekeeping

Except for the drywell, all other areas toured were clean but were cluttered with material from the outage. Cleanliness in the drywell was in need of improvement.

#### 1.8.2 Other Observations

##### 1.8.2.1 Use of Hard Hats

Licensee Procedure PPM 1.11.11, Section 5.6, states: "Yellow hard hats, when required, will be worn in Contaminated Areas and are left inside the area after use."

Section 5.6.2 of the procedure states: "Hard hats are not required when a respirator or bubble hood has been prescribed by Health Physics." The use of the yellow hard hats was also not required when a welders hood or face shield was used.

The need for wearing the hard hats was imposed by the licensee's safety department. The licensee's radiation protection staff were generally responsible for enforcing the use of the hard hats.

The inspectors observed that many of the workers entering the Drywell, a posted high radiation and contaminated area, were not wearing hard hats. It was also noted that many of the hard hats were apparently being left behind by workers. Many hard hats were seen all over the Drywell work spaces. The hard hats were laying in high radiation areas ranging in excess of 1000 mrem/hr. Many of the hats were marked with graffiti.

The misuse of hard hats was also observed in other high radiation and contaminated areas of the Reactor Building, Radwaste Building, and Turbine Building. The observations were brought to the licensee's attention during the inspection. The inspectors expressed concern over the poor ALARA practices used by the workers in marking the hats with graffiti in controlled areas of the plant (e.g., possibly high radiation areas) and in the increased exposure that will be required to retrieve the discarded hats from the high radiation areas of the Drywell. The licensee's quality assurance staff initiated Problem Evaluation Request 294-444 describing the inspectors' observations. The Plant Manager took immediate action by informing his staff that he expected all workers entering contaminated areas to wear a hard hat as required by the plant's Safety Manual.

#### 1.8.2.2 Poor ALARA Practice

While touring, the inspectors noted that the seismic constraints installed throughout the Drywell were being used as waste receptacles. Most of the constraints contained all kinds of scaffolding equipment, nails, wing nuts, a plastic bottle, and all kinds of miscellaneous dirt and other debris such as tape, etc. This material will eventually have to be removed before plant restart. Removal could be difficult because of the restrictive sizes and locations of the restraints. The inspectors expressed concern because of the exposure that would be expended to retrieve the material and other debris. Many of the restraints are located in high radiation areas ranging from 100 mrem/hr to levels in excess of 1000 mrem/hr.

#### 1.9 Conclusions

Very good radiological control audits and appraisals were performed. No significant changes in the licensee's organization or facilities had been made since the previous inspection. Other changes included the implementation of the Total Exposure System and a Remote Monitoring System.

The selection, training, and qualification program for contractor radiation protection technicians hired in support of the refueling outage was good.

The licensee's overall performance during Refueling Outage R-9 appeared to be good. Reduction in outage exposures was improving..

The licensee's program for controlling occupational exposure, in the aspects reviewed, appeared to be good in accomplishing the licensee's safety objectives and in achieving the aggressive ALARA exposure goals. Both external and internal radiation exposure controls were generally good. An excellent job of reducing respirator use during the outage was performed.

Control and labeling of radioactive materials was consistent with 10 CFR Part 20 requirements. Surveys and monitoring were generally good. Personnel contamination events had increased.

Several poor health physics work practices and one poor safety practice regarding the use of hard hats and disposal of extraneous material and debris into seismic constraints were noted during the tours. The licensee took prompt corrective action in each event.

A general weakness was observed in the licensee's access control requirements. Workers entering radiological controlled areas did not appear to be knowledgeable of the radiological control conditions.

A violation was identified concerning the failure to adhere to station procedures regarding entry and exiting from radiological controlled work areas as discussed in Section 1.8.

ATTACHMENT

**1 PERSONS CONTACTED**

**1.1 Licensee**

\*J. Parrish, Assistant Managing Director for Operations  
\*J. Swailes, Plant Manager  
\*W. Shaeffer, Operations Manager  
\*J. Albers, Radiation Protection Manager & Corporate Radiological Health Officer  
\*G. Smith, Operations Division Manager  
\*W. Barley, Radiation Protection Consultant  
\*J. Benjamin, Manager, Quality Assessment  
\*J. Gearhart, Director, Quality Assurance  
\*S. Davidson, Quality Assurance Manager, Plant Support Assessments  
\*D. Coleman, Manager, Regulatory Services  
\*V. Shockley, Manager, Health Physics  
\*Y. Derrer, Manager, Health Physics/Chemistry/General Employee Training  
\*M. Reddemann, Technical Services Division Manager  
\*S. Kim, ALARA Engineer  
\*R. Winslow, Senior Health Physicist  
\*R. Patch, Health Physics Operation Supervisor  
\*C. Madden, Quality Assurance Technical Assistant  
\*K. Pisarcik, General Aide, Licensing  
\*W. Rigby, Health Physics Planning/ALARA Supervisor  
\*M. Mann, Operations  
\*D. Dinger, Health Physics Supervisor (Acting)  
\*L. Pritchard, Principal Health Physicist  
\*R. Mussman, Sr., ALARA Shielding Coordinator  
\*M. Nolan, Radwaste Supervisor  
\*R. Demarah, ALARA Shielding Technician  
\*W. Friedel, Health Physics/ALARA Technician

**1.2 NRC Personnel**

\*R. Barr, Senior Resident Inspector

\*Denotes personnel that attended the exit interview. In addition to the personnel listed, the inspectors contacted other personnel during this inspection period.

**2 EXIT MEETING**

An exit meeting was conducted on May 19, 1994. During this meeting, the inspectors reviewed the scope and findings of the report. The licensee did not identify as proprietary, any information provided to, or reviewed by the inspectors.